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Docket Number:	24-OPT-01
Project Title:	Perkins Renewable Energy Project
TN #:	254458
Document Title:	Perkins Environmental Analysis 4-0 to 4-9
Description:	Perkins Renewable Energy Project Opt-in Application Environmental Analysis including Air Quality, Biology, Cultural Resources, Geologic Hazards, Hazardous Materials, Land Use, Noise, Paleontological Resources, and Public Health
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4 Environmental Analysis

4.0 Introduction to Environmental Analysis

4.0.1 Document Organization

This chapter includes 17 individual sections containing information specified by the California Energy Commission (CEC) as required for Opt-In Applications (California Code of Regulations, title 20, Section 1704, Appendix B). All of the resource sections use a standardized format containing the following headings and associated content:

- Environmental Setting includes an examination of the existing physical setting (baseline conditions as determined pursuant to section 15125(a) of the California Environmental Quality Act (CEQA) Guidelines) that may be impacted by the Project.
- Impact Analysis identifies the methodology used to analyze potential environmental impacts for each resource area, Impact evaluations are quantitative or qualitative, as appropriate.
  This section also includes the analysis of potential direct, indirect, and cumulative impacts associated with each resource area. The section begins with a list of the criteria used to determine whether environmental effects of the Project qualify as significant adverse environmental impacts. The impacts are compared to significance criteria to determine the level of significance. The impact sections focus on those impacts that are considered potentially significant per the requirements of CEQA. An impact is considered significant if it leads to a "substantial, or potentially substantial, adverse change in the environment." (section 21068 of the CEQA Guidelines) Impacts from the Project fall within one of the following categories:
  - No Impact. The Project would have no effect on environmental conditions or would reduce existing environmental problems or hazards.
  - Less than Significant. An impact may be adverse but does not exceed the threshold levels and does not require mitigation measures.
  - Less than Significant with Mitigation Incorporated. A potentially adverse impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures.
  - Significant and Unavoidable. An adverse impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures.

- Where applicable, each impact section includes a discussion of mitigation measures or other methods necessary to reduce potential impacts below the level of significance and states the level of significance after mitigation.
- Cumulative Impacts discusses whether the Project's contribution to a cumulative effect would be considerable when viewed in connection with the incremental impacts of past projects, the impacts of other current projects, and the impacts of reasonably foreseeable probable future projects (as defined in CEQA Guidelines section 15130).
- Regulatory Setting and Laws, Ordinances, Regulations, and Standards discusses federal, State, and local laws, ordinances, regulations, and standards applicable to the Project and compliance therewith.

Agencies and agency contacts, and permits and permit schedule, are provided in Appendices E.1 and E.2.

4.0.2 Cumulative Impacts

Cumulative impacts were evaluated through review of the websites for Imperial County Planning, Caltrans, Imperial Irrigation District, the BLM, and others to identify past, present, or probable future infrastructure development projects located within a 6-mile radius of the Project Application Area. However, because some types of cumulative impacts may occur at a further distance, the entirety of Imperial County was reviewed for any renewable energy projects. A list of all cumulative projects within a 6-mile radius is provided in Table 4-1, and all renewable energy projects in Imperial County are listed in Table 4-2. Cumulative projects are shown in Figure 4-1 and Figure 4-2.

Table 4-1 Cumulative Projects within 6 Miles

Project name	Project type	Applicant	Location	Phase	Approximate distance from the Project Application Area
Ormesa 2	Geothermal	Ormat	Imperial County	Operational	2.85 miles northwest
Ormesa Conduit Improvement Project	Geothermal	Ormat	Imperial County	In progress: analysis and document preparation	2.90 miles northwest
Gem 1	Geothermal	Ormat	Imperial County	Operational	2.95 miles northwest
Gem 2	Geothermal	CalEnergy	Imperial County	Operational	2.95 miles northwest
Ormesa 1E	Geothermal	Ormat	Imperial County	Operational	4.0 miles northwest
VEGA SES 4 Solar Energy Project	Solar	Imperial County	Imperial County	Pending entitlement	4.0 miles southwest
Viking Solar Energy Generation and Battery Storage Project	Solar	Imperial County	Imperial County	Pending entitlement	4.5 miles northwest
Ormesa I	Geothermal	Ormat	Imperial County	Operational	4.8 miles northwest
Union Pacific Railroad Communication Facility (CACA 042127)	Communication facility	Union Pacific Railroad	Imperial County	Operational	Adjacent Project site
IID 161 kV Transmission Line (CARI 000140)	Transmission line	Imperial Irrigation District	Imperial County	Operational	Adjacent Project site
IID 92 kV Transmission Line & Distribution Line	Transmission line	Imperial Irrigation District	Imperial County	Operational	Adjacent Project site
Fiber Optic Line (CACA 041192)	Fiber optic line	Level Three Communications	Imperial County	Operational	Adjacent Project site
North Gila-Imperial Valley 500 kV Transmission Project	Transmission line	NGIV2, LLC	Imperial County	Proposed	0.06 mile south
IID Brock Reservoir	Reservoir	Imperial Irrigation District	Imperial County	Operational	3.15 miles east

Source: (BLM, n.d.), (IP Perkins 2023), (Imperial County Planning & Development Services, n.d.)

Table 4-2 Cumulative Renewable Projects within Imperial County

Project name	Project type	Applicant	Location	Phase	Approximate distance to the Project Application Area
Le Conte Battery Storage	Battery Storage	Imperial County	Imperial County	Pending Entitlement	25.50 miles southwest
CED Westside Canal Battery Storage	Battery Storage	Imperial County	Imperial County	Pending Entitlement	28.70 miles west
SIGC	Geothermal	Ormat	Imperial County	Operational	16.8 miles west
Heber Geothermal Company	Geothermal	Ormat	Imperial County	Operational	16.9 miles west
Goulds I	Geothermal	Ormat	Imperial County	Operational	16.9 miles west
Heber South	Geothermal	N/A	Imperial County	N/A	18.12 miles west
Ormesa 2	Geothermal	Ormat	Imperial County	Operational	2.85 miles northwest
Ormesa Conduit Improvement Project	Geothermal	Ormat	Imperial County	In Progress - Analysis & Document Preparation	2.90 miles northwest
Gem 1	Geothermal	Ormat	Imperial County	Operational	2.95 miles northwest
Gem 2	Geothermal	CalEnergy	Imperial County	Operational	2.95 miles northwest
Orni 19	Geothermal	Ormat	Imperial County	Approved	25 miles northwest
Orni 18	Geothermal	Ormat	Imperial County	Operational	26 miles northwest
J.M. Leathers	Geothermal	CalEnergy	Imperial County	Operational	36.70 miles northwest
Hudson Ranch II	Geothermal	Energy Source	Imperial County	Approved	36.81 miles northwest
Hudson Ranch I	Geothermal	Energy Source	Imperial County	Operational	36.81 miles northwest
Vulcan	Geothermal	CalEnergy	Imperial County	Operational	37.0 miles northwest
Del Ranch	Geothermal	CalEnergy	Imperial County	Operational	37.0 miles northwest

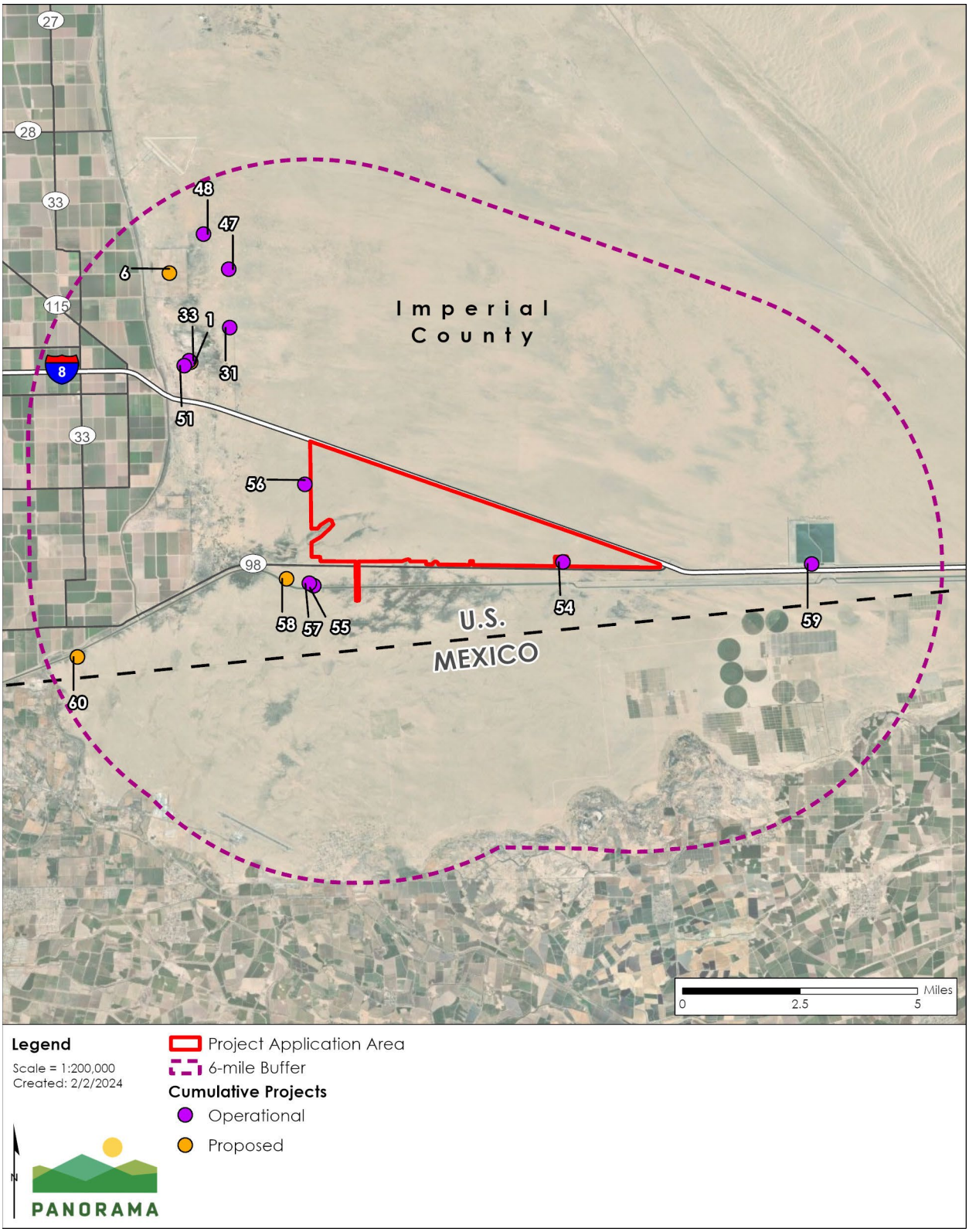
Project name	Project type	Applicant	Location	Phase	Approximate distance to the Project Application Area
Turbo	Geothermal	CalEnergy	Imperial County	Operational	37.0 miles northwest
Unit 3	Geothermal	CalEnergy	Imperial County	Operational	37.05 miles northwest
Unit 4	Geothermal	CalEnergy	Imperial County	Operational	37.05 miles northwest
Unit 5	Geothermal	CalEnergy	Imperial County	Operational	37.10 miles northwest
Black Rock Units 1,2 &3	Geothermal	Ormat	Imperial County	Approved	37.50 miles northwest
J.J. Elmore	Geothermal	CalEnergy	Imperial County	Operational	37.80 miles northwest
Cal Energy Unit 1 and 2 Geothermal Plant	Geothermal	CalEnergy	Imperial County	Operational	37.85 miles northwest
Ormesa 1E	Geothermal	Ormat	Imperial County	Operational	4.0 miles northwest
Ormesa I	Geothermal	Ormat	Imperial County	Operational	4.8 miles northwest
Wister	Geothermal	Orni 21	Imperial County	Proposed/under construction	40.90 miles west
Desert Valley Company (DVC) Monofill Expansion Project	Geothermal	Imperial County	Imperial County	Pending entitlement	42 miles northwest
Truckhaven Seismic Exploration	Geothermal	ORNI 5 LLC	Thermal, Imperial County	In progress: decision and appeal	55.77 miles northwest
Wistaria Ranch Solar	Solar	Imperial County	Imperial County	Approved: not built	22.70 miles west
Iris Cluster Solar Farm Project	Solar	Imperial County	Imperial County	Approved: not built	22.80 miles west
Mount Signal and Calexico Solar Farm Projects	Solar	Imperial County	Imperial County	Operational	24 miles southwest
Imperial Solar South	Solar	Imperial County	Imperial County	Operational	25.20 miles southwest

Project name	Project type	Applicant	Location	Phase	Approximate distance to the Project Application Area
Centinela Solar	Solar	Imperial County	Imperial County	Operational	25.30 miles west
Orni 30 LLC CUP	Solar	Imperial County	Imperial County	Pending entitlement	25.5 miles northwest
Drew Solar Project	Solar	Imperial County	Imperial County	Approved: under construction	25.50 miles west
Alhambra Solar	Solar	Imperial County	Imperial County	Operational	27 miles northwest
VEGA SES Solar Energy Project	Solar	Imperial County	Imperial County	Approved: not built	27.63 miles west
Laurel Cluster Solar Farms	Solar	CA DWR and 8minute Solar Energy	Imperial County	Approved: not built	28 miles west
Campo Verde	Solar	Imperial County	Imperial County	Operational	28.20 miles west
Arkansas Solar	Solar	Imperial County	Imperial County	Operational	30.5 miles northwest
Calipat Solar Farm I (Wilkinson Solar)	Solar	Imperial County	Imperial County	Approved: not built	31 miles northwest
Calipat Solar Farm I	Solar	Imperial County	Imperial County	Operational	32 miles northwest
Sonora Solar	Solar	Imperial County	Imperial County	Operational	32 miles northwest
Nider Solar Project	Solar	Imperial County	Imperial County	Pending entitlement	32 miles northwest
Imperial Solar West	Solar	Imperial County	Imperial County	Operational	32.60 miles west
Citizens Imperial Solar, LLC Project	Solar	Imperial County	Imperial County	Operational	32.64 miles northwest
VEGA SES 6 Solar Energy Project	Solar	Imperial County	Imperial County	Pending entitlement	32.75 miles northwest
Midway Solar Farm I-IV	Solar	Imperial County	Imperial County	Operational	34.60 miles northwest

Project name	Project type	Applicant	Location	Phase	Approximate distance to the Project Application Area
VEGA SES 2, 3, & 5 Solar Energy Project	Solar	Imperial County	Imperial County	Pending entitlement	34.75 miles northwest
Imperial Valley Solar II	Solar	Imperial County	Imperial County	Operational	38 miles northwest
IV Solar Company	Solar	Imperial County	Imperial County	Operational	38 miles northwest
VEGA SES 4 Solar Energy Project	Solar	Imperial County	Imperial County	Pending entitlement	4.0 miles southwest
Viking Solar Energy Generation and Battery Storage Project	Solar	Imperial County	Imperial County	Pending entitlement	4.5 miles northwest
Wister Solar Energy	Solar	Imperial County	Imperial County	Pending entitlement	40.75 miles west
Seville Solar	Solar	Imperial County	Imperial County	Operational	50.70 miles northwest
Titan Solar/Seville 4 Solar Project	Solar	Imperial County	Imperial County	Pending entitlement	51.60 miles northwest

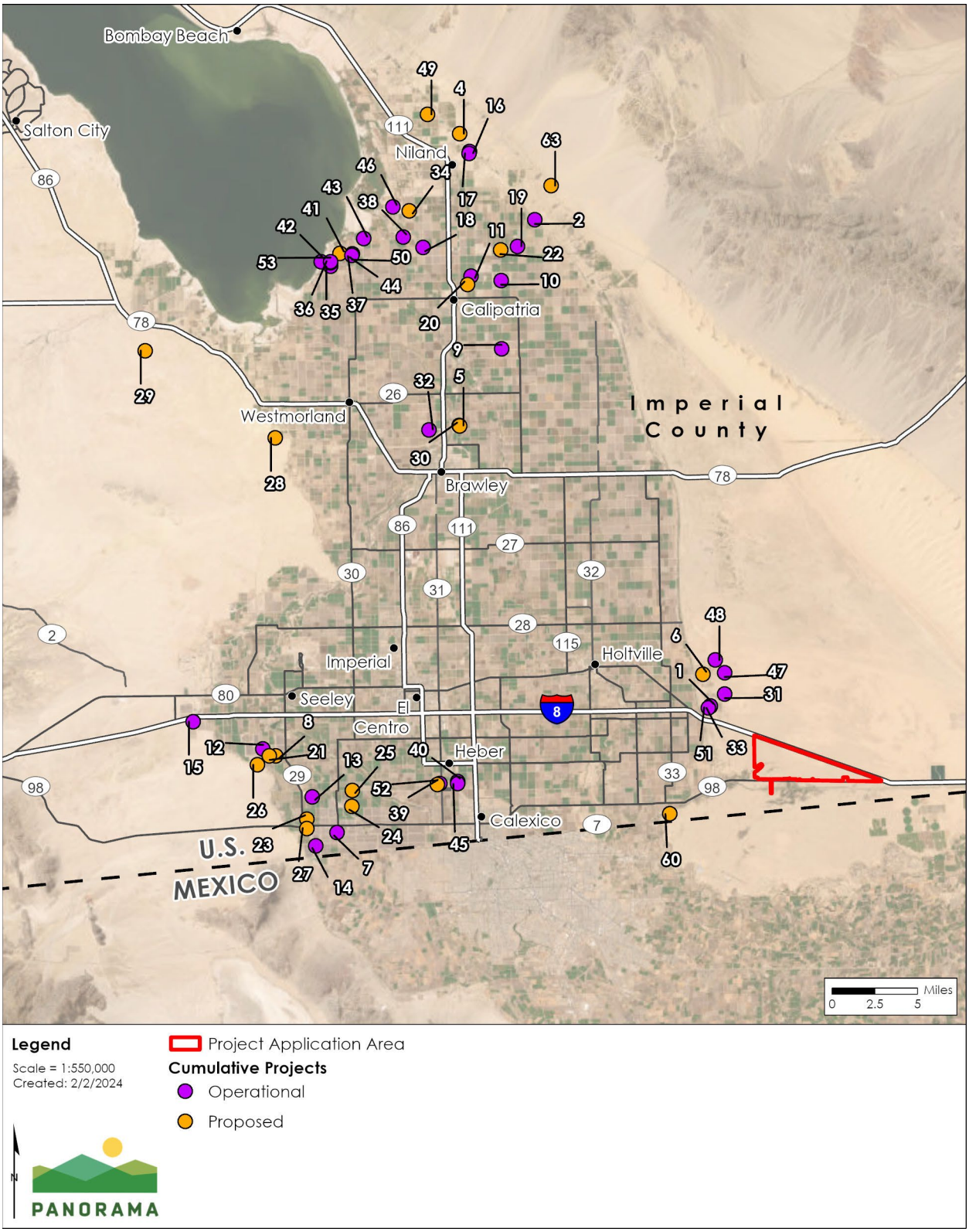
Source: (BLM, n.d.), (Imperial County Planning & Development Services, n.d.)

Figure 4-1 Cumulative Projects within a 6-mile Radius



Source: (BLM, n.d.), (IP Perkins 2023), (Imperial County Planning & Development Services, n.d.)

Figure 4-2 Cumulative Renewable Projects within Imperial County



Source: (BLM, n.d.), (Imperial County Planning & Development Services, n.d.)

4.0.3 References

BLM. n.d. "BLM National NEPA Register." Eplanning.Blm. Accessed January 23, 2024. https://eplanning.blm.gov/eplanning-ui/home.

Imperial County Planning & Development Services. n.d. "Renewable Energy Overlay and Plant Locations." Icpd.Maps.Arcgis. Accessed January 23, 2024. https://icpds.maps.arcgis.com/apps/webappviewer/index.html?id=0d869c18d11645cc918391fdcac24b80.

IP Perkins. 2023. "East Mesa Renewable Energy Project Plan of Development Version 7."

4.1 Air Quality

The section evaluates potential impacts from the Project related to air quality. This section relies on information from the Air Quality Analysis Technical Report prepared for the Project (Appendix H) (Baseline Environmental Consulting 2024).

Section 4.1.1 describes the existing air quality conditions, including local air quality, air quality standards, and significance thresholds for criteria pollutants. Section 4.1.2 identifies potential air quality impacts that may result from Project construction, operation and maintenance, and decommissioning. Section 4.1.3 discusses cumulative air quality impacts. Section 4.1.4 presents measures to address air quality impacts. Section 4.1.5 presents laws, ordinances, regulations, and standards (LORS) applicable to air quality and the Project's compliance therewith.

4.1.1 Environmental Setting

Regional Setting

Imperial County is located within the Salton Sea Area Air Basin (SSAB) (refer to Figure 4.1-1). The Imperial County Air Pollution Control District (ICAPCD) has countywide jurisdiction and is responsible for ensuring that the ambient air quality standards of the federal Clean Air Act and the California Clean Air Act are achieved and maintained. Air pollution monitoring stations controlled by ICAPCD, located in Brawley, El Centro, and Calexico, determine whether the County is meeting the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS).

Geography and Topography

The Project Application Area and surrounding Imperial Valley area is relatively flat and is located approximately 36 miles southeast from the Salton Sea and about 1 mile north of the U.S.–Mexico border. The mountains that surround Imperial Valley include the Santa Rosa, Fish Creek, Coyote, and Jacumba mountains to the west; the Chocolate Mountains to the northeast; the Algodones Sand Dunes (also known as the Imperial Sand Dunes), Picacho Peaks, and Cargo Muchacho Mountains to the southeast; and Palo Verde Peak to the northeast (County of Imperial 1993).

Climate and Meteorology

The climate in Imperial County is arid with hot, dry summers and mild winters. The daily temperatures and seasonal variations can vary widely. The generally clear skies and rapid heating and cooling of the desert soils create high temperatures by day and quick cooling by night. The average annual rainfall is about 3 inches, the average annual air temperature is about 72 degrees Fahrenheit, and the average frost-free season is about 300 days per year (County of Imperial 1993). Meteorological data from the nearest FAA station is not included in this Application due to the absence of any sensitive receptors within 3 miles of the project (see discussion under Methodology in Section 4.1.2).

Figure 4.1-1 Salton Sea Air Basin

Source: (California Department of Forestry and Fire Protection 2021)

Overview of Air Quality Standards

The federal Clean Air Act (CAA) and the California Clean Air Act (CCAA) establish ambient air quality standards and regulatory authorities tasked with ensuring those standards are achieved and maintained. As required by the CAA, the U.S. Environmental Protection Agency (EPA) has identified criteria pollutants and established NAAQS to protect public health and welfare. NAAQS have been established for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter 10 microns or smaller (PM_{10}), particulate matter 2.5 microns or smaller ($PM_{2.5}$), and lead (Pb), each described below. Under the CCAA, California has adopted the CAAQS, which are generally more stringent than the NAAQS for certain criteria pollutants. Table 4.1-1, page 4.1-6, presents the current federal and State standards for regulated pollutants and the ICAPCD's attainment status for each standard. California has also established CAAQS for criterial pollutants sulfates, hydrogen sulfide, and vinyl chloride.

As required by the federal CAA and the CCAA, air basins or portions thereof have been classified as either "attainment" or "nonattainment" for each criteria air pollutant based on whether the standards have been achieved. In some cases, an area's status is unable to be determined, in which case the area is designated "unclassified." The air quality in an attainment area meets or exceeds the NAAQS or CAAQS. A nonattainment area has air quality that falls short of the NAAQS or CAAQS. Each state is required to adopt an enforceable plan, known as a State Implementation Plan (SIP), to achieve and maintain air quality meeting the NAAQS (EPA 2024).

Criteria Air Pollutants

Ozone (O_3)

Ozone (O_3) is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving VOC and NO_x. VOC and NO_x are known as *precursor compounds* for ozone. Substantial ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of VOC and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when long sunny days combine with regional air subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds.

Sulfur Dioxide (SO_2)

SO_2 is a colorless, acidic gas with a strong odor. SO_2 is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter and contributes to the potential formation of atmospheric sulfuric acid that could precipitate downwind as acid rain. SO_2 can irritate lung tissue and increase the risk of acute and chronic respiratory disease.

Carbon Monoxide (CO)

CO is a nonreactive pollutant that is a product of incomplete combustion of organic material and is mostly associated with motor vehicle traffic and, in wintertime, with wood–burning stoves and fireplaces. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground–level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces its oxygen-carrying capacity, resulting in reduced levels of oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia. CO measurements and modeling were important in the early 1980s, when CO levels were regularly exceeded throughout California, but in more recent years, CO measurements and modeling are not a priority in most California air districts due to the retirement of older vehicles, fewer emissions from new vehicles, and improvements to fuels.

Nitrogen Dioxide

When combustion temperatures are extremely high, as in aircraft, truck, and automobile engines, atmospheric nitrogen combines with oxygen to form various oxides of nitrogen, of which nitric oxide (NO) and nitrogen dioxide (NO_2), referred to collectively as NO_x, are the most significant air pollutants. Nitric oxide is a colorless and odorless gas that while relatively harmless to humans, quickly converts to NO_2. Automobiles and industrial operations are the main sources of NO_2, a reddish-brown gas that is a byproduct of combustion processes and that may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels. NO_2 has been found to be a lung irritant capable of producing pulmonary edema., and inhaling NO_2 can lead to respiratory illnesses such as bronchitis and pneumonia.

Lead

Lead, which has a range of adverse neurotoxin health effects, used to be released into the atmosphere via leaded gasoline products. The phase-out of leaded gasoline in California has resulted in dramatically decreased levels of atmospheric lead. The highest atmospheric concentrations of lead are generally found near lead smelters and general aviation airports as piston aircraft use leaded fuel. Other stationary sources that generate lead emissions include waste incinerators, coal- and oil-fired power plants, and lead-acid battery manufacturers (CARB, n.d.-b).

Particulate Matter (PM_{10} and $PM_{2.5}$)

PM10 and PM2.5 consist of airborne particles that measure 10 micrometers or less in diameter and 2.5 micrometers or less in diameter, respectively. PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs, causing adverse health effects. Particulate matter in the atmosphere results from many kinds of dust and fume

producing industrial and agricultural operations, fuel combustion, wood burning stoves and fireplaces, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition, construction activities and mining, are more local in nature while others, such as vehicular traffic and wood burning stoves and fireplaces, have a more regional effect.

Very small particles of certain substances (e.g., sulfates, nitrates) can cause lung damage directly or can contain adsorbed gases (e.g., chlorides, ammonium) that may be damaging to health. Particulates can also damage materials and reduce visibility. Dust comprising large particles (diameter >10 micrometers) settles out rapidly and is easily filtered by human breathing passages. This dust is of concern more as a soiling nuisance than a health hazard. The remaining portions of dust, PM_{10} and $PM_{2.5}$, are a health concern particularly at levels above the federal and California ambient air quality standards. $PM_{2.5}$ (including diesel exhaust particles) is thought to have greater effects on health because these particles are so small as to be able to penetrate to the deepest parts of the lungs.

Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, coughing, bronchitis, and respiratory illnesses in children. Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health.

Toxic Air Contaminants

Toxic air contaminants (TACs) are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer-causing) adverse human health effects (i.e., injury or illness) even when present in relatively low concentrations. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including *diesel particulate matter* (DPM) emissions from diesel-fueled engines, which was identified as a TAC by CARB in 1998. Compounds regulated as TACs under State law include all 189 compounds regulated as *hazardous air pollutants* (HAPs) under the 1990 federal Clean Air Act Amendments (CARB, n.d.). TACs are different than criteria pollutants because ambient air quality standards have not been established for TACs. TACs occurring at extremely low levels may still cause health effects and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts are described by carcinogenic risk and by chronic (i.e., long duration) and acute (i.e., severe but of short duration) adverse effects on human health.

Existing Ambient Air Quality

Imperial County is currently classified as being in marginal nonattainment for the 1-hour State ozone standard and nonattainment for the federal and State 8-hour ozone standards, as shown in Table 4.1-1, below (ICAPCD 2017). In October 2018, the ICAPCD Board of Directors approved the Imperial County 2018 Redesignation Request and Maintenance Plan for Particulate Matter less than 10 Microns in Diameter, which redesignated the Imperial Valley Planning Area from serious nonattainment to attainment of the PM10 NAAQS under CAA Section 107(d)(3)(E) protocol (ICAPCD 2018). Imperial County is unclassified or classified as attainment for all other pollutant standards.

Table 4.1-1 Imperial Valley Planning Area Attainment Status

Pollutant	Averaging time	State standard concentration	State standard attainment status	National standard concentration	National standard attainment status
Ozone	1-Hour	0.090 ppm	Nonattainment	—	Unclassified/attainment
	8-Hour	0.070 ppm	Nonattainment	0.070 ppm	Nonattainment (marginal – 2015; moderate – 2008)
Carbon Monoxide (CO)	1-Hour	9.0 ppm	Unclassified/attainment	9.0 ppm	Unclassified/attainment
	8-Hour	20 ppm	Unclassified/attainment	35 ppm	Unclassified/attainment
Nitrogen Dioxide (NO_2)	1-Hour	0.180 ppm	Unclassified/attainment	0.100 ppm	Unclassified/attainment
	Annual	0.030 ppm	Unclassified/attainment	0.053 ppm	Unclassified/attainment
Sulfur Dioxide (SO_2)	1-Hour	0.25 ppm	Unclassified/attainment	0.075 ppm	Unclassified/attainment
	3-Hour	—	Unclassified/attainment	0.5 ppm	Unclassified/attainment
	24-Hour	0.04 ppm	Unclassified/attainment	0.14 ppm	Unclassified/attainment
	Annual	—	Unclassified/attainment	0.03 ppm	Unclassified/attainment
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m3	Nonattainment	150 µg/m3	Attainment (maintenance)
	Annual	20 µg/m3	Nonattainment	—	—
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	—	Unclassified/attainment	35 µg/m3	Unclassified/attainment
	Annual	12 µg/m3	Unclassified/attainment	12 µg/m3	Unclassified/attainment
Lead (Pb)	30-Day	1.5 µg/m3	Unclassified/attainment	—	Unclassified/attainment
	Quarterly	—	Unclassified/attainment	1.5 µg/m3	Unclassified/attainment

Note: ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter

Source: (ICAPCD, n.d.; CARB, n.d.; EPA 2023)

The ICAPCD operates a network of air monitoring stations throughout Imperial County to monitor ambient levels of criteria pollutants such as ozone, PM_{10}, and $PM_{2.5}$. Table 4.1-2 and Table 4.1-3 presents a five-year summary for the period from 2018 to 2022 of the highest annual concentrations of ozone, PM10, and PM2.5 measured at the two nearest monitoring stations. A third monitoring stations was not included because the next nearest station is near the Salton Sea are not representative of air quality in the Project site due to dust emissions from the Salton Sea and greater influence from agricultural operations, which are not located near the Project site.

- El Centro-9th Street located about 20 miles northwest of the Project site, and
- Calexico-Ethel Street located about 16 miles southwest of the Project site.

Table 4.1-2 Measuring Ambient Air Quality Concentrations by Year – El Centro 9th Street Station

Pollutant	Standard	2018	2019	2020	2021	2022
Ozone	1-hour max. concentration (ppm)	0.102	0.080	0.097	0.096	0.113
Ozone	Days >CAAQS (0.09 ppm)	2	0	1	1	2
Ozone	8-hour concentration (ppm)	0.090	0.071	0.077	0.084	0.079
Ozone	Days >CAAQS (0.070 ppm)	15	1	2	7	10
Ozone	Days >NAAQS (0.070 ppm)	14	1	2	6	10
PM_{10}	Max 24-hour Concentration (µg/m^3)	256.3	130.0	197.7	194.5	554.6
PM_{10}	Days > CAAQS (50 µg/m^3)	113	53.7	92.0	88.6	99.3
PM_{10}	Days > NAAQS (150 µg/m^3)	5.1	0.0	2.0	1.0	2.1
PM_{10}	Annual Arithmetic Mean (µg/m^3)	47.3	35.6	41.5	41.8	45.5
$PM_{2.5}$	Max 24-hour Concentration (µg/m^3)	22.4	21.4	28.5	19.1	30.3
$PM_{2.5}$	Days > NAAQS (35 µg/m^3)	0.0	0.0	0.0	0.0	0.0
$PM_{2.5}$	Annual Arithmetic Mean (µg/m^3)	8.7	7.9	9.8	8.4	8.9

Notes:

CAAQS = California Ambient Air Quality Standards; µg/m3 = micrograms per cubic meter; NAAQS = National Ambient Air Quality Standards; ppm = parts per million.

State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. When the measured state and national concentrations varied due to different sample methods, the highest concentration was reported in the summary table.

Source: (Baseline Environmental Consulting 2024)

Table 4.1-3 Measuring Ambient Air Quality Concentrations by Year – Calexico Ethel Street Station

Pollutant	Standard	2018	2019	2020	2021	2022
Ozone	Max 1-hour Concentration (ppm)	0.103	0.106	0.107	0.122	0.097
Ozone	Days > CAAQS (0.09 ppm)	2	4	6	4	1
Ozone	Max 8-hour Concentration (ppm)	0.084	0.089	0.087	0.090	0.083
Ozone	Days > CAAQS (0.070 ppm)	10	18	19	14	7
Ozone	Days > NAAQS (0.070 ppm)	9	17	16	13	6
PM_{10}	Max 24-hour Concentration (µg/m3)	419.0	146.1	194.5	301.1	184.8
PM_{10}	Days > CAAQS (50 µg/m3)	*	112.0	166.3	150.7	163.9
PM_{10}	Days > NAAQS (150 µg/m3)	9.3	0.0	4.0	3.0	2.0
PM_{10}	Annual Arithmetic Mean (µg/m3)	61.6	44.5	54.4	52.5	54.0
$PM_{2.5}$	Max 24-hour Concentration (µg/m3)	90.6	53.1	46.1	60.8	41.9
$PM_{2.5}$	Days > NAAQS (35 µg/m3)	*	1.1	5.4	2.1	5.1
$PM_{2.5}$	Annual Arithmetic Mean (µg/m3)	*	10.7	12.0	10.3	11.0

Notes:

CAAQS = California Ambient Air Quality Standards; µg/m3 = micrograms per cubic meter; NAAQS = National Ambient Air Quality Standards; ppm = parts per million.

* = insufficient data available to determine the value.

State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. When the measured state and national concentrations varied due to different sample methods, the highest concentration was reported in the summary table.

Source: (Baseline Environmental Consulting 2024)

Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions are of global concern. Although there are no ambient air quality standards for GHGs, they are regulated by both the California Air Resources Board (CARB) and the EPA.

GHG emissions from human activities primarily include CO_2, with much smaller amounts of nitrous oxide (N_2O), methane (CH_4), often from unburned natural gas, sulfur hexafluoride (SF_6) from high-voltage power equipment, and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. Because these GHGs have different warming potentials (i.e., the amount of heat trapped in the atmosphere by a certain mass of the gas), and CO_2 is the most common reference gas for climate change, GHG emissions are often quantified and reported as CO_2-equivalent (CO_2e) emissions. For example, while SF_6 represents a small fraction of the total annual GHGs emitted worldwide, this gas is very potent, with 22,800 times the global warming potential of CO_2. Therefore, an emission of 1 metric ton of SF_6 would be reported as 22,800 metric tons CO_2e (MT CO_2e). The global warming potential of CH_4 and N2O are 25 times and 298 times that of CO_2, respectively (CARB, n.d.-a). The principal GHGs from human activity that enter and accumulate in the atmosphere are described below.

Carbon Dioxide (CO_2)

CO_2 is a naturally occurring gas that enters the atmosphere through natural as well as anthropogenic (human) sources. Key anthropogenic sources include the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, trees, wood products, and other biomass as well as industrial chemical reactions such as those associated with manufacturing cement. CO_2 is removed from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4)

Like CO_2, CH_4 is emitted from both natural and anthropogenic sources. Key anthropogenic sources of CH_4 include gaseous emissions from landfills, releases associated with the mining and materials extraction industries (in particular coal mining) and fugitive releases from the extraction and transport of natural gas and crude oil. Livestock and agricultural practices also emit CH_4. Small quantities of CH_4 are released during fossil fuel combustion.

Nitrous Oxide (N_20)

N_2O is emitted from both natural and anthropogenic sources. Important anthropogenic sources include industrial activities, agricultural activities (primarily the application of nitrogen fertilizer), the use of explosives, combustion of fossil fuels, and decay of solid waste.

Fluorinated Gases (HFCs, PFCs, and SF_6)
HFCs, PFCs, and SF_6 are synthetic gases emitted from a variety of industrial processes and contribute substantially more to the greenhouse effect on a pound-for-pound basis than the previously described GHGs. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, HFCs, and halons). These gases are typically emitted in small quantities but, because of their potency, are sometimes referred to as "high global warming potential gases."

4.1.2 Impact Analysis

Methodology

This section presents the methodology used for the analysis of construction and operational emissions for the Project. Criteria pollutant and GHG emissions for Project construction and operation were calculated using the California Emissions Estimator Model (CalEEMod), Version 2022.1.1.19. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects. CalEEMod allows for the use of default data (e.g., emission factors, trip lengths, meteorology, source inventory) provided by the various California air districts to account for local requirements and conditions, and/or user-defined inputs. The calculation methodology and input data used in CalEEMod can be found in the CalEEMod User's Guide Appendices A, D, and E (CAPCOA 2022). The input data and construction and operation emission estimates for the Project are discussed below and provided in Appendix H. Emissions calculations made outside CalEEMod, such as determination of emissions for determination of sulfur hexafluoride (SF_6) consumption, and the compiled emissions profiles are included in Appendix H. CalEEMod output files for the Project are included in Appendix H. The estimated emissions were then compared to applicable significance criteria.

Construction Emissions
Construction emissions of criteria air pollutants include emissions generated by construction equipment used on site and emissions generated by vehicle trips associated with construction, such as worker and vendor trips. CalEEMod estimates construction emissions by multiplying the amount of time equipment is in operation by emission factors.

A 24-month construction scenario was modeled and analyzed to account for the construction equipment and the duration of construction phasing. Construction of the Project was modeled based on the Applicant-provided construction schedule.

Construction equipment was estimated to operate 5 days per week and up to 10 hours per day and used horsepower information provided by the Applicant and the CalEEMod defaults for load factor. Vendor and haul trips were modeled as exclusively heavy-duty truck trips. The analysis conservatively assumes a one-way distance of 70 miles to account for sourcing materials within the air basin for the air quality analysis. Soils excavated during construction

are assumed to be balanced on site. This analysis assumes that the Project would comply with all applicable regulatory standards. In particular, the Project would comply with ICAPCD Regulation VIII Fugitive Dust Rules. Rules 800 and 801 under Regulation VIII are designed to reduce the amount of fine PM_{10} entrained in the ambient air generated from fugitive dust sources and emissions generated from construction and other earthmoving activities within Imperial County by requiring actions to prevent, reduce, or mitigate PM_{10} emissions, such as watering and speed limits.

Detailed assumptions including schedule and phasing for each construction scenario is included in Appendix H. Table 4.1-4, below, includes the anticipated construction phases and scheduled dates for each construction phase.

Table 4.1-4 Construction Schedule

Phase	Start	End	Duration (days)	Duration (months)
Phase 1: Site Preparation (~5,800 acres)	1/2/2026	6/2/2026	100	5
Phase 2: PV Panel Systems (1,150 MW)	4/2/2026	11/2/2027	150	8
Phase 3: Inverters, Substation, Electrical	9/2/2026	4/2/2027	150	8
Phase 4: Gen-tie and Loop-in Transmission	2/2/2027	3/2/2027	30	2
Phase 5: Battery Storage (1,150 MW)	2/2/2027	10/2/2027	160	8
Phase 6: Utility Switchyard (500 kV)	2/2/2027	12/2/2027	200	10

Source: (IP Perkins, LLC 2022)

Operational Emissions

In CalEEMod, operational sources of criteria pollutant emissions include area, energy, and mobile sources. The first year of operation was assumed to be 2027 and calculations were made based on an assumed 24-month construction schedule. CalEEMod defaults were used to estimate emissions assuming the use of up to two 3,000 square feet operation and maintenance buildings, water supply use of 50 acre-feet annually for panel washing, minimal indoor water uses, and a standby, backup generator (rated at 45 kW, or approximately 61 hp), which would only be deployed in the case of an emergency outage on the Project's distribution power system.

CEC Appendix B Item E GHG requires that emissions calculations include "the emission rates of criteria pollutants and greenhouse gases (CO_2, CH_4, N_2O, and SF_6) from the stack, cooling towers, fuels and materials handling processes, delivery and storage systems, and from all on-site secondary emission sources." The Project would not include stacks, cooling towers, fuels and materials handling processes, or delivery and storage systems. The on-site emissions sources would be from the on-site use of off-road construction equipment, utility task vehicles (UTVs), and fugitive emissions of SF_6 from circuit breakers as well as building operations and employee vehicle trips. Emissions factors for UTVs and SF_6 consumption are included in

Appendix H. Emission factors for off-road construction equipment, building emissions, and employee vehicle commutes are embedded in the CalEEMod model.

In addition, construction of the Project would result in the removal of existing vegetation, which provide carbon uptake and act as a CO_2 sink. The loss of natural carbon uptake due to land-use conversion were estimated for the Project. Criteria air pollutant and GHG emissions from all the sources described above, except for SF_6 leakage, were estimated using the methodology from CalEEMod version 2022.1.1. GHG emissions from SF_6 leakage were calculated based on the methodology documented in U.S. EPA 40 CFR 98, Subpart A.

After commencing operation, the Project would deliver 1,150 MW of clean, renewable solar energy to California ratepayers. The renewable electricity generated by the Project would displace electricity generated by fossil fuels to meet energy demand. The avoided GHG emissions from conventional power plants were estimated based on Project electricity production and CO_2 emissions factors of conventional generation technologies for marginal generation obtained from the CEC's *Estimated Cost of New Utility-Scale Generation in California: 2018 Update* (CEC, 2019)

Toxic Air Contaminants

The primary health risks of TACs to nearby sensitive receptors would be driven by carcinogenic DPM emissions from on-site equipment and vehicles during construction. Non-cancer effects of DPM are normally less of a concern than cancer risks. The recommended exposure duration for estimating cancer risk to residents or off-site workers would be 30 years or 25 years, respectively, according to the Office of Environmental Health Hazard Assessment's Guidance Manual for the Preparation of Health Risk Assessments (OEHHA 2015).

Health effects from carcinogenic TACs are usually described in terms of individual cancer risk over a 30-year exposure duration. This introduces uncertainty in the quantification of cancer risk because the risk from construction emissions would occur only during a small fraction of a lifetime, and construction would cease following completion of the Project. Therefore, the total exposure period for construction activities would be approximately 6 percent of the total exposure period used for typical residential health risk evaluation (30 years).

Concentrations of mobile source DPM emissions are also greatly reduced by distance such that a separation of 1,000 feet normally allows sensitive land uses to avoid high levels of DPM concentrations (CARB 2005). The nearest sensitive receptor is over 3 miles from the Project Application Area. Because emissions would disperse with distance, there would be no potential to expose sensitive receptors to substantial pollutant concentrations of carcinogenic DPM; therefore, a health risk assessment was not conducted for this Project.

Impact Evaluation Criteria

The potential for impacts to air quality was evaluated using the criteria described in the California Environmental Quality Act (CEQA) Environmental Checklist (Appendix G of the CEQA Guidelines). For air quality, the CEQA Environmental Checklist asks, would the Project:

- Conflict with or obstruct implementation of the applicable air quality plan?
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?
- Generate GHG emissions either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy, or regulation adopted for reducing GHG emissions?

Significance Criteria for Construction and Operation

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to determine whether a project would have a significant impact on air quality. Table 4.1-5, below, presents the ICAPCD's regional air quality significance thresholds for construction and operation, as derived from the ICAPCD's CEQA Guidelines (ICAPC [1993] 2017). In the absence of an ICAPCD threshold of significance for GHG emissions for construction and operation, "South Coast AQMD Air Quality Significance Thresholds" was used in the form of CO2e due to proximity (SCAQMD 2008; 2023).

Table 4.1-5 ICAPCD CEQA Significance Thresholds for Construction and Operation

Pollutant	Construction thresholds	Operation threshold
NOx	100 lbs/day	137 lb/day
VOC	75 lbs/day	137 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	--	550 lbs/day
SOx	--	150 lbs/day
CO	550 lbs/day	550 lbs/day
CO_2e	10,000 MT/year [a]	10,000 MT/year [a]

[a] South Coast AQMD Air Quality Significance Thresholds" was used for construction and operation for CO2e

Source: (Imperial County Air Pollution Control District (ICAPCD) [1993] 2017; South Coast Air Quality Management District (SCAQMD) 2023; 2008)

Impact AQ-1

Would the Project conflict with or obstruct implementation of the applicable air quality plan? (*Less Than Significant)*

Project Site Components

The analysis below considers the consistency of the Project with measures included in air quality management plans covering the Project Application Area. According to ICACPD's *CEQA Air Quality Handbook* (ICAPCD [1993] 2017), "a Project should demonstrate compliance with the most recent ozone Air Quality Attainment Plan (AQAP) and PM_{10} State Implementation Plan (SIP), as well as compliance with the Imperial County Rules and Regulations, State regulations and Federal Regulations" (ICAPCD [1993] 2017).

The following ICACPD Plans are the most recent clean air plans to achieve ozone and particulate matter standards:

- Imperial County 2017 State Implementation Plan for the 2008 8-Hour Ozone Standard (ICAPCD 2018a)
- Imperial County 2018 Redesignation Request and Maintenance Plan for Particulate Matter Less Than 10 Microns in Diameter (ICAPCD 2018b)

Imperial County 2017 State Implementation Plan for the 2008 8-Hour Ozone Standard

The *Imperial County 2017 State Implementation Plan for the 2008 8-Hour Ozone Standard* requires implementation of Reasonably Available Control Technology (RAfreCT) to control certain emission sources of ozone precursors (VOCs and NO_x) and Reasonably Available Control Measures (RACMs) to control mobiles sources. The Project would include an emergency diesel generator, which is a stationary source. Operation and maintenance of the proposed emergency diesel generator at the Project site would comply with ICAPCD Rule 207 - New and Modified Stationary Source Review, and Rule 208 - Permit to Operate, both of which require new stationary sources to apply Best Available Control Technology and meet emissions standards to ensure the stationary source operations do not interfere with attainment or maintenance of ambient air quality standards. The emergency generator would therefore implement the RACTs for stationary sources. RACM for mobile sources included in the ozone attainment plan assumes California's emission standards, fuel specifications, and incentive programs for heavy-duty vehicles represent all measures that are technologically and economically feasible within California. No other RACMs would apply to the Project. The Project would implement all RACM included in the ozone attainment plan as the Project vehicles would be consistent with California emission standards and fuel specifications. In addition, the Project would implement BMP Air Quality 3 and PDF AQ-2, which would involve use of zero emission vehicles where available and increased efficiency in all construction equipment to reduce ozone emissions. Because the Project would implement all RACMs for mobile sources, the Project would not conflict with the *Imperial County 2017 State Implementation Plan for the 2008 8-Hour Ozone Standard* and the impact would be less than significant. Analysis of project consistency with ICAPCD numeric thresholds for emissions of ozone precursors is provided in Impact AQ-2 below.

Imperial County Maintenance Plan for Particulate Matter Less Than 10 Microns in Diameter

The *Maintenance Plan for Particulate Matter less than 10 Microns in Diameter* (ICAPCD 2018) addresses the applicable requirements for a maintenance plan and CAA section 110 and part D, including emission inventories, continuous monitoring requirements, and contingency provisions. The plan's PM_{10} control strategy for Imperial County consists of ICACPD-adopted rules and regulations that have been determined by the EPA as meeting Best Available Control Measure (BACM) level stringency for sources previously identified as significant.

The BACMs for PM_{10} are part of ICAPCD Regulation VIII, including Rule 800, Rule 801, Rule 802, Rule 803, Rule 804, and Rule 805.

Table 4.1-6 provides a summary of the current Regulation VIII fugitive dust rules and the Project's conformance with the rules. Because the Project would implement all BACMs for control of PM_{10}, including all provisions of ICAPCD Regulation VIII, the Project would not conflict with the *Maintenance Plan for Particulate Matter less than 10 Microns in Diameter* and the impact would be less than significant. Analysis of project consistency with ICAPCD numeric thresholds for emissions of PM_{10} are provided in Impact AQ-2 below.

Table 4.1-6 ICACPD Regulation VIII Fugitive Dust Rules

Rule	Purpose	Project conformance
Rule 800	Establishes fugitive dust limits and mitigation measures	The Project would comply with ICACPD Rule 800 by adhering to and implementing the Fugitive Dust Control Plan (Appendix I.1). The requirements set forth in this rule are applicable to all the rules under Regulation VIII and, therefore, implementing the Fugitive Dust Control Plan, which requires the implementation of Rules 801-805, will minimize fugitive dust emissions to the extent feasible and comply with Rule 800.
Rule 801	Establishes construction and earthmoving fugitive dust limits and mitigation measures	The Project would comply with ICACPD Rule 801 by adhering and implementing the Fugitive Dust Control Plan (Appendix I.1) as well as BMP Air Quality 4-16, PDF AQ-1, and CMA LUPA Air 5 as listed in Section 4.1-5. These measures would be in compliance with the requirements of this rule and minimize fugitive dust emissions to the extent feasible.
Rule 802	Establishes outdoor handling, storage, and transport of bulk material fugitive dust limits and mitigation measures	The Project would comply with ICACPD Rule 802 by adhering to and implementing the Fugitive Dust Control Plan (Appendix I.1) as well as BMP 10, BMP 15, and PDF AQ-1 as listed in Section 4.1-14. These measures would be in compliance with the requirements of this rule and minimize fugitive dust emissions from handling, storing, and transporting bulk materials.
Rule 803	Establishes carry-out and track-out fugitive dust limits and mitigation measures	The Project would comply with ICACPD Rule 803 by adhering to and implementing the Fugitive Dust Control Plan (Appendix I.1) as well as BMP 11, BMP 12, BMP 14, and PDF AQ-1 as listed in Section 4.1-14. These measures would be in compliance with the requirements of this rule and minimize fugitive dust emissions from carry-out and track-out during construction activities.

Rule	Purpose	Project conformance
Rule 804	Establishes open area fugitive dust limits and mitigation measures	The Project would comply with ICACPD Rule 804 by adhering to and implementing the Fugitive Dust Control Plan (Appendix I.1) as well as BMP Air Quality 4-16, PDF AQ-1, and CMA LUPA Air 5 as listed in Section 4.1-14. These measures would be in compliance with the requirements of this rule to prevent, reduce, or mitigate PM10 emissions to the extent feasible in open areas.
Rule 805	Establishes paved and unpaved roads fugitive dust limits and mitigation measures	The Project would comply with ICACPD Rule 805 by adhering to and implementing the Fugitive Dust Control Plan (Appendix I.1) as well as BMP 4 -9, BMP 14, and PDF AQ-1 as listed in Section 4.1-16. These measures would be in compliance with the requirements of this rule and minimize fugitive dust emissions from new or existing public or private paved or unpaved roads.

Source: (ICAPCD, n.d.-b)

Breaker-and-a-Half Switchyard

The BAAH switchyard would not contain any stationary sources of air emissions and would therefore be consistent with the RACT in the *Imperial County 2017 State Implementation Plan for the 2008 8-Hour Ozone Standard.* The BAAH switchyard construction, maintenance, and decommissioning would use equipment that meets the RACM standards for ozone reduction and would therefore be consistent with the plan. The BAAH switchyard construction would implement the same BMPs, PDFs, and CMAs for control of fugitive dust as the Project site components, which are consistent with the BACMs for *Maintenance Plan for Particulate Matter less than 10 Microns in Diameter.* The BAAH switchyard would therefore have a less than significant impact from conflict with an air quality plan. Analysis of BAAH consistency with ICAPCD numeric air quality emissions thresholds is provided in Impact AQ-2 below.

Loop-in Transmission Lines

The loop-in transmission lines would not contain any stationary sources of air emissions and would therefore be consistent with the RACT in the *Imperial County 2017 State Implementation Plan for the 2008 8-Hour Ozone Standard.* The loop-in transmission lines construction, maintenance, and decommissioning would use equipment that meets the RACM standards for ozone reduction and would therefore be consistent with the plan. The BAAH switchyard construction would implement the same BMPs, PDFs, and CMAs for control of fugitive dust as the Project site components, which are consistent with the BACMs for *Maintenance Plan for Particulate Matter less than 10 Microns in Diameter.* The BAAH switchyard would therefore have a less than significant impact from conflict with an air quality plan. Analysis of loop-in transmission line consistency with ICAPCD numeric air quality emissions thresholds is provided in Impact AQ-2 below.

Impact AQ-2

Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? (*Less Than Significant With Mitigation*)

Construction

Project Site Components

Construction of the Project would generate emissions of criteria air pollutants. The Project's use of motor vehicles, off-road equipment, helicopters, and other construction equipment would directly emit ozone, and the ground disturbance would generate fugitive dust. The Project Application Area is in a nonattainment area for ozone under both federal and state standards. The Project Application Area is in the portion of Imperial County that is in attainment for PM_{10} under federal standards, but is in nonattainment under California state standards.

Table 4.1-7, below, summarizes the average daily controlled and uncontrolled emissions from construction activities. Controlled emissions are the estimated emissions from Project construction activities with implementation of the Fugitive Dust Control Plan (Appendix I.1), Applicant BMPs and PDFs, and DRECP LUPA CMAs for air quality emissions reduction during construction.

Table 4.1-7 Estimated Project Construction Average Daily Pollutant Emissions (lb/day)

Category	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Uncontrolled emissions						
Phase 1: Site Preparation	20.69	211.90	219.96	0.35	142.99	22.93
Phase 2: PV Panel System	39.90	329.81	427.75	0.66	421.08	57.21
Phase 3: Inverters, Substation	25.12	104.52	206.98	0.30	391.55	44.92
Phase 4: Transmission Lines	17.01	37.25	54.40	0.12	118.02	13.61
Phase 5: Battery Storage	5.78	61.98	84.08	0.18	119.19	14.66
Phase 6: BAAH Switchyard	5.16	58.39	67.38	0.17	88.09	11.21
Uncontrolled emissions total[a]	65.02	541.71	647.72	1.01	812.63	102.13
ICAPCD threshold	75 lbs./day	100 lbs./day	550 lbs./day	—	150 lbs./day	—
Threshold exceedance?	No	**Yes**	**Yes**	N/A	**Yes**	N/A
Controlled emissions[b]						
Phase 1: Site Preparation	4.60	38.45	220.04	0.35	123.67	13.88
Phase 2: PV Panel System	10.08	149.88	436.76	0.66	401.21	44.37
Phase 3: Inverters, Substation	19.94	59.71	217.38	0.30	388.54	42.46
Phase 4 Transmission Lines	15.88	32.63	58.70	0.12	117.14	13.09
Phase 5: Battery Storage	2.16	34.79	92.41	0.18	117.04	12.99

Category	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Phase 6: BAAH Switchyard	1.67	33.41	72.52	0.17	86.12	9.71
Controlled emissions total[a]	39.65	209.58	658.60	1.01	789.74	86.82
ICAPCD threshold	75 lbs./day	100 lbs./day	550 lbs./day	-	150 lbs./day	-
Threshold exceedance?	No	**Yes**	**Yes**	N/A	**Yes**	N/A

Notes:

[b] Emissions assumes peak day of emissions with overlapping construction phases.

[c] Controlled emissions assume implementation of BMPs, PDFs, and CMAs.

Source: (Baseline Environmental Consulting 2024)

As shown in Table 4.1-7, the uncontrolled construction emissions would exceed the NO_x, CO, and PM_{10} thresholds established by the ICACPD. Exceedance of the ICAPCD thresholds for NO_x, CO, and PM_{10} would represent a cumulatively considerable net increase in generation of a criteria pollutant for which the region is in nonattainment. Therefore, the impact would be significant. The Project would implement BMPs 1 through 3, which require reducing worker vehicle use by carpooling to the site, limiting equipment idling to less than 5 minutes, and considering using electric vehicles. The Project would also implement PDF AQ-2, which includes several measures to control off-road equipment emissions such as using Tier 4 California Emission Standards for off-road compression-ignition engines, ensuring all equipment and trucks are properly maintained throughout construction, and replacing gasoline fueled equipment with electrically driven equivalents as practical. Implementation of the CMAs, BMPs and PDF AQ-2 for air quality would reduce emissions of NO_x, CO, and PM_{10}; however, emissions of NO_x, CO and PM10 would still exceed ICAPCD threshold, as shown in Table 4.1-7. The Project impact from generation of ozone precursors and PM_{10} would therefore be potentially significant.

To mitigate this impact, Applicant proposes Mitigation Measure AIR-1, which, in accordance with ICAPCD Policy Number 5,[1] "Off-site Mitigation/In-lieu Fee," would require contribution to an ICAPCD regional mitigation program to reduce emissions of both ozone precursors, including NO_x and CO. The in-lieu fee is a mechanism to fund programs to reduce NOx and CO emissions in the air basin. With implementation of Mitigation Measure AIR-1, the impact from NO_x and CO emissions would be less than significant.

The Fugitive Dust Control Plan (Appendix I.1) ensures the Project's compliance with the ICACPD Regulation VIII Fugitive Dust Rules, which establish various strategies to limit the amount of fugitive dust emitted into the air during various construction activities. Project BMPs

[1] https://apcd.imperialcounty.org/wp-content/uploads/2023/05/P5-Offsite-Mitigation-In-Lieu-Fee-FINAL-Nov.-2022.pdf

also include strategies to reduce fugitive dust that is the cause of PM_{10} emissions. BMP 7 requires that all access roads be surfaced with aggregate or be paved. BMP 8 requires that all unpaved roads and disturbed areas be watered or have soil binders applied to minimize fugitive dust generation. BMP 9 requires that all vehicles on site limit their speeds to 15 miles an hour, and BMP 10 requires that all vehicles transporting loose materials be covered and watered to prevent the material from causing fugitive dust. CMA LUPA Air-5 would ensure that a fugitive dust control plan be developed and implemented during construction activities. In addition, PDF AQ-1 requires the preparation and implementation of the Fugitive Dust Control Plan as well as other reasonable precautions to prevent all airborne fugitive dust plumes from leaving the Project Application Area and to prevent visible particulate matter from being deposited upon public roadways. The DRECP LUPA CMAs, BMPs, PDFs, and Fugitive Dust Control Plan measures comprise all measures that could reasonably be implemented to control fugitive dust during Project construction.

Even with implementation of the BMPs, PDFs, CMAs, and the Fugitive Dust Control Plan Project construction emissions would still exceed ICACPD thresholds, as shown in the controlled emissions in Table 4.1-7. To further reduce PM_{10} (fugitive dust) emissions to below the ICAPCD threshold, the Applicant proposes Mitigation Measure AIR-2, which would apply ICAPCD's Rule 310, which requires in-lieu fee mitigation for fugitive dust produced by operational sources, to the Project's construction-phase fugitive dust emissions. In accordance with ICAPCD Rule 310, Applicant would either, in coordination with ICAPCD, create an off-site mitigation project or program that would demonstrate the required PM_{10} (fugitive dust) reductions or would pay an in-lieu of mitigation fee. The in-lieu fee is a mechanism to fund programs to reduce PM_{10} fugitive dust emissions in the air basin. With implementation of Mitigation Measure AIR-2, the impact from PM10 (fugitive dust) emissions would be less than significant.

Breaker-and-a-Half Switchyard

Construction of the BAAH switchyard would generate criteria air pollutants. As summarized in Table 4.1-7, the BAAH switchyard construction (Phase 6) would not exceed any ICAPCD emissions thresholds as an individual construction phase/activity, and impacts would be less than significant.

However, the BAAH switchyard construction is scheduled to overlap with other Project construction activities, and collectively, the Project construction emissions would exceed ICAPCD thresholds for NO_x, CO, and $PM_{10,}$ as summarized in the total emissions in Table 4.1-7. The BAAH switchyard construction would implement the same BMPs, PDFs, CMAs, and Mitigation Measures as the Project construction. With implementation of the BMPs, PDFs, CMAs, and MMs, criteria pollutant impacts of the BAAH switchyard would be less than significant.

Loop-in Transmission Lines

Construction of the loop-in transmission lines would generate criteria air pollutants. The loop-in transmission lines construction is shown in Phase 4 emissions, as summarized in Table 4.1-7.

Loop-in transmission lines construction would not exceed any ICAPCD emissions thresholds as an individual construction phase/activity and impacts would be less than significant.

However, the loop-in transmission lines construction is scheduled to overlap with other Project construction activities, and collectively, the Project construction emissions would exceed ICAPCD thresholds for NO_x, CO, and PM_{10} as summarized in the total emissions in Table 4.1-7 and discussed in the section above on Project Components. The loop-in transmission lines construction would implement the same BMPs, PDFs, CMAs, and Mitigation Measures as overall Project construction. With implementation of the BMPs, PDFs, CMAs, and MMs, criteria pollutant impacts of the loop-in transmission lines would be less than significant.

Operation and Maintenance

Project Site Components

Up to 24 personnel would be on site daily to operate and maintain the Project. Estimated maximum daily pollution emissions during Project operation and maintenance are shown in Table 4.1-8.

Table 4.1-8 Estimated Project Operation and Maintenance Maximum Daily Pollutant Emissions

Criteria	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
O&M Emissions	0.58	3.03	21.31	0.08	65.22	7.43
ICAPCD Threshold	137 lbs./day	137 lbs./day	550 lbs./day	150 lbs./day	150 lbs./day	550 lbs./day
Threshold Exceedance	No	No	No	N/A	No	No

Source: (Baseline Environmental Consulting 2024)

The Project's operation and maintenance emissions would not exceed any ICACPD operational pollutant thresholds and, therefore, would not result in a cumulatively considerable net increase in any criteria pollutant for which the region is in nonattainment. Impacts to criteria air pollutant emissions from operation and maintenance would be less than significant.

Breaker-and-a-Half Switchyard

Operation of the BAAH Switchyard would comprise a portion of the total Project operations and maintenance emissions shown in Table 4.1-7. Because Project operations and maintenance emissions of criteria air pollutants would not exceed ICAPCD thresholds, BAAH switchyard operation emissions of criteria air pollutants would not exceed ICAPCD thresholds, and impacts would be less than significant.

Loop-in Transmission Lines

Operation of the loop-in transmission lines would comprise a portion of the total Project operations and maintenance emissions shown in Table 4.1-7. Because Project operations and maintenance emissions of criteria air pollutants would not exceed ICAPCD thresholds, loop-in

transmission lines operation emissions of criteria air pollutants would not exceed ICAPCD thresholds, and impacts would be less than significant.

Impact AQ-3

Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? (*Less Than Significant*)

Construction Impacts

Substantial objectionable odors are normally associated with agriculture, wastewater treatment, industrial uses, or landfills. The Project would involve the construction, operation and maintenance, and decommissioning of a solar energy facility and associated infrastructure that do not produce objectionable odors. During construction activities, only short-term, temporary odors from vehicle exhaust and construction equipment engines would occur. Construction-related odors would disperse and dissipate and would be short-term as they would cease upon completion of construction, assumed to be 24 months. In addition, there are no sensitive receptors within the vicinity of the Project Application Area and, therefore, the construction-related odors would not affect any number of people. The impact would be less than significant.

The nearest sensitive receptor to the Project Application Area is a residence over 3 miles west of the Project site. As discussed previously, separation of DPM sources from sensitive receptors by a distance of 1,000 feet or more is generally considered sufficient to avoid substantial concentrations of DPM. Because the Project would be separated from the nearest receptor by a distance of over 3 miles, the Project would not generate substantial emissions of any pollutants including TACs that would affect a substantial number of people and impacts would be less than significant.

Operation and Maintenance

Project Site Components

Project operation and maintenance would require the potential use of diesel generators during emergencies and would involve use of diesel-powered vehicles and equipment for washing of PV panels and maintenance of equipment. Like construction-related odors and DPM emissions, operational odors and pollutants would disperse and dissipate and would not cause substantial odors or pollutant concentrations at any receptor due to the distance of over 3 miles to the nearest sensitive receptor. The impact from generation of odors or pollutant concentrations would be less than significant.

Breaker-and-a-Half Switchyard

Operational impacts of the BAAH switchyard from generation of odors or pollutant concentrations would be similar to, but less than, those discussed above for Project site components. Therefore, since overall Project impacts would be less than significant, the impacts resulting from the loop-in transmission lines would be less than significant.

Loop-in Transmission Lines

Operational impacts for the BAAH switchyard from generation of odors or pollutant concentrations would be similar to, but less than, those discussed above for Project site

components. Therefore, since overall Project impacts would be less than significant, the impacts resulting from the loop-in transmission lines would be less than significant.

Impact AQ-4

Would the Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? *(Less Than Significant)*

Construction

Project Site Components

During construction, the Project would generate temporary GHG emissions, the majority of which would come from the operation of heavy equipment, construction-related vehicles, and helicopters. Diesel fuel or gasoline is used to power the heavy-duty construction equipment used for site development and preparation, facility construction, and roadway construction, in addition to eventual decommissioning. During the construction phase, off-road equipment and vehicles and helicopters used over the duration of construction would generate 8,157 MTCO2e in GHG emissions, and on-road vehicles would generate 8,096 $MTCO_2e$ in GHG emissions. Energy consumed during the extraction of the construction water supply would add 321 $MTCO_2e$ to the one-time construction emissions (see Table 4.1-9).

The overall construction emissions would total 16,577 $MTCO_2e$; this one-time quantity of GHG emissions has been amortized over the 30-year lifespan of the project and added to operational emissions to evaluate the effects of GHG emissions during the lifetime of operation (SCAQMD 2008). If distributed over a 30-year period, the overall construction GHG emissions would be an average of 553 $MTCO_2e$/year (see Table 4.1-10). As shown below, Project-related GHG emissions would be well below the CO2e significance threshold. Therefore, impacts from GHG emissions would be less than significant and no mitigation is required.

Table 4.1-9 Estimated Project CO_2e Emission Including Construction and Operation and Maintenance

Activity	Project O&M GHG emissions ($MTCO_2e$ per year)
Amortized Construction Emissions	553
Operation and maintenance equipment emissions	988
Effects of land use conversion	2,205
Gas-insulated equipment (SF_6 Leaks, in CO_2e)	982
Emissions forestalled by producing electricity	(256,681)
Total Project GHG emissions	**(251,953)**
Significance Threshold	**10,000 MT/year**
Threshold exceedance?	**No**

Source: (Baseline Environmental Consulting 2024)

Table 4.1-10 Estimated Project Construction CO_2e Emission Amortized Over 30 Years

Activity	One-time construction emissions ($MTCO_2e$)	30-year amortized emissions ($MTCO_2e$ per year)
Phase 1: Site Preparation	1,476	49
Phase 2: PV Panel System	3,624	121
Phase 3: Inverters, Substation	991	33
Phase 4: Gen-Tie and Loop-in	59	2
Phase 5: Battery Storage	785	26
Phase 6: BAAH Switchyard	861	29
Subtotal Construction off-road equipment, helicopters, vehicles (All Phases)	*8,157*	*272*
Construction on-road vehicles	8,096	270
Construction water use	321	11
Total Construction GHG Emissions	**16,574**	**553**

Source: (Baseline Environmental Consulting 2024)

Breaker-and-a-Half Switchyard

The GHG emissions generated from construction of the BAAH switchyard are summarized in Table 4.1-9. Construction of the BAAH switchyard individually would generate 53 MTCO2e per year of amortized emissions. The BAAH switchyard construction GHG emissions would be less than significant. The BAAH switchyard construction emissions would be generated concurrent with other Project GHG construction emissions. The total Project GHG emissions are also less than significant as described above.

Loop-in Transmission Lines

The GHG emissions generated from construction of the loop-in transmission lines are summarized in Table 4.1-9. Construction of the loop-in transmission lines would generate approximately 2 $MTCO_2e$ per year of amortized emissions. The loop-in transmission lines construction GHG emissions would be less than significant. The loop-in transmission lines construction emissions would be generated concurrent with other Project GHG construction emissions. The total Project GHG emissions are also less than significant as described above.

Operation and Maintenance:

Project Site Components

The Project's GHG emissions from operation and maintenance would primarily result from vehicle travel to and from the Proposed Project area to conduct routine inspections and maintenance. The energy consumed for providing the water supply for panel washing and for routine testing of the standby generator would also contribute to O&M emissions.

Effects of Land Use Conversion

The Project would result in ground disturbance that would disturb soils and remove some vegetation that naturally provide carbon uptake because soil and vegetation acts as a carbon sink by removing CO_2 from the atmosphere. The actual amount of carbon uptake loss is uncertain as it depends on the characteristics of the site; however, the loss of natural carbon uptake would be limited in this setting due to limited aboveground biomass. A conservatively high estimate of 2,205 $MTCO_2e$ per year of sequestration capability lost was estimated in the *Air Quality Technical Report* (Baseline Environmental Consulting 2024) for the Project. Because a majority of the site would return to the natural baseline condition of sparse creosote brush, some soil carbon accumulation would naturally return after construction, and sequestration would be promoted through revegetation efforts.

Emissions from Gas-insulated Equipment

The Project would include electrical power equipment that contains gas, a stationary source of GHG, to provide thermal insulation or arc quenching. The gas-insulated equipment includes devices such as switchgear, switches, and circuit breakers proposed for the Project substation and BAAH switchyard. The circuit breakers and gas-insulated switchgear would contain SF_6, a potent GHG. The SF_6 insulating gas could leak small amounts of SF_6 annually over the 30-year lifespan of the Project. The Project would manage its use of SF_6 through inventory recordkeeping, proper handling, and planning for an eventual replacement with an alternative. Prior to the decommissioning of the Project, the emissions of SF_6 are estimated to be approximately 982 CO_2e per year, which is included in the total emissions for operation and maintenance (see Table 4.1-9).

Carbon-Based Fuel Emissions Forestalled by Producing Electricity

Some of the renewable power generated by the Perkins Project would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand. The power displaced is incremental power provided by generators elsewhere on the grid, typically from natural gas power plants. The Perkins solar PV generating station at 1,150 MW would be able to produce about 1.9 million megawatt-hours (MWh) of electricity each year for delivery to California's end-users. Some of the electricity produced would displace fuel-burning by California's flexible natural gas-fired resources or electricity otherwise imported to California. This would avoid GHG that would otherwise be emitted by fuel-burning generators. While the precise quantity of GHG emissions forestalled by the Project would depend on the operations and dispatch strategy for both the solar PV and BESS components, the analysis in the Air Quality Technical Report (Baseline Environmental Consulting 2024) concluded that the Project would forestall a greater quantity of GHG emissions than it would generate.

The GHG emissions that are avoided by the Project's production of renewable electricity would significantly offset the GHG emissions from Project construction and operation. The Project would result in a net reduction in GHG emissions of approximately 251,953 metric tons of CO2e per year (Table 4.1-9). Therefore, project construction and operation would not result in a cumulatively considerable net increase in GHG emissions and impacts from GHG emissions during operation and maintenance would be less than significant.

Breaker-and-a-Half Switchyard
The GHG emissions generated from operation of the BAAH switchyard would be a subset of the total Project land use conversion emissions, operation and maintenance equipment emissions, and gas-insulated equipment emissions generated by the Project. The BAAH switchyard emissions would be less than 10,000 MTCO2e/year and thus less than significant. While the BAAH switchyard individually would not forestall produced electricity, it is a component of the overall Project, which would displace power produced by carbon-based fuels as described above. The BAAH switchyard emissions would thus be less than significant and would help contribute to a net reduction in GHG emissions.

Loop-in Transmission Lines
The GHG emissions generated from operation of the loop-in transmission lines would be a subset of the total Project land use conversion emissions and operation and maintenance equipment emissions generated by the Project. The loop-in transmission lines emissions would be less than 10,000 MTCO2e/year and thus less than significant. While the loop-in transmission lines individually would not forestall produced electricity, the loop-in transmission lines are a necessary component of the overall Project and are needed to displace power produced by carbon-based fuels as described above. The loop-in transmission lines emissions would thus be less than significant and would help contribute to a net reduction in GHG emissions.

Impact AQ-5

Would the Project conflict with an applicable plan, policy, or regulation adopted for reducing GHG emissions? ***(Less Than Significant)***

Project Site Components
Plans and policies adopted for the purpose of reducing GHG emissions in the Project Application area include the CARB 2022 Climate Change Scoping Plan, SB 32, and Imperial County Regional Climate Action Plan. The Project's conformance with these plans and policies is evaluated to determine whether the Project would conflict with an applicable plan, policy, or regulation adopted for reducing GHG emissions.

The California Global Warming Solutions Act of 2006 (AB 32) and Senate Bill 32 (SB 32) of 2016 codified the GHG emissions target to 40 percent below the 1990 level by 2030. Subsequently, California's Clean Energy and Pollution Reduction Act of 2015 (Senate Bill 350 [SB 350)]) set ambitious 2030 targets for energy efficiency and renewable electricity, among other actions, aimed at reducing GHG emissions across the energy and transportation sectors. SB 350 also connects long-term planning for electricity needs with the State's climate targets, with CARB establishing 2030 GHG emissions targets for the electricity sector in general. The current renewable portfolio standards were signed into law in September 2018 with Senate Bill 100 (SB 100), which established the goals of 50-percent renewable energy resources by 2026 and 60-percent renewable energy resources by 2030. SB 100 also sets a target for California to achieve a carbon-free energy supply by December 31, 2045.

The strategy for achieving the GHG reductions is set forth by the CARB Climate Change Scoping Plan. The 2022 Climate Change Scoping Plan lays out a path to achieve targets for

carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon. The 2022 Climate Change Scoping Plan also identifies decarbonizing the electricity sector as a crucial pillar of achieving carbon neutrality, and CARB recognizes that energy storage is an essential component for the electricity grid to maintain reliability with high concentrations of renewables (CARB 2022).

Overall, the electricity produced, stored, and discharged by the Project would contribute towards a reduction in emissions of GHGs from California's power supply as discussed previously in Impact AQ-4. Because the Project would use renewable energy resources to produce electricity, resulting in forestalled GHG emissions, the Project would be consistent with and would not conflict with the California's GHG emissions reduction targets and the 2022 Climate Change Scoping Plan.

As the total GHG emissions generated during construction and operation of the Project site components would be considerably less than the GHG emissions forestalled, the Project would result in a net reduction in GHG emissions, which would contribute to meeting the State's GHG reduction goals under AB 32 and subsequent targets for 2030 and beyond. The Project would not conflict with any applicable GHG management plan, policy, or regulation, and, therefore, impacts would be less than significant.

Breaker-and-a-Half Switchyard
The BAAH switchyard would generate less than significant GHG emissions and would contribute to a net reduction in GHG emissions as a component of the overall Project. The impact from conflicts with an applicable GHG management plan would be less than significant.

Loop-in Transmission Lines
The loop-in transmission lines would generate less than significant GHG emissions and would contribute to a net reduction in GHG emissions as a component of the overall Project. The impact from conflicts with an applicable GHG management plan would be less than significant.

4.1.3 Cumulative Impacts

Impacts of the Project would be considered cumulatively considerable if they had the potential to combine with other past, present, or reasonably foreseeable future projects to meet significance thresholds. A list of closely related past, present, and reasonably foreseeable future projects is provided in Section 4.0, Tables 4.0-1 and 4.0-2.

Air pollution is largely a cumulative issue as air pollutants from individual projects contribute to the cumulative sum of total air pollutants in the ICACPD. Based on ICACPD's *CEQA Air Quality Handbook* (ICAPCD [1993] 2017), a project would have a significant cumulative impact if it were inconsistent with the applicable adopted federal and State air quality plans, if a project

were to exceed the construction and operational emission thresholds, or if there were a significant contribution towards objectionable odors from a project.

Project Site Components

As discussed under Impact AQ-1, the Project would not conflict with any air quality plan and, as discussed under Impact AQ-3, the Project would not generate odors or substantial pollutant concentrations that would affect a substantial number of people. Under Impact AQ-2, the Project would exceed ICACPD thresholds for NO_x, CO, and PM_{10} and contribute to a potentially cumulatively significant impact. Mitigation Measure AIR-1 and provides a regional solution for reduction of NO_x and CO to reduce the cumulative impacts to less than significant and Mitigation Measure AIR-2 provides a regional solution for reduction of PM_{10} to reduce the cumulative impacts to less than significant. Therefore, with the Project's implementation of MM AIR-1 and MM AIR-2, along with all other BMPs, PDFs, and CMAs, cumulative impacts would be reduced to less than significant.

Breaker-and-a-half Switchyard

Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, with the Project's implementation of all BMPs, PDFs, CMAs, and MM AIR-1 and MM AIR-2, the BAAH switchyard would not contribute to cumulative air quality impacts.

Loop-In Transmission Line

Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, with the Project's implementation of all BMPs, PDFs, CMAs, and MM AIR-1 and MM AIR-2, the loop-in transmission lines would not contribute to cumulative air quality impacts.

4.1.4 Proposed Best Management Practices, Project Design Features, Conservation Management Actions, and Mitigation Plans

As part of the Project, the Applicant, and other entities involved in construction and operation, would implement BMPs, PDFs, and CMAs. The Applicant has also prepared mitigation plans as required by the BLM.

Project Site Components

Best Management Practices and Project Design Features

The Project would implement the following BMPs and PDFs related to air quality. See Appendix D.1 for the full text of the measures.

- BMP 1 through BMP 16 (Air Quality)
- PDF AQ-1 Fugitive Dust Control Plan
- PDF AQ-2 Control On-Site Off-Road Equipment Emissions

Conservation Management Actions
The Project would implement the following DRECP CMAs relevant to air quality. See Appendix D.2 for the full text of the CMAs.

- LUPA-AIR-1
- LUPA-AIR-2
- LUPA-AIR-3
- LUPA-AIR-4
- LUPA-AIR-5

Mitigation Plans
The Project would implement the following mitigation plans relevant to air quality:

- Fugitive Dust Control Plan (Appendix I.1)

Mitigation Measures
The Project would implement the following mitigation measures relevant to air quality:

Mitigation Measure AIR-1: Ozone Mitigation

In accordance with ICAPCD Policy Number 5, "Off-site Mitigation/In-lieu Fee", the Applicant shall prepare and implement the following mitigation measures to reduce construction emissions of NO_x, and CO below the applicable ICAPCD construction thresholds:

1. Propose an off-site mitigation project providing supporting documentation that the reductions are met; or
2. Pay an in-lieu mitigation fee in accordance with the ICAPCD's Off-Site Mitigation/In-Lieu Fee Policy.

Mitigation Measure AIR-2: PM_{10} (Fugitive Dust) Mitigation

Mitigation Measure Air-2 would apply ICAPCD's Rule 310 for operational sources of fugitive dust to the Project's construction phase emissions. In accordance with ICAPCD Rule 310, the Applicant shall prepare and implement the following mitigation measures to reduce construction emissions of PM_{10} **(fugitive dust)** below the applicable ICAPCD construction thresholds:

1. Propose an off-site mitigation project or program providing supporting documentation that the reductions are met; or
2. Pay an in-lieu mitigation fee in accordance with the ICAPCD's Off-Site Mitigation/In-Lieu Fee Policy.

Breaker-and-a-Half Switchyard

The same BMPs, PDFs, CMAs, and mitigation plans that apply to the Project site components would apply to the BAAH switchyard.

Loop-in Transmission Corridors

The same BMPs, PDFs, CMAs, and mitigation plans that apply to the Project site components would apply to the 500 kV loop-in transmission lines.

4.1.5 Laws, Ordinances, Regulations, and Standards Compliance

Table 4.1-11 Federal Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Clean Air Act Amendments of 1990, 40 CFR part 50	Establishes ambient air quality standards for criteria air pollutants.	ICAPCD attainment status under the NAAQS is provided in Table 4.1-1. ICAPCD thresholds consistent with the CAA are listed in . The Project would implement BMPs, PDFs, and mitigation to ensure the Project's air pollutant emissions would not contribute to federal nonattainment status of criteria pollutants in the air basin.
40 CFR part 51 (NSR) (ICAPCD Rule 207)	Requires preconstruction review and permitting of new or modified stationary sources of air pollution to allow industrial growth without interfering with the attainment and maintenance of ambient air quality standards.	Requires new source review (NSR) permitting for construction of specified stationary sources. NSR applies to pollutants for which ambient concentration levels are higher than the NAAQS. The NSR requirements are implemented at the local level with EPA oversight (ICAPCD Rule 207). The Project would ensure that the operation and maintenance of the proposed emergency diesel generator at the Project site would comply with ICAPCD Rule 207 - New and Modified Stationary Source Review to ensure the stationary source operations do not interfere with attainment or maintenance of ambient air quality standards.
40 CFR part 60 subpart IIII (NSPS) (ICAPCD Regulation XI)	Establishes national standards of performance for new or modified stationary compression ignition internal combustion engines.	The Project would include an emergency generator which is subject to operations, maintenance, and emissions requirements of this subpart. The emergency generator would be Tier 4 compliant, meaning their emissions will not exceed any of the emission limitations of this subpart.
40 CFR part 52 Prevention of Significant Deterioration	The EPA has mandated that Prevention of Significant Deterioration (PSD) and Title V requirements apply to facilities whose stationary source CO2e emissions exceed 100,000 tons per year.	The Project would not exceed 100,000 tons of CO2e emissions per year, as discussed in Impact AQ-4 above.

Table 4.1-12 State Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
California Clean Air Act	Establishes state ambient air quality standards.	ICAPCD attainment status under the CAAQS is provided in Table 4.1-1. ICAPCD thresholds consistent with the CCAA are listed in . The Project would implement BMPs, PDFs, and mitigation to ensure the Project's air pollutant emissions would not contribute to state nonattainment status of criteria pollutants in the air basin.
Assembly Bill 32 – California Global Warming Solutions Act of 2006 (AB 32)	Aims to reduce carbon emissions within the state by approximately 40 percent from 1990 levels by the year 2030.	The Project would adhere to CARBs regulations to limit and reduce GHG emissions by having a net reduction in GHG emissions. As a solar generating facility and BESS, the Project would support the emission reduction goals of AB 32.
Executive Order S-3-05	Aims to reduce carbon emissions within the state by approximately 80 percent below 1990 levels by 2050.	The Project would result in a net reduction in GHG emissions, which would contribute to meeting the State's GHG reduction goals 80 percent below 1990 levels by 2050.
Assembly Bill 1279	Aims to achieve carbon neutrality as soon as possible, but no later than 2045 and maintain net negative GHG emissions thereafter; and reduce GHG emissions to 85 percent below 1990 levels by 2045	The Project would result in a net reduction in GHG emissions, which would contribute to meeting the State's GHG reduction goals 85 percent below 1990 levels by 2045.
Senate Bill 605	Aims to reduce emissions of short-lived climate pollutants in the state by identifying existing and potential new control measures to reduce emissions and prioritizes development of new measures for short-lived climate pollutants that offer co-benefits by improving water quality or reducing other air pollutants that impact community health and benefit disadvantaged communities.	The Project would adhere to CARB's regulations to limit and reduce GHG emissions by resulting in a net reduction in GHG emissions. In addition, the Project is located in a rural area and would not impact a disadvantaged community.

Senate Bill 32	Directs CARB to update the Scoping Plan to express the 2030 target. CARB released the updated 2022 Climate Change Scoping Plan which lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045.	The Project would result in a net reduction in GHG emissions, which would contribute to meeting the State's GHG reduction goals under AB 32 and subsequent targets for 2030 and beyond.
EO B-55-18	Establishing a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter.	The Project would result in a net reduction in GHG emissions, which would contribute to meeting the State's GHG reduction goals of achieving carbon neutrality by 2045.
SB 100	Requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.	The Project would generate renewable energy and therefore contribute towards the State's requirement of increasing procurement of renewable energy.

Table 4.1-13 Local Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
ICAPCD Regulation II – Permits.	Establishes the basic framework for acquiring permits to construct and operate from the air district. A separate ATC application will be submitted to the ICAPCD. The ATC application will be the basis for the District's Determination of Compliance.	The Project would comply with Rule 207, which requires a preconstruction review for new and modified stationary sources (the standby generator) to ensure the operation of equipment does not interfere with attainment or maintenance of ambient air quality standards, and with Rule 208, which allows the ICAPCD to inspect and evaluate a permitted facility to ensure the facility will operate to comply with the provisions of the Authority to Construct permit (see Rule 207) and comply with all applicable laws, rules, standards, and guidelines. See 40 CFR Part 51 above.
ICAPCD Regulation VIII – Fugitive Dust Rules	Implements multiple fugitive dust requirements to limit particulate emissions	The Project would comply with all required fugitive dust rules and requirements through implementation of the Fugitive Dust Control Plan, BMPs, PDFs, and CMAs.

Imperial County Renewable Energy and Transmission Element	Objective 4.2: Encourage the development of renewable energy facilities that will contribute to the reduction or elimination of airborne pollutants created by exposure of the seabed of the Salton Sea as it recedes.	Mitigation Measure Air-2 seeks to contribute to regional programs to reduce fugitive dust. The project will not exacerbate pollutant generation at the Salton Sea.

4.1.6 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application is provided in Appendix E.1. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2. Pursuant to Assembly Bill 205 subsection 25545.1(b)(1), the CEC retains exclusive authority over permitting and supersedes any applicable statute, ordinance, or regulation of a local air quality management district. The Applicant and CEC would collaborate with the ICAPCD on review of this Opt-in Application to ensure compliance with ICAPCD rules and regulations.

4.1.7 References

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4.2 Biological Resources

This section describes biological resources in and near the Project and the potential effects that the Project may have on biological resources. Section 4.2.1 discusses the environmental setting. Section 4.2.2 identifies potential impacts that may result from Project construction, operation (including maintenance), and decommissioning. Section 4.2.3 evaluates potential cumulative impacts on biological resources. Section 4.2.4 discusses mitigation measures to address impacts. Section 4.2.5 provides an overview of applicable federal, State, and local laws, ordinances, regulations, and standards and the Project's compliance therewith.

4.2.1 Environmental Setting

This section provides an overview of existing biological resource conditions in the Project area as further detailed in the Biological Resources Technical Report (BRTR) and Jurisdictional Delineation (JD) report (Appendices J.1 and J.2). The BRTR includes a detailed discussion of the methodologies used to conduct the biological resources assessment, including details on the literature review, field surveys, and species-specific analyses and surveys.

Methodology

Biological Study Area

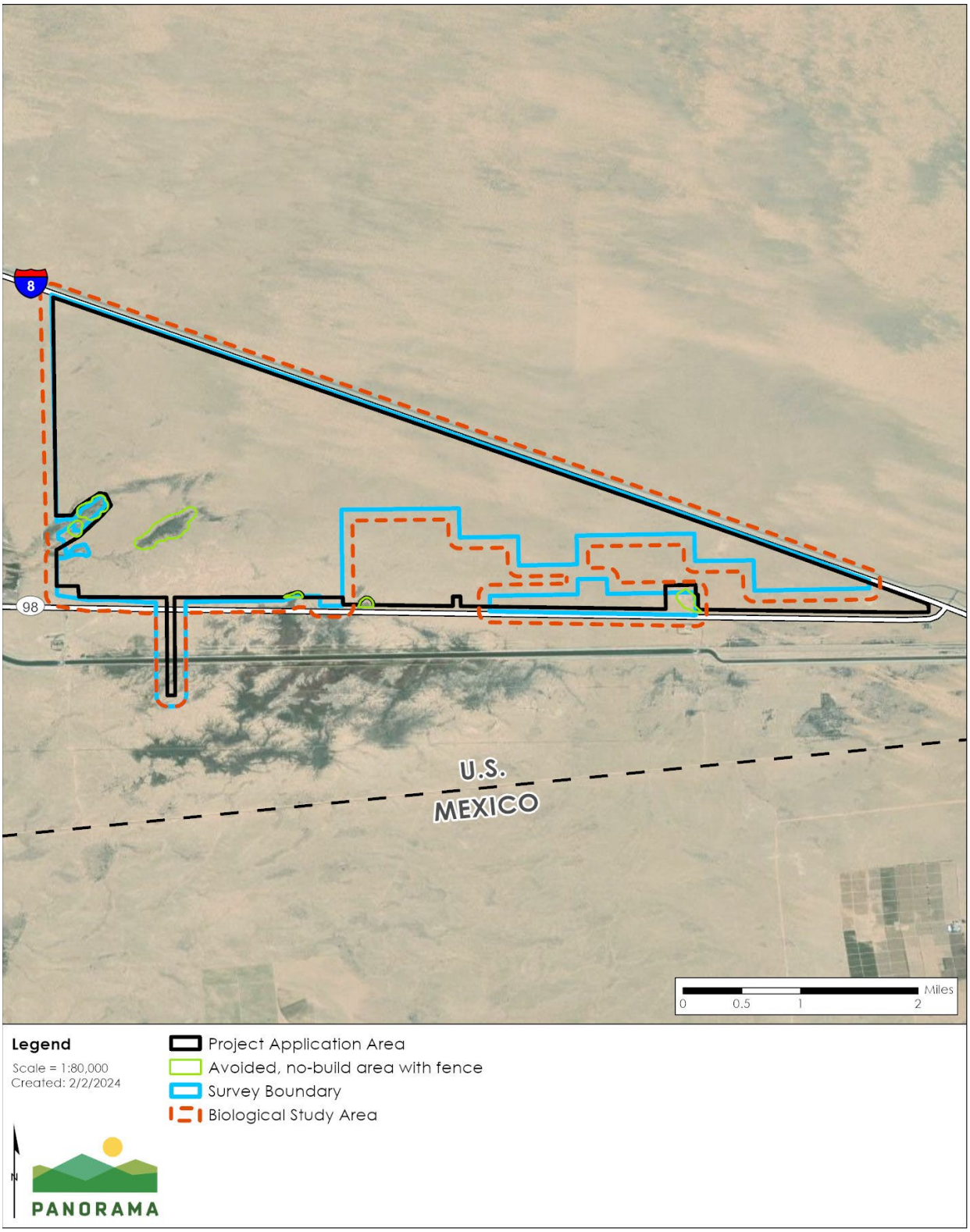
The *biological study area* (BSA) for the purpose of this application includes a 10-mile buffer from the Project Application Area for purpose of the literature review and a 1,000-foot buffer from the Project Application Area for the purpose of field surveys (with the exception of the portion of the Project that borders Interstate 8). The portion of the Project area on BLM-administered lands and a 150-meter buffer were surveyed in 2023 (referred to herein as the 2023 survey area (refer to Figure 4.2-1). Additional lands, including the private lands and Bureau of Reclamation (BOR) administered lands included in the Project, as well as an additional area extending out to the 1,000-foot buffer from the Project site, will be surveyed for biological resources in the Spring of 2024.

Literature Search

As detailed in the BRTR, the following resources were reviewed for information on existing conditions relating to biological resources:

- National Agriculture Imagery Program (NAIP) aerial imagery
- National Wetlands Inventory (NWI) Wetlands Mapper (USFWS, n.d.)
- California Native Plant Society's (CNPS) Online Inventory of Rare and Endangered Plants of California (CPNPS, Rare Plant Program, n.d.)
- The Consortium of California Herbaria Jepson Interchange (Consortium of California Herbarium [CCH], n.d.)
- CDFW California Natural Diversity Database (CNDDB) (CDFW 2023b)
- Calflora's What Grow's Here? Online database (Calflora, n.d.; 2023)

Figure 4.2-1 Survey Area (2023)



Source: (Ironwood 2023b)

- The Manual of California Vegetation (MCV) online database (CPNPS, n.d.-a; Sawyer, Keeler-Wolf, and Evens 2009) and DRECP mapping (Conservation Biology Institute, n.d.)
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, n.d.)
- BLM California sensitive species list (BLM 2023)
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2023)
- California Department of Fish and Wildlife (CDFW) Special Animals List (CNDDB 2023)
- CDFW Biogeographic Information and Observation System (BIOS) (California Department of Fish and Wildlife (CDFW), n.d.-a)
- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper (U.S. Fish and Wildlife Service (USFWS) 2023a)
- USGS National Hydrography Dataset (NHD) (USGS 2019)
- eBird: An online database of bird distribution and abundance (eBird, n.d.)

Field Surveys

This section discusses the surveys performed in 2023. The specific surveys completed in 2023 include the following:

- Special status plant surveys
- Full coverage wildlife surveys at 20-meter belt transects throughout the 2023 survey area
- Burrowing owl surveys
- Flat-tailed horned lizard surveys
- Avian point count surveys
- Aquatic resource delineation

All surveys were conducted per DRECP Conservation Management Action (CMA) biological resources requirements for DFAs for each species within the recommended timing, including full-coverage rare plant and burrowing owl surveys, see Section 3 of the BRTR in Appendix J (BLM 2016). Any modifications are further explained within each individual sensitive species section below.

Special Status Plants

Focused special status plant surveys were conducted from March 21 to March 25, March 27 to 31, and April 1 to April 3, 2023, when the majority of the rare plant species that have a potential to occur in the Project area are most likely to be flowering and identifiable (California Department of Fish and Game [CDFG] 2000). Botanists followed the intuitive controlled survey methodology of Whiteaker et al. (1998), using full-coverage 20-meter transects across the entire 2023 survey area. Survey methodology was consistent with the following guiding documents:

- Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000)

- Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 2000)
- CNPS Botanical Survey Guidelines (CPNPS 2001)
- Survey Protocols for Survey and Manage Strategy 2: Vascular Plants (Whiteaker et al. 1998)

All surveyors were trained on diagnostic features and habitat notes of special status species that may occur, and each crew of surveyors included at least one highly experienced botanist. Prior to the initiation of plant surveys in the spring, reference populations of special status plants were visited to ensure that timing for surveys was sufficient and that special status plant species that have the potential to occur would be identifiable. On March 20, 2023, populations of sand food (*Pholisma sonorae*) and giant Spanish needle (*Palafoxia arida* var. *gigantea*) were observed near Midway Campground in the Algodones Dunes. On March 26 and 27, 2023, populations of ribbed cryptantha (*Johnstonella costata [Cryptantha costata]*) were observed east of the Algodones Dunes. During plant surveys, botanists recorded all plant species observed, regardless of conservation status.

Special Status Wildlife

Full coverage wildlife surveys were conducted during the following periods:

- Spring surveys, full-coverage 20-meter transect wildlife surveys (burrowing owl survey #1): March 20 to April 3, 2023
- Burrowing owl survey #2 and flat-tailed horned lizard survey: May 15 to May 18, 2023
- Burrowing owl survey #3 and flat-tailed horned lizard survey: June 12 to June 15, 2023
- Burrowing owl survey #4 and flat-tailed horned lizard survey: June 29 to July 4, 2023

Full-coverage wildlife surveys were conducted at 20-meter belt transects. Survey crews in the spring seasons consisted of experienced desert wildlife biologists with at least one botanist and one avian biologist per crew. Surveys were conducted by walking linear transects and visually searching for live individuals or sign of any sensitive species. All holes detected that may be inhabited by sensitive species as burrows or burrow complexes were carefully inspected for potential occupancy or sign of recent use. Special emphasis was placed on searching around the bases of shrubs and along the banks of shallow washes. Burrows were carefully examined, and the wildlife species that may have been inhabiting them was attributed based on indicator signs within the burrow or near the mouth of the burrow.

All sign of desert kit fox and American badger was recorded, including live or dead individuals, scat, tracks, burrows, and burrow complexes. Activity and likely species usage for each burrow or complex was determined by the burrow size (larger burrows are more likely coyote or badger) and types of sign found at the burrow site. A burrow or complex was categorized as active if fresh tracks, scratches, or scat were found at the site. The presence of old scat in the absence of tracks, freshly dug dirt, or scratches was taken to indicate that a burrow or

complex was inactive. All burrows and burrow complexes were mapped and attributed, when possible, to species. If a burrow could not be attributed to a species, the species was recorded as "canid," which includes desert kit fox, coyote, or domestic dog.

During wildlife surveys, biologists recorded all wildlife species observed regardless of conservation status. Common species were tallied at the end of each transect and recorded throughout each day by each crew.

Burrowing Owl

Surveys followed the guidance of both the 1993 California Burrowing Owl Consortium (CBOC 1993) Guidelines and 2012 CDFW Staff Report (CDFG 2012) including baseline data collection and an assessment of site use by burrowing owl. One full-coverage survey was conducted during spring wildlife surveys, during the breeding season, which were consistent with Phase II of the 1993 CBOC Guidelines and partially consistent with the 2012 CDFW Staff Report (Ironwood Consulting 2023). Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (CBOC 1993; CDFG 2012).

The first burrowing owl survey was conducted at 20-meter spacing, which provided a greater level of coverage than the 30-meter spacing recommended in the 1993 CBOC Guidelines and was consistent with the 20-meter spacing recommended in the 2012 CDFW Staff Report. All burrows detected during wildlife surveys were assessed for wildlife occupancy to ensure detection of any special status species, including burrowing owl that may have been occupying a burrow. The 20-meter transect spacing also increased the likelihood of flushing live burrowing owls during the survey. All sign of burrowing owl, including individuals, feathers, tracks, whitewash, pellets, and suitable burrows were recorded if present. An additional 150 meters of buffer around the BLM administered lands within the Project Application Area was also surveyed following guidance of the 2012 CDFW Staff Report. Supplemental surveys on BOR administered lands and private lands within the Project site will be completed in 2024.

The subsequent three surveys included re-visiting all previously detected burrows to check for any change in burrowing owl sign, and any new detections of burrowing owl sign was noted. Any new burrows observed during these burrow checks were added to the next check. The burrow checks were timed according to the intervals defined in the 2012 CDFW Staff Report recommendations, with at least 3 weeks passing between each session of burrow checks.

Flat-tailed Horned Lizard

Survey recommendations for the flat-tailed horned lizard include surveys through the active season (April to September) covering a minimum of 10 hours of surveys per 260 hectares (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003). Flat-tailed horned lizard surveys within the Project Application Area were conducted from May through July and were modified with 30-meter belt transects throughout the entirety of the Project Application Area, conforming to and exceeding requirements of a minimum of 10 hours survey time per each 260 hectares (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003) by

conducting a total of 520 hours of surveys over the 5,822-acre 2023 survey area. All flat-tailed horned lizard sign (e.g., live individuals, carcasses, scat, tracks, ant hills the species depends on for forage) were mapped and recorded (Ironwood Consulting 2023).

Avian Counts

Avian counts were conducted during each wildlife survey in the spring of 2023. Each survey team consisted of a minimum of one avian biologist who was exclusively tasked with tallying all avian observations. The avian biologist walked with each survey team in the morning, from the start of each survey until about 10:00 am but earlier if weather conditions were unfavorable for avian detection (i.e., high wind). After these avian counts, the avian biologist would continue to note any incidental wildlife species observed while also continuing to participate in any ongoing survey.

Aquatic Resource Delineation

Wetlands potentially subject to USACE jurisdiction were delineated based on the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). The limits of non-wetland waters potentially subject to State or federal jurisdiction were determined following the methods outlined in *U.S. Army Corps of Engineers Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* (OHWM Field Guide) (Lichvar and McColley 2008), the California Energy Commission's (CEC's) Mapping Episodic Stream Activity (MESA) protocols *as described in Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plant*s (Brady and Vyverberg 2014), and the CDFW's traditional definition of bed, channel, or bank as referenced in section 1602(a) of the California Fish and Game Code. The MESA protocols were developed to assist with delineation of streams in dryland environments, specifically within the arid and semi-arid Mojave, Sonoran, Great Basin, and eastern Sierra regions of California, to facilitate project permitting in compliance with California Fish and Game Code (CEC, n.d.)

Ironwood specialists conducted an initial field investigation (survey) for aquatic resources, including wetlands and other waters, from July 23 to July 25, 2022 (2022 site visit). During the 2022 site visit, wetlands were delineated in areas that are now avoided by the Project. Ironwood conducted additional delineations between April 1 and April 4, 2023, where aquatic resources were noted during the initial surveys.

Existing Conditions

Topography and Geography

The Project Application Area is located within the Sonoran Desert of Southern California. The Project Application Area is bounded by power lines to the west, high-voltage transmission lines to the south, and an Interstate Highway to the north and east. A designated Area of Critical Environmental Concern (ACEC) is located north of the Project Application Area and separated from the Project Application Area by Interstate 8 (I-8). The southern Project boundary includes the All-American Canal, Highway 98, the Tamarisk Long Term Visitor Area, and the U.S.–

Mexico border. Land to the west of the Project Application Area consists of undeveloped open space, with an irrigated agricultural region further west of the open space. The topography of the Project Application Area is fairly flat and generally slopes downward at a gradient of less than 1 percent toward the northwest. Ground elevations of the Project Application Area range from approximately 85 feet (26 meters) in the northwest corner of the Project Application Area to 125 feet (38 meters) in the southeast corner of the Project Application Area (Ironwood Consulting 2023).

Watershed and Drainages

The Project Application Area is located within the Colorado River Hydrologic Region (HR). The Colorado River HR covers approximately 13 million acres (20,000 square miles) in southeastern California and is the most arid HR in California, with annual precipitation averaging less than 4 inches (WRCC 2022).

The Project Application Area is in the Southern Mojave-Salton Sea subregion of Hydrologic Unit Code (HUC) 18 Hydrologic region, which is a closed desert basin. The Project Application Area is located within the Deer Peak Watershed with East Highline Canal to the west, Coachella Canal to the east, and the All-American Canal bisecting the loop-in transmission corridor on the southern end of the Project Application Area. According to data from the National Hydrography Dataset (USGS 2019), two small, discontinuous, intermittent streams (one of which forks) occur on the western side of the Project Application Area. These intermittent streams correspond to vegetated drainage swales, likely with moderately deep ground water, but appeared to lack surface flow.

Vegetation and Other Land Cover

The dominant vegetation communities and land cover types within the BSA are summarized in Table 4.2-1, below.

Table 4.2-1 Vegetation Communities and Land Cover Types

Vegetation community	Summary description and sensitivity
Sonoran creosote bush scrub	Occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote bush (Larrea tridentata) scrub habitat of the Colorado Desert (Holland 1986). Sonoran creosote bush scrub is the dominant vegetation community throughout most of the Project Application Area. Sonoran creosote bush scrub is not designated as a sensitive plant community.
Microphyll woodland/desert dry wash woodland	Characteristic of desert washes and dominated by mesquite (Prosopis glandulosa) thickets. Holland (1986) describes this community as an open to relatively densely covered, drought-deciduous, microphyll (small compound leaves) riparian scrub woodland, often supported by braided wash channels that change following each surface flow event. Microphyll woodland/desert dry wash woodland is a sensitive vegetation community with a rarity rank of S3

Vegetation community	Summary description and sensitivity
Alkali goldenbush desert scrub	Occurs in moist or seasonally dry flats, and margins of intermittently saturated vegetated swales, with alkali goldenbush (Isocoma aradenia) and mesquite as the dominant vegetation. Alkali goldenbush desert scrub is a sensitive vegetation community with a rarity rank of S3 (CDFW 2023).
Arrow weed thickets	Occurs near seasonally flooded washes and stream borders, with arrow weed (Pluchea sericea) as 2 percent or more of absolute cover. In the Project Application Area, arrow weed thickets occur within the loop-in transmission lines on the southern edge of the All-American Canal. Arrow weed thickets are a sensitive vegetation community with a rarity rank of S3 (CDFW 2023a).
Common reed marsh	Characterized by greater than 2 percent absolute cover of common reed (Phragmites australis) and is sometimes considered invasive along waterways and wetlands. Common reed march is not a sensitive community.
Tamarisk thicket	Dominated by tamarisk (Tamarix ramosisima) and considered invasive along waterways. Tamarisk thickets are not a sensitive community.
Open water	Open water is present within the developed All-American Canal channel
Urban	Developed area; not sensitive

Wetlands and Riparian Areas

Five types of potentially jurisdictional aquatic features were identified in the Project Application Area during aquatic resource delineation surveys. The potentially jurisdictional features and acreage within the 2023 survey area are summarized in Table 4.2-2, below. Detailed maps of the jurisdictional features within the Project Application Area are shown in Appendix J.3.

Drainage channels dominated by vegetation including tamarisk, honey mesquite, or alkali goldenbush occur on the western side of the Project Application Area. These vegetated swales contain groundwater close enough to the surface to support deeply rooted species such as tamarisk and mesquite. Smaller drainage channels on the slopes above the vegetated swales show evidence of episodic flow. The All-American Canal is a man-made irrigation canal located

Table 4.2-2 Aquatic Resources with 2023 Survey Area

Aquatic resource type	Acres or length
Wetlands	3.36
All-American Canal	5.96
Man-made depressions	0.09
Drainage channel (bank to bank)	1.45
Mesic/riparian woodland (mesquite thickets)	25.48
Non-native mesic/riparian woodland (tamarisk thickets)	13.32

south of the Project Application Area. Two man-made depressions may have held pooled water in the recent past, as evidenced by mud cracks and honey mesquite in the bottom of the depressions. Riparian woodland, both native and non-native, occur along the All-American Canal and in the western region of the Project Application Area. Wetlands occur along both banks of the All-American Canal and are dominated by common reed, with a low cover of arrow weed.

Sensitive Biological Resources

This section discusses special status species and sensitive biological resources that occur or have a potential to occur in the BSA. Sensitive biological resources are those that meet the criteria defined by California Energy Commission (CEC) in California Code of Regulations (CCR) title 20, Appendix B, requirement 13(A) including the following:

- Areas of Critical Concern as defined by 20 CCR section 1201(c) (formerly 1201(d)), including but not limited to wildlife refuges, wetlands, thermal springs, endangered species habitats, and areas recognized by the California Natural Area Coordinating Council and the Governor's Office of Planning and Research
- Species of Special Concern, as defined by 20 CCR section 1201(t) (formerly 1201(u)), including but not limited to species designated pursuant to State and federal law and those rare and endangered plant species recognized by the Smithsonian Institution or the California Native Plant Society
- Species and habitats identified by local, State, and federal agencies as needing protection, including but not limited to those identified by the California Natural Diversity Database (CNDDB) or, where applicable, in local coastal plans or in relevant decisions of the California Coastal Commission
- Species listed under the State or federal Endangered Species Act
- Species identified as state Fully Protected
- Species covered by Migratory Bird Treaty Act (MBTA)
- Species receiving consideration during environmental review under California Environmental Quality Act (CEQA) Guidelines 14 California Code of Regulations (CCR) section 15380
- Locally significant species that are rare or uncommon in a local context such as a county or region or is so designated in local or regional plans, policies, or ordinances
- Plant species listed as rare under the California Native Plant Protection Act
- Established native resident or migratory wildlife corridors or wildlife nursery sites

Assessments for the potential occurrence of special status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB and other sources, species occurrence records from other sites in the vicinity of the BSA, previous reports for the Project, and the results of surveys of the BSA. The potential for each special status species to occur in the BSA was evaluated according to the following criteria:

- Present: Species was observed within the BSA during surveys

- High: Both a historical record exists of the species within the Project Application Area or its immediate vicinity (approximately 10 miles) and the habitat requirements associated with the species occur within the Project Application Area.
- Moderate: Either a historical record exists of the species within the immediate vicinity of the Project Application Area (approximately 10 miles) or the habitat requirements associated with the species occur within the Project Application Area.
- **Low:** No records exist of the species occurring within the Project Application Area or its immediate vicinity and/or habitats needed to support the species are of poor quality.

Special Status Species

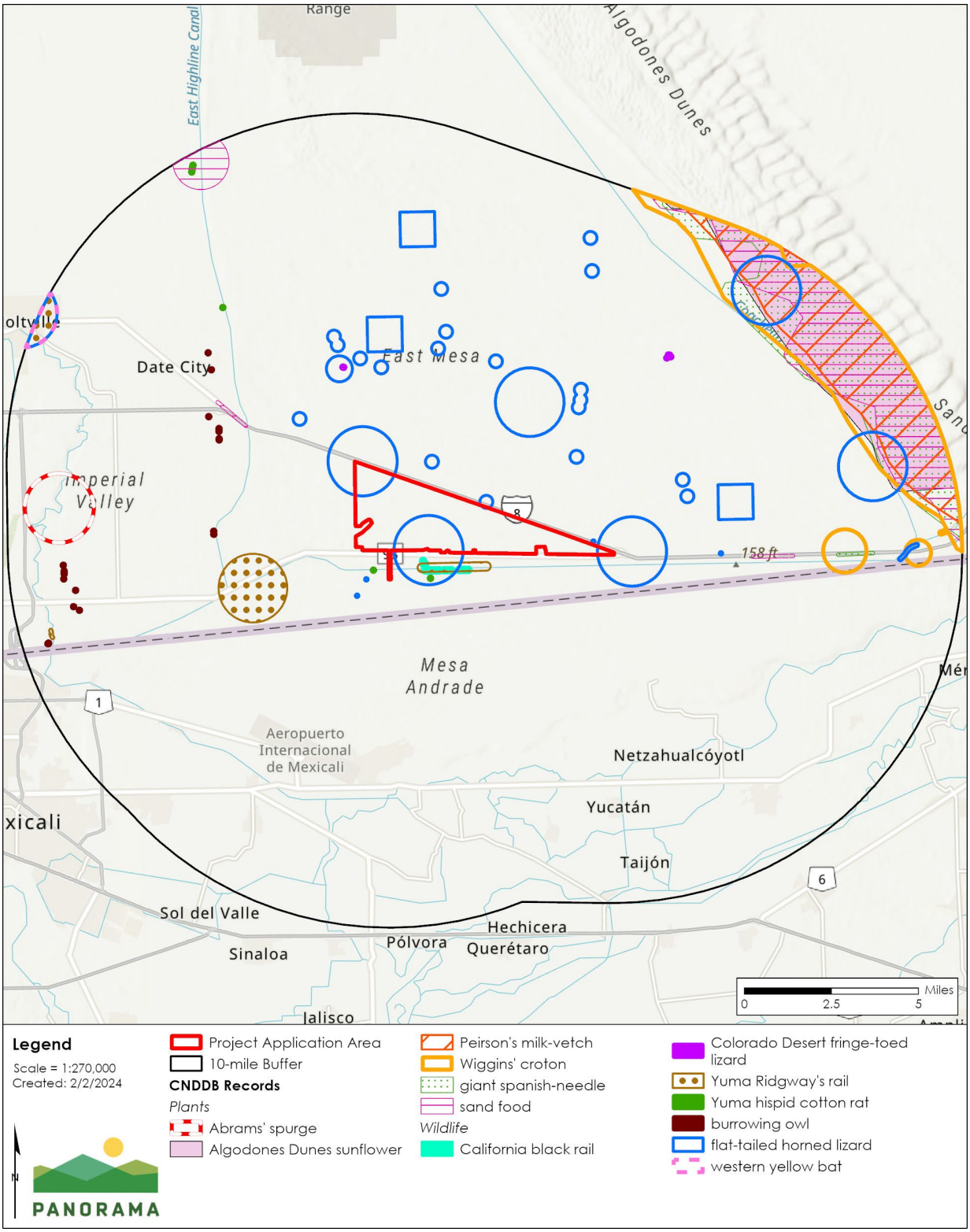
Special status species occurrences documented within 10 miles of the Project Application Area are shown in Figure 4.2-2. The probability of each species to occur on the Project Application Area is addressed in Appendix J.1-A (wildlife) and Appendix J.1-B (plants) of the BRTR (Appendix J.1). Detailed figures are provided in Appendix J.3.

Special Status Plant Species

Special status plants with a moderate to high potential to occur in the BSA and those observed during surveys are listed in Table 4.2-3.

Special status plant species detected within the Project Application Area or having moderate to high potential to occur based on the presence of suitable habitat, including seven plant species, are discussed in detail in Section 4.2 of the BRTR. One species, ribbed cryptantha, with a rank of 4.3 is listed in the BRTR; however, the species is common enough within the region that the species is not considered special status within the context of CEQA and is not discussed further in this section. Noteworthy invasive plant observations are summarized in Appendix J.1-C, Figure 12 of the BRTR (Appendix J.1). A comprehensive list of all plant species observed during surveys is included in Appendix J.1-D 2.

Figure 4.2-2 Special Status Species Occurrences within 10 Miles



Source: (Intersect Power 2023a) (California Department of Fish and Wildlife (CDFW) 2023)

Table 4.2-3 Special Status Plant Species with Potential to Occur in the Project Vicinity

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Pierson's milkvetch *Astragalus magdalenae* var. *Peirsonii*	FT SE 1B.2	Perennial herb; blooms from December to April. Occurs in sandy habitat and desert dunes, from 50 to 250 meters, with Sonoran desert scrub in San Diego, Riverside, Imperial, and Los Angeles counties.	Moderate across the Project Application Area	Not observed. Nearest record is 1.5 miles from the Project site.
Wiggin's croton *Croton wigginsii*	SR 2B.2	Perennial shrub; blooms from March to May. Occurs in sandy habitats and desert dunes, below 100 meters, with Sonoran Desert scrub in Imperial County.	Moderate across the Project Application Area	Not observed. Nearest record is 6 miles from the Project site.
Abram's spurge *Euphorbia abramsiana*	2B.2	Annual herb; blooms from September to November. Occurs in sandy, Mojavean desert scrub and Sonoran desert scrub, below 200 meters in Imperial, San Bernardino, San Diego, and Riverside counties	Low across the Project Application Area	Not observed. Nearest record is more than 10 miles from the Project site.
Algodones sunflower *Helianthus niveus* ssp. *Tephrodes*	SE 1B.2	Perennial herb; blooms from September to May. Occurs in sandy-Desert dunes-Sonoran desert scrub habitat below 100 meters, in Imperial, Riverside, and San Diego Counties.	Moderate across the Project Application Area	Not observed. Nearest record is 7 miles from the Project site.
Slender cottonheads *Nemacaulis denudata* var. *gracilis*	2B.2	Annual herb; blooms from January to May. Occurs in coastal dunes, desert dunes, and Sonoran desert scrub from 10 to 500 meters, in Imperial, Riverside, San Bernardino, and San Diego counties.	Moderate across the Project Application Area	Not observed. Nearest record is 15 miles from the Project site.
Giant Spanish needle *Palfixia arida* var. *gigantea*	1B.3	Annual or perennial herb, blooms from February to May. Occurs in sandy habitats, desert dunes and alkali sink, and Sonoran desert scrub below 610 meters in Imperial and Riverside counties.	High across the Project Application Area	Not observed. Nearest record is near Interstate 8, close to the Project site.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Sand food *Pholisma sonorae*	1B.2	Perennial shrub, blooms from April to May. Occurs in saline habitats and playa margins of Palen Dry Lake below 200 meters in Riverside County.	Moderate across the Project Application Area	Not observed. Nearest record is 5 miles from Project site.

Notes

[a] Conservation Status:

Federal

FE = Federally listed as endangered: species in danger of extinction throughout a significant portion of its range

FT = Federally listed as threatened: species likely to become endangered within the foreseeable future

California Rare Plant Rank (CRPR)

CRPR 1A = Presumed extirpated in California and either rare or extinct elsewhere

CRPR 1B = Rare, threatened, or endangered in California and elsewhere

CRPR 2A = Presumed extirpated in California but more common elsewhere

CRPR 2B = Rare, threatened, or endangered in California but more common elsewhere

CRPR 3 = Plants which need more information

CRPR 4 = Limited distribution (watch list)

CBR = Considered but rejected

1 = Seriously endangered in California: high degree/immediacy of threat; over 80% of occurrences threatened)

2 = Fairly endangered in California: moderate degree/immediacy of threat; 20%-80% of occurrences threatened)

3 = Not very endangered in California: low degree/immediacy of threats or no current threats known; <20% of occurrences threatened, or no current threats known

California Endangered Species Act (CESA)

SR = State listed as rare

ST = State listed as threatened

SE = State listed as endangered

Special Status Wildlife Species

Special status animals with a moderate to high potential to occur within the Project Application Area and those observed during surveys are listed in Table 4.2-4, below. Presence or potential for denning or nesting sites as well as breeding habitat is also listed in Table 4.2-4 and further discussed in Section 4.1 and Appendix J.1-A of the BRTR. Population concentrations are depicted in Appendix J.1 – Figures 9 through 11.

Special status wildlife species observed within the Project Application Area or with moderate to high potential to occur based on the presence of suitable habitat are discussed in detail in Section 4.1 and Appendix J.1-A of the BRTR. The results of wildlife surveys are summarized in Appendices J.1- C 1, 2, 3 and 5. A comprehensive list of all wildlife species observed during surveys is included in Appendix J.1-D.

Table 4.2-4 Special Status Wildlife Species with Potential to Occur in the Project Vicinity

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Invertebrates				
Western bumble bee *Bombus occidentalis*	SCE	Inhabits grasslands, shrublands, and urban grassy areas. Widely distributed throughout the western United States and Canada.	Moderate across Project Application Area	Not observed. Nearest CNDDB record is 22 miles from Project site.
Crotch's bumble bee *Bombus crotchii*	SCE	Inhabits grasslands and shrublands. Primarily occurs in California but range extends into Baja Mexico and Nevada.	Moderate across Project Application Area	Not observed. Nearest CNDDB record of observation 29 miles from Project site near the town of Brawley from 1948.
Reptiles				
Flat-tailed horned lizard *Phrynosoma mccalli*	SSC BLM-S	Typical habitat is sandy desert hardpan or gravel flats with scattered sparse vegetation of low species diversity. Most common in areas with a high density of harvester ants and fine windblown sand but rarely occurs on dunes. The historic range of this lizard is throughout most of the Colorado desert from the Coachella Valley south through the Imperial Valley and west into the Anza-Borrego desert, south to extreme NE Baja California, extreme SW Arizona, and NW Sonora, Mexico.	**Present** Suitable habitat across Project Application Area	One hundred live individuals observed on the Project site during surveys.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Colorado desert fringe-toed lizard *Uma notata*	SSC BLM-S	Inhabits sparsely vegetated arid areas with fine wind-blown sand, including dunes, flats with sandy hummocks formed around the bases of vegetation, washes, and the banks of rivers. Needs fine, loose sand for burrowing. Found in extreme southeast California in the Colorado Desert from the Salton Sea and Imperial sand hills east to the Colorado River, south to the Colorado River delta, and on into extreme northeastern Baja California. Ranges west as far as the east base of Borrego Mountain.	**Present** Suitable habitat only on Project site	One individual was observed on the Project site. Habitat on site is suitable for Colorado Desert fringe-toed lizards.
Birds				
Western burrowing owl *Athene cunicularia hypugaea*	SSC BLM-S BCC FOC	Typically found in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nesters that are dependent upon burrows made by other animals for nest shelters.	**Present** Suitable habitat in Project Application Area	Five live individuals and nine active burrows observed on Project site during surveys.
Swainson's hawk *Buteo swainsoni*	ST BLM-S (nesting) FOC	Require large areas of open landscape for foraging, including grasslands and agricultural lands that provide low-growing vegetation for hunting and high rodent prey populations. Swainson's hawks typically nest in large native trees such as valley oak, cottonwood, walnut, and willow, and occasionally in non-native trees such as eucalyptus within riparian woodlands, roadside trees, trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands.	**Present (flyover)** Forage habitat in Project Application Area Nesting – low	Two observations of flyovers were documented during surveys. No nests were observed. There are no CNDDB records in Imperial County, but historical observation from 1978 in Imperial County (eBird, n.d.).

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Northern harrier *Circus hudsonius*	SSC BCC (nesting)	This species does not commonly breed in desert regions of California, where suitable habitat is limited, but winters broadly throughout California in areas with suitable habitat. Northern harriers forage in open habitats including deserts, pasturelands, grasslands, and old fields.	Nesting – low Wintering or Migration – moderate in Project Application Area	Not observed. No CNDDB observations in Imperial County, but observations recorded recently in Salton Sea National Wildlife Refuge (eBird, n.d.).
Prairie falcon *Falco mexicanus*	WL (nesting)	Occurs in annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Typically nests cliffs and bluffs.	Nesting – low Foraging – moderate in Project Application Area	Not observed. Nearest CNDDB record approximately 30 miles east of Project site and observed 35 miles east of Project Application Area in Winterhaven in 2021 (eBird, n.d.).
American peregrine falcon *Falco peregrinus anatum*	CFP CDF-S (nesting)	Rare in the arid southwest, occur and are suspected to breed in the lower Colorado River Valley. Peregrine falcons require open habitat for foraging and prefer breeding sites near water. Nesting habitat includes cliffs, steep banks, dunes, mounds, and some human-made structures.	Nesting – low Foraging – moderate in Project Application Area	Not observed. No CNDDB records in Imperial County but observed east of the Project Application Area, at Brock Research Center, in 2011 (eBird, n.d.).
Loggerhead shrike (Nesting) *Lanius ludovicianus*	SSC (nesting)	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats.	**Present** Foraging in Project Application Area	Eleven observations on Project site during surveys. No nests were observed.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Black-tailed gnatcatcher *Polioptila melanura*	WL	A year-round resident in southwestern United States and central and northern Mexico. In California, the black-tailed gnatcatcher is found in the southeast desert wash habitat from Palm Springs and Joshua Tree National Park south and along the Colorado River. It is now rare in eastern Mojave Desert north to the Amargosa River, Inyo County. This species nests primarily in wooded desert wash habitat but also occurs in creosote scrub habitat during the non-breeding season.	**Present** Foraging in Project Application Area Nesting – moderate across Project Application Area	Eight observations recorded on the Project site during surveys
California black rail *Laterallus jamaicensis coturniculus*	ST CFP BLM-S	Small populations occur in the freshwater marshes of the Colorado River.	Moderate within BAAH and loop-in corridor, along All-American Canal Nesting – low	Not observed. Occupied habitat in freshwater marsh east of loop-in transmission corridor. They may fly over the Project site, but no nesting or foraging habitat exists within the Project site.
Ridgway's (Yuma Ridgway's) rail *Rallus obsoletus yumanensis*	SE CFP FE	In California, nests in freshwater marshes and wetlands along the lower Colorado River, the Coachella Canal, the Imperial Valley, and the upper end of the Salton Sea at the Whitewater River delta and Salt Creek.	Moderate within BAAH and loop-in corridor, along All-American Canal Nesting – low	Not observed. Occupied habitat in freshwater marsh east of transmission line corridor. They may fly over the Project site, but no nesting or foraging habitat exists within the Project site.
Bank swallow *Riparia riparia*	ST BLM-S (nesting)	A neotropical migrant found primarily in riparian and other lowland habitats in California west of the deserts during the spring–fall period. Uses holes dug in cliffs and riverbanks for cover. Will also roost on logs, shoreline vegetation, and telephone wires.	Nesting – low Migration – moderate within BAAH and loop-in corridor, along All-American Canal	Not observed. No CNDDB records in Imperial County, but observed in the Salton Sea in 2023 (eBird, n.d.). No suitable nesting habitat.

Species name	Status [a]	Habitat requirements	Potential to occur	Regional occurrence records
Bats				
Western yellow bat *Lasiurus xanthinus*	SSC WBWG-H	Recorded below 600 m (2000 ft.) in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. This species occurs year-round in California.	Moderate for foraging and roosting across Project Application Area	Not observed. Several CNDDB records 10 miles from the Project site.
Mammals				
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	SSC	Occur along the Colorado River, in grass and agricultural areas near irrigation waters, and wetlands and uplands with dense grass and herbaceous plants.	Moderate within BAAH and loop-in corridor, along All-American Canal	Occurrences are located near the freshwater marsh habitat associated with the All-American Canal within the loop-in corridor of the Project site.
Burro deer *Odocoileus hemionus eremicus*	CPGS FOC	Occur in early to intermediate successional stages of most forest, woodland, and brush habitats. Prefer a mosaic of various-aged vegetation that provides woody cover, meadow and shrubby openings, and free water.	High across Project Application Area	No live individuals detected. Scat, tracks, and carcass observed during surveys. Burro deer may use site to access All-American Canal.
American badger *Taxidea taxus*	SSC	Suitable habitat for badgers is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils.	Moderate in Project site	No individuals or sign observed on site; suitable habitat is present.
Desert kit fox *Vulpes macrotis*	FE ST FOC	Lives in annual grasslands or grassy open stages of vegetation dominated by scattered brush, shrubs, and scrub. Cover provided by dens they dig in open, level areas with loose-textured, sandy, and loamy soils.	Present in Project site	No live individuals detected. One active burrow and multiple inactive burrows were observed during surveys.

Notes

[b] Conservation Status:

Federal

FE = Federally listed as endangered: species in danger of extinction throughout a significant portion of its range

FT = Federally listed as threatened: species likely to become endangered within the foreseeable future

FCT = Proposed for federal listing as a threatened species

BCC = Fish and Wildlife Service: Birds of Conservation Concern

FSS = United States Forest Service Sensitive

State

SSC = State Species of Special Concern

CFP = California listed as Fully Protected

SE = State listed as endangered

ST = State listed as threatened

SCE = State candidate for endangered listing

WL = State watch list

CPF = California Protected Furbearing Mammal

CPGS = California Protected Game Species

CDF-S = California Department of Forestry and Fire Protection Sensitive

Bureau of Land Management

BLM-S = BLM sensitive

FOC = DRECP Focus and Planning Species

Western Bat Working Group (WBWG)

H = Imperiled or at high risk of imperilment

M = Warrant closer evaluation, more research, and conservation actions

L = Most of the existing data support stable populations

**Species not detected during surveys may have the potential to occur in the Project Application Area in the future

Sensitive Natural Communities and Critical Habitat

Plant communities are considered sensitive biological resources if they have limited distributions, have high wildlife value, include sensitive species, or are particularly susceptible to disturbance. Vegetation rarity ranking is based on a rank calculator developed by NatureServe. According to the CDFW Vegetation Program, alliances with state ranks of S1 to S3, as well as certain additional associations specifically noted as sensitive, are considered to be imperiled and, thus, potentially of special concern. Three sensitive natural communities: microphyll woodland/desert dry wash woodland, alkali goldenbush desert scrub, and arrow weed thickets all occur within the BSA and have a state rarity rank of S3 (CDFW 2023a). Microphyll woodland and alkali goldenbush desert scrub occur in the southwest portion of the Project site. Alkali golden scrub and arrow weed thickets occur in the southern portion of the loop-in transmission lines corridor, along the All-American Canal. Detailed descriptions of these communities and their locations are in the BRTR (Appendix J.1).

No USFWS-designated Critical Habitat occurs within the BSA (USFWS 2015).

Wildlife Movement

Wildlife movement corridors, or *habitat linkages*, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then

subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

Habitats within a linkage are not necessarily the same as those being linked. Rather, the linkage needs only contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species during periods of movement among areas of suitable habitat. Typically, habitat linkages are contiguous strips of natural areas though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending on the species, a linkage may require specific minimum physical characteristics (e.g., rock outcroppings, specific vegetation cover) to function as an effective wildlife corridor and allow those species to traverse the linkage. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a relatively short period of time.

Data from the CDFW Biographic Information System (BIOS) (CDFW, n.d.-a) and the California Essential Habitat Connectivity Project (CDFW 2010c) were accessed to analyze wildlife movement. The BSA is not located within an identified wildlife movement corridor or linkage (CDFW 2010c; n.d.-a). Imperial County is located within the Pacific Flyway, and the Salton Sea and surrounding agricultural areas are important stop overs for birds migrating from Mexico to Canada. While the Imperial Valley contains important habitat for migratory birds, the BSA, with the exception of the All-American Canal, does not contain agricultural areas or water features that are important for migratory birds.

Habitat Conservation Plans

There are no local, regional, or state conservation planning areas located within the BSA (CDFW, n.d.).

4.2.2 Impact Analysis

Potential direct and indirect impacts to biological resources were evaluated to determine the permanent and temporary effects of Project construction, operation and maintenance (O&M), and decommissioning activities.

Methodology

Impacts result from project-related activities that destroy, damage, alter, or otherwise affect biological resources. This may include injury or mortality to plant or wildlife species, effects on an animal's behavior (e.g., frightening off an animal by construction noise) as well as the loss, modification, or disturbance of natural resources or habitats. Impacts are either direct or indirect, and either permanent or temporary. This section includes a brief overview of the types of impacts analyzed in this section.

Direct impacts involve a direct physical change in the environment which is caused by a project and occur at the same time and place (CEQA Guidelines, section 15358.) Direct impacts may include injury, death, and/or disturbance of special-status species if present in the work areas or vicinity. Direct impacts may also include direct physical changes to the environment such as

dust, noise, and traffic, or the destruction of vegetation communities necessary for special-status species breeding, feeding, or sheltering.

Indirect impacts are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. (CEQA Guidelines, section 15358.) Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems. (*Id.*) Specific examples of indirect impacts could include colonization by invasive species (particularly weedy plant species that outcompete native plant species), or dust drifting out of disturbance areas and covering native plants, thereby decreasing their photosynthetic capacity.

Permanent impacts are those that result in the long-term or irreversible loss of biological resources. For example, construction of a new electrical substation, which would result in a large, developed, and fenced property where native vegetation may have existed before would be a permanent impact.

Temporary impacts are those that are reversible over time, with or without implementation of mitigation measures. Examples include the generation of fugitive dust and noise during Project construction, trimming or crushing vegetation that will regrow following Project construction, and removed vegetation that will be actively restored. These temporary impacts are anticipated to last during Project construction and shortly thereafter; however, the biological resources are anticipated to return to baseline conditions after Project construction.

Impact Evaluation Criteria

The following threshold criteria, as defined by the CEQA Guidelines Environmental Checklist (Appendix G of the CEQA Guidelines), were used to evaluate potential impacts on biological resources. Based on these criteria, the Project would have a significant impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations or by the CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;
- Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, any marsh, vernal pool, or coastal habitat) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

Impact BIO-1

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? ***(Less than significant)***

Special Status Plant Species

Suitable habitat of sandy substrate and creosote bush scrub exists on the Project Application Area for Pierson's milk vetch, Wiggin's croton, Algodones sunflower, ribbed cryptantha, slender cottonheads, giant Spanish needle, and sand food. There is marginal habitat in the Project Application Area for Abram's spurge, due to the fine sand on a majority of the Project Application Area. Focused surveys for spring blooming special status plant species were conducted in the spring of 2023, and none of these plant species were observed during focused surveys. Abram's spurge is expected to have a low potential for occurrence due to types of soils onsite and the nearest record being more than 10 miles away. Due to its low potential for occurrence, fall plant surveys were not conducted for this species in the Project Application Area.

Direct Impacts – Project Site Components

Because no special status plants occur on BLM administered lands within the Project Application Area or within a buffer from BLM-administered lands, based on surveys to date, the Project would not impact special status plants on BLM-administered lands and therefore impacts would be considered less than significant under CEQA.

Surveys for special status plants have not yet been completed on private lands and BOR administered lands; surveys for special status plants will be completed on private lands and BOR administered lands in the spring of 2024. If a special status plant were to occur on private lands or BOR lands, direct impacts on special status plant could occur during construction, operation, or decommissioning and those direct impacts on special status plants would be considered significant under CEQA. Once surveys have been completed on the private lands and BOR lands, the Application will provide a survey report that would include an analysis of impacts to special status plants, if present, and proposed mitigation measures as needed.

Direct Impacts – BAAH Switchyard

Because no special status plants occur on the BAAH switchyard or within a buffer, the BAAH switchyard would not impact special status plants on BLM-administered lands and therefore impacts would be considered less than significant under CEQA.

Direct Impacts – Loop-in transmission lines

Because no special status plants occur on the loop-in transmission lines or within a buffer, the loop-in transmission lines would not impact special status plants on BLM-administered lands and therefore impacts would be considered less than significant under CEQA.

Indirect Impacts – Project Site Components

Potential indirect impacts on special status plants during construction, operation, or decommissioning could include the introduction or spread of invasive plant species or fugitive dust (during construction and decommissioning) that could outcompete sensitive species or degrade habitat. Because no special status plant species are known to occur in the Project Application Area o, indirect impacts on special status plants are unlikely to occur. Due to the absence of special status plant populations in proximity to the project, indirect impacts on special status plants would be considered less than significant under CEQA.

Because special status plant species have not yet been completed for the entire 1-mile area surrounding the Project Application Area, there is a potential for indirect impacts to special status plant species within 1 mile of the Project Application Area. The Project would adhere to BMP-20 to minimize dust impacts, and BMP-33, and PDF BIO-4 to minimize potential impact related to invasive species spread. Because the Project would minimize impacts on special status species that may occur within 1 mile of the Project Application Area, indirect impacts on special status plants would be less than significant.

Indirect Impacts – BAAH Switchyard

Potential indirect impacts on special status plants during construction, operation, or decommissioning of the BAAH switchyard could include the introduction or spread of invasive plant species or fugitive dust that could outcompete sensitive species or degrade habitat. Because no special status plant species are known to occur in the BAAH switchyard, indirect impacts on special status plants are unlikely to occur. Due to the absence of special status plant populations in proximity to the Project, indirect impacts on special status plants would be considered less than significant under CEQA.

Because special status plant species have not yet been completed for the entire 1-mile area surrounding the Project Application Area, there is a potential for indirect impacts to special status plant species within 1 mile of the Project Application Area. The Project would adhere to BMP-20 to minimize dust impacts, and BMP-33, and PDF BIO-4 to minimize potential impact related to invasive species spread. Because the Project would minimize impacts on special status species that may occur within 1 mile of the Project Application Area, indirect impacts on special status plants would be less than significant.

Indirect Impacts – Loop-in transmission lines

Potential indirect impacts on special status plants during construction, operation, or decommissioning of the loop-in transmission lines could include the introduction or spread of invasive plant species or fugitive dust that could outcompete sensitive species or degrade habitat. Because no special status plant species are known to occur in the loop-in transmission lines, indirect impacts on special status plants are unlikely to occur. Due to the absence of special status plant populations in proximity to the Project, indirect impacts on special status plants would be considered less than significant under CEQA.

Because special status plant species have not yet been completed for the entire 1-mile area surrounding the Project Application Area, there is a potential for indirect impacts to special status plant species within 1 mile of the Project Application Area. The Project would adhere to BMP-20 to minimize dust impacts, and BMP-33, and PDF BIO-4 to minimize potential impact related to invasive species spread. Because the Project would minimize impacts on special status species that may occur within 1 mile of the Project Application Area, indirect impacts on special status plants would be less than significant.

Direct Impacts on Special Status Wildlife Species – Project Site Components

Western bumble bee and Crotch's bumble bee

The western bumble bee and Crotch's bumble bee were not observed during Project surveys. Some suitable foraging habitat occurs within the Project Application Area since some of the plant families associated with western bumble bee and Crotch's bumble bee nectar sources occur on the Project Application Area. While suitable habitat on the Project site occurs, the active agriculture and developments adjacent to the Project site could lower habitat suitability with the potential use of pesticides. Ground nesting habitat is unlikely, due to the predominantly sandy substrate in the Project Application Area, but could be found in abandoned rodent burrows or bird nests (Hatfield et al. 2012).

Direct impacts to western bumble bee and Crotch's bumble bee that may forage in or migrate through the BSA are not expected, as these non-resident individuals would be able to avoid any sources of disturbance during construction, operation, or decommissioning. The project could impact a nest of western bumble bee or Crotch's bumble bee if one were to establish on the site at the time of construction. Western bumble bee and Crotch's bumble bee may be directly impacted by loss or degradation of foraging habitat due to removal of nectar source plants. The Project would implement CMAs LUPA-BIO-1, LUPA-BIO-2, and LUPA-BIO-3, which require protocol surveys, biological monitoring, and resource setbacks, if nests are encountered (see Appendix D.2 for the full text of the CMAs). The Project would implement CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2, which require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project. Because the Project would compensate for impacts on western bumble bee and Crotch's bumble bee habitat, the direct impacts on western bumble bee and Crotch's bumble bee would be less than significant.

Flat-tailed horned lizard and Colorado desert fringe-toed lizard

Flat-tailed horned lizards and Colorado desert fringe-toed lizards occur in the Project Application Area and could nest or forage within all Project areas, including the PV panels, BESS, substation, breaker and a half, and loop-in transmission corridor. During surveys, one hundred live flat-tailed horned lizard individuals, six carcasses, two hundred seventy-seven tracks, and one hundred ninety-six scat were observed. One live Colorado desert fringe-toed lizard was observed during surveys on the Project Application Area.

Because flat-tailed horned lizards and Colorado desert fringe-toed lizards occur on the Project Application Area, construction, operation and maintenance, or decommissioning activities could cause injury or mortality of individuals of both species from destruction of occupied

burrows and/or active nest sites, vegetation removal, vehicle traffic, and open trenches that could entrap individuals. The species may also be subject to direct impacts due to the loss or degradation of breeding and foraging habitat in work areas resulting from vegetation clearing and ground disturbance. These direct impacts to flat-tailed horned lizards and Colorado desert fringe-toed lizards would be considered significant under CEQA without mitigation.

The Project would implement CMA LUPA-BIO-IFS-10, which requires compliance with the current Flat-Tailed Horned Lizard Rangewide Management Strategy (RMS); CMA LUPA-BIO-COMP-1, which requires habitat compensation for flat-tailed horned lizard in compliance with the RMS; LUPA-BIO-5, which requires reduced vehicle speed and long-term impact reductions to lizards; and LUPA-BIO-14 requiring covering of steep wall excavations and trenches to reduce risk of entrapment of a lizard. The text of these CMAs is set forth in full in Appendix D.2.

In addition, the Applicant has proposed PDF BIO-1, which requires biological monitoring by trained flat-tailed horned lizard monitors; PDF BIO-2, which includes worker environmental awareness training with special emphasis on flat-tailed horned lizard and Colorado desert fringe-toed lizard; and PDF BIO-5, which includes procedures for wildlife avoidance. The text of these PDFs is set forth in full in Appendix D.1. Because the Project would implement procedures for avoidance of flat-tailed horned lizard and Colorado desert fringe-toed lizard and would compensate for impacts on flat-tailed horned lizard habitat, the direct impacts on flat-tailed horned lizard and Colorado desert fringe-toed lizard would be less than significant with the implementation of CMAs and PDFs.

Burrowing owl

Burrowing owls occur within the Project Application Area and could potentially nest or forage within all Project areas including the PV panels, BESS, substation, breaker and a half, and loop-in transmission corridor. Five live individuals, nine active burrows, and two carcasses were observed during surveys.

Due to the presence of burrowing owls on the Project Application Area during surveys, it is assumed that burrowing owl would occur in the area during construction. Construction, operating and maintenance, or decommissioning activities in proximity to active burrows could directly impact individual burrowing owls or active nests through injury or mortality from collisions with Project vehicles or equipment; destruction of occupied burrows and/or active nest sites; and disturbance from increased vehicle traffic, noise at work sites, and human presence that could result in an interruption of normal behaviors or nest abandonment. Burrowing owls may also be subject to direct impacts due to the temporary loss or degradation of foraging and nesting habitat) in work areas resulting from vegetation mowing and ground disturbance. Direct impacts on any burrowing owls that occur in the Project Application Area and direct vicinity of the Project would be considered significant under CEQA without mitigation.

The Applicant proposes to implement BLM CMAs on the entire Project Application Area. CMA DFA-BIO-IFS-1 requires clearance surveys for burrowing owls no less than 14 days prior to ground disturbance. CMA LUPA-BIO-IFS-12 and LUPA-BIO-IFS-13 require biological monitoring to ensure avoidance of occupied burrows and a 200-meter setback to minimize disturbance and passive exclusion and relocation for any burrows that cannot be avoided. If burrowing owls cannot be avoided, LUPA-BIO-IFS-14 allows for translocation of burrowing owls in coordination with CDFW. The Nesting Bird Management Plan (NBMP) (Appendix M.2) and Bird and Bat Conservation Strategy (BBCS) (Appendix M.1) also contain procedures to reduce potential impacts on burrowing owl during construction and operation. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation for any impacts to birds. PDF BIO-6 includes implementation of the BBCS. Because the CMAs, NMBP, BBCS, and PDFs define procedures to avoid direct impacts on burrowing owls, translocation would only occur if avoidance is not possible, and the CMAs define procedures for habitat compensation that would offset habitat loss for burrowing owl, impacts on burrowing owl would be less than significant with implementation of the CMAs and PDFs.

Loggerhead shrike and Black-tailed gnatcatcher

Loggerhead shrike and black-tailed gnatcatchers occur within the Project Application Area and could potentially nest or forage within all Project areas including the PV panels, BESS, substation, breaker and a half, and loop-in transmission corridor. Surveys and avian counts within the BSA documented eleven observations of live loggerhead shrike individuals and eight observations of live black-tailed gnatcatcher individuals.

If loggerhead shrike and black-tailed gnatcatcher are present in Project disturbance areas during construction, operation and maintenance, or decommissioning activities, individuals of the species may be directly impacted through injury or mortality resulting from collisions with Project vehicles or equipment; destruction of occupied and/or active nest sites; or disturbance from increased vehicle traffic, noise at work sites, and human presence that could result in an interruption of normal nesting or foraging behaviors or nest abandonment. During the Project operational period, the loop-in transmission lines, gen-tie line, and solar panels could result in collisions with loggerhead shrike and black-tailed gnatcatcher. The species may also be subject to direct impacts due to the loss or degradation of foraging habitat in work areas resulting from vegetation mowing or ground disturbance. Direct impacts on loggerhead shrike and black-tailed gnatcatcher would be considered significant under CEQA without mitigation.

The Project would implement an NBMP and a BBCS (Appendix M.2 and Appendix M.1, respectively) in compliance with CMA LUPA BIO-16, which include procedures for construction monitoring for nesting birds and avoidance of an active nest during construction, as well as long-term monitoring and adaptive management during operation. PDFs BIO-6 and BIO-7 require implementation of the BBCS and require flight diverters on Project transmission lines and other features to reduce the risk of bird collisions. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation required for any impacts to birds,

including loggerhead shrike and black-tailed gnatcatcher. Because the CMAs, NMBP, BBCS, and PDFs define procedures to avoid, minimize, and mitigate direct impacts on loggerhead shrike and black-tailed gnatcatcher, including requirements for habitat compensation that would offset habitat loss, impacts on loggerhead shrike and black-tailed gnatcatcher would be less than significant with implementation of the CMAs and PDFs.

Swainson's hawk

Two live Swainson's hawk individuals were observed in the BSA. The Project Application Area provides suitable foraging habitat during migratory season but does not contain nesting habitat for Swainson's hawk and is outside the species' breeding range.

Potential direct impacts to Swainson's hawk include loss of migratory foraging habitat and potential injury or mortality if an individual is struck or collides with Project components, including the loop-in transmission lines, gen-tie line, or PV panels, during a stopover. The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management, as well as requirements for bird diverters on the loop-in transmission lines and gen-tie line and design requirements to reduce collisions with Project facilities. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation required for any impacts to birds. Because the foraging habitat in the Project Application Area is regionally common and impacts would be offset through compensation, and because the Project includes design features to minimize collisions with Swainson's hawk, the impact on Swainson's hawk would be less than significant.

Northern harrier, prairie falcon, American peregrine falcon

No northern harriers, prairie falcons, or American peregrine falcons were observed in the Project Application Area during surveys or avian counts. The Project Application Area provides suitable foraging habitat but does not contain suitable nesting habitat for northern harrier, prairie falcon, or American peregrine falcon.

Direct impacts on northern harriers, prairie falcons, and American peregrine falcons include loss of foraging habitat and potential injury or mortality if an individual is struck or collides with Project components, including the loop-in transmission lines, gen-tie line, or PV panels. The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management, as well as requirements for bird diverters and project design requirements to reduce collisions with Project facilities. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation required for any impacts to birds, including northern harrier, prairie falcon, and American peregrine falcon. Because the foraging habitat in the Project Application Area is regionally common and impacts on foraging habitat would be offset through compensation, and because the Project includes design features to minimize collisions with northern harrier, prairie falcon, and American peregrine falcon, the impact on these species would be less than significant.

Western yellow bat

No western yellow bats or roosts were observed during surveys in the Project Application Area. Suitable foraging habitat and roosting habitat is found in the Project Application Area within desert dry wash woodland.

If western yellow bats are present in or near disturbance areas during construction, operation and maintenance or decommissioning activities, the species may be directly impacted through injury or mortality of individuals resulting from collisions with Project vehicles or equipment; destruction of occupied roost sites; and disturbance from increased vehicle traffic, noise at work sites, or human presence that could result in an interruption of normal breeding behavior or roost abandonment. During operation, bats could collide with solar panels or other Project facilities while foraging in the area. The species may also be subject to direct impacts due to the loss or degradation of foraging habitat in work areas resulting from vegetation clearing or ground disturbance. Direct impacts to western yellow bats would be considered significant under CEQA without mitigation.

The Project would implement a BBCS (Appendix M.1) in compliance with CMAs LUPA-BIO-16 and LUP-BIO-17, which includes bat monitoring and avoidance procedures as well and measures to reduce operational impacts on bats. CMA LUPA-COMP-1 also requires compensation for impacts to native vegetation and habitat at a 1:1 ratio. Because the Project would implement procedures to minimize impacts on bats and would provide compensatory habitat mitigation for impacts on foraging and nesting habitat, the impacts on western yellow bat would be less than significant.

Burro deer

The Project Application Area is within range of burro deer, but no burro deer individuals were observed during Project surveys. Burro deer scat and tracks were observed throughout the 2023 survey area and one very old piece of carcass was observed. Burro deer likely move through the Project Application Area to access the All-American Canal. Project activities would not restrict access to the All-American Canal and burro deer would be able to migrate around the Project Application Area to access the All-American Canal.

Direct impacts on burro deer that may forage in or migrate through the Project Application Area are not expected as these non-resident individuals would be able to avoid any sources of disturbance during construction, operation and maintenance, or decommissioning. Burro deer may be directly impacted by loss or degradation of foraging habitat; however, the habitat in the Project Application Area is common throughout the region, and loss of foraging habitat would not be expected to jeopardize a local or regional population of burro deer and would not be considered significant under CEQA; therefore, impacts would be less than significant.

American badger

No American badgers or active badger burrows were observed during Project surveys. There is suitable habitat for American badger throughout the Project Application Area.

If American badgers are present in disturbance areas or on access roads during construction, operation and maintenance, or decommissioning activities, there is potential for direct impacts including injury or death resulting from vehicle collision, damage or destruction of occupied burrows, disturbance from construction noise/vibration, or entrapment of individuals in excavation areas. Temporary direct impacts would result from loss or degradation of foraging habitat or harassment. Temporary direct impacts may also occur if disturbance at maternity dens resulting from construction noise/vibration or human presence negatively affects kit-rearing. Direct impacts on American badger would be considered significant under CEQA without mitigation.

CMAs LUPA-BIO-VEG-1 and LUPA-BIO-VEG-2 maintain vegetation for habitat and foraging. LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project. PDFs BIO-1 and BIO-2 require pre-construction biological monitoring and worker environmental awareness training. PDF BIO-3 minimizes vegetation and habitat impact through sensitive habitat delineation and avoidance while PDF BIO-5 avoids and minimizes impacts to wildlife through implementation of measures including: wildlife avoidance, minimized traffic and lighting impacts, avoidance of toxic substances, minimized noise and vibration, secured water and trash receptacles, and wildlife netting or exclusion fencing. Because the Project would implement CMAs and PDFs to minimize impacts to American badger individuals and habitat, the impact on American badger would be less than significant with implementation of the CMAs and PDFs.

Desert kit fox

There is suitable habitat for desert kit fox in the Project Application Area, but no desert kit foxes were observed during surveys. One active desert kit fox burrow and thirty-nine inactive burrows were observed during Project surveys. The number of burrows will likely change over time since kit fox distribution is dynamic and changes under natural conditions due to prey availability and other environmental factors such as the presence of coyotes that prey on kit fox pups.

If desert kit foxes are present in disturbance areas or on access roads during construction, operation and maintenance, or decommissioning, there is potential for direct impacts, including injury or death resulting from vehicle collision or entrapment of individuals in excavation areas. Temporary direct impacts from damage or destruction of occupied burrows, disturbance from construction noise/vibration, entrapment of individuals in excavation areas, and loss or degradation of foraging habitat may also impact desert kit fox. Disturbance at maternity dens resulting from construction noise/vibration or human presence may also cause temporary direct impact by negatively affecting kit-rearing. Direct impacts to desert kit fox would be considered significant under CEQA without mitigation.

CMAs LUPA-BIO-VEG-1 and LUPA-BIO-VEG-2 maintain vegetation for habitat and foraging. LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project. PDFs BIO-1 and BIO-2 require pre-construction biological monitoring and worker environmental awareness training. PDF BIO-3 minimizes vegetation and habitat impact

through sensitive habitat delineation and avoidance while PDF BIO-5 avoids and minimizes impacts to wildlife through implementation of measures including: wildlife avoidance, minimized traffic and lighting impacts, avoidance of toxic substances, minimized noise and vibration, secured water and trash receptacles, and wildlife netting or exclusion fencing. Because the Project would implement CMAs and PDFs to minimize impacts to desert kit fox individuals and habitat, the impact on desert kit fox would be less than significant.

Birds protected by the California Fish and Game Code and Migratory Bird Treaty Act
Common bird species and their nests were observed throughout the BSA and vicinity (Appendix J.1-C5), including species that occur as residents and breed in Imperial Valley. Native birds protected by the CFGC and the MBTA could potentially nest in the Project Application Area. Construction activity has the potential to temporarily directly impact nesting birds through the destruction of nests during vegetation clearing and reduced nesting success due to disturbance from Project activities. Potential direct impacts during Project operation include potential injury or mortality if an individual is struck or collides with Project components including the loop-in transmission lines, gen-tie line, or PV panels. Temporary direct impacts would result from the loss of foraging habitat during construction. Permanent loss of foraging habitat would result from development of Project components including buildings, PV panels, substation, breaker and a half, and loop-in transmission lines. Direct impacts to birds protected under the California Fish and Game code and MBTA would be considered significant under CEQA without mitigation

The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management and include requirements for bird diverters on the gen-tie and loop-in transmission lines to reduce collisions with Project components. CMAs LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 require compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project and define additional mitigation required for any impacts to birds, including those protected by the MBTA. Because the foraging habitat in the Project Application Area is regionally common and impacts on foraging habitat would be offset through compensation, and because the Project includes design features to minimize collisions with migratory birds, the impact on these species would be less than significant.

Direct Impacts on Special Status Wildlife: Breaker-and-a-Half Switchyard
The direct impacts of the BAAH switchyard would be similar to and significant for purposes of CEQA, but because of its smaller footprint, less than, those described above for the Project site components. Because the Project would implement the BMPs, PDFs and CMAs described above for the Project Site Components, direct impacts on special status wildlife associated with the BAAH switchyard would be less than significant.

Direct Impacts on Special Status Wildlife: Loop-in Transmission Lines
The impacts described above for the Project components would apply to the loop-in transmission lines. Because the loop-in transmission would apply the same BMPs, PDFs and CMAs as all other Project components, the loop-in transmission lines impacts on the special

status species discussed above would be less than significant. In addition, the special status species discussed below have the potential to occur within the All-American Canal, which the loop-in transmission corridor crosses and which the loop-in transmission lines will span.

California black rail and Yuma Ridgway's rail

No California black rails or Yuma Ridgway's rails were observed during surveys or avian point counts in the loop-in transmission lines corridor and greater Project Application Area. For the California black rail, there is no suitable foraging or nesting habitat in the loop-in transmission survey corridor, but individuals may be observed incidentally as flyovers.

There is habitat occupied by Ridgway's rail in a wetland area south of the All-American Canal, starting approximately 2,000 ft east of the Project's loop-in transmission lines corridor (Blackhawk Environmental 2020). Within the loop-in transmission corridor, wetlands occur only along the banks of the All-American Canal and these areas are not considered suitable habitat for they are lined with mature stands of common reed (*Phragmites australis*), steeply sloped, and adjacent to water depths too deep for use by Ridgway's rails (Blackhawk Environmental 2020). There is no suitable nesting or foraging habitat for Yuma Ridgway's rail on, or within close proximity to, the Project site, but individuals may be observed incidentally as flyovers.

The loop-in transmission lines would span the All-American Canal and would not result in loss of any suitable habitat for California black rail or Yuma Ridgway's rail. Direct impacts on California black rail and Yuma Ridgway's rail could occur from collisions with the loop-in transmission lines and would be considered significant under CEQA without mitigation.

The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management and require use of bird diverters to reduce collisions with Project components, including the loop-in transmission lines. Because there is no suitable foraging or nesting habitat for California Rail or Ridgeway's Rail within, or in close proximity to, the Project site, the Project would not impact habitat for these species, and because the Project includes design features to minimize collisions with migratory birds, the impact on California Rail and Yuma Ridgeway's Rail would be less than significant.

Bank swallow

No bank swallows were observed during surveys or avian point counts in the loop-in transmission lines corridor and greater Project Application Area. There is suitable foraging habitat for bank swallow in the loop-in transmission lines corridor but no suitable nesting habitat. Direct impacts on bank swallow could occur from collisions with the loop-in transmission lines and would be considered significant under CEQA without mitigation. The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management and require use of bird diverters to reduce collisions with Project components, including the loop-in transmission lines. Because the foraging habitat in the loop-in transmission corridor is

regionally common and habitat impacts would be offset through compensation, and because the Project includes design features to minimize collisions with migratory birds and would implement the CMAs described above, the impact on bank swallow would be less than significant.

Yuma hispid cotton rat

No Yuma hispid cotton rats were observed during surveys in the loop-in transmission lines corridor and greater Project Application Area. Suitable habitat for Yuma hispid cotton rat exists within the loop-in transmission corridor along the All-American Canal. The proposed loop-in transmission lines and poles would span, and therefore avoid, the All-American Canal and all suitable habitat areas for Yuma hispid cotton rat. Because the Project would avoid construction, operation and maintenance, or decommissioning activities within suitable habitat for Yuma hispid cotton rat, the Project impacts on Yuma hispid cotton rat would be less than significant.

Indirect Impacts on Special Status Wildlife: Project Site

Indirect impacts on special status species include those impacts that would occur later in time or as an indirect result of the Project activities. Potential indirect impacts from Project construction, operation, and maintenance include the following:

- Introduction or spread of invasive plants as a result of weed seed being introduced to areas of disturbance or introduced to the area on Project construction equipment
- Fugitive dust settling on plants and causing degradation of habitat in or near the Project site
- Erosion and sedimentation indirectly affecting habitat for special status species in or near the Project site
- Runoff of hazardous materials causing degradation of habitat in or near the Project site during construction and operation
- Increased subsidies for predators

Due to the scale of the Project, indirect impacts could cause a significant impact on special status species under CEQA without mitigation. A Project-specific Integrated Weed Management Plan (Appendix M.5) has been prepared to address the impacts from invasive weed establishment. Several DRECP CMAs would reduce indirect impacts on special status species. LUPA BIO-6 defines requirements to minimize subsidies to predators. LUPA- BIO-7 defines requirements for restoration, including use of certified weed-free seed. LUPA-BIO-8 defines requirements for reclamation to avoid post-Project impacts on dust and sedimentation. Additionally, LUPA-AIR-5 requires development of a fugitive dust control plan (Appendix I.1) to mitigate impacts on air quality from fugitive dust. LUPA-BIO-10 defines requirements for weed management to reduce introduction of weeds during construction. LUPA-BIO-11 defines requirements for management of invasive species.

In addition, Applicant-proposed PDFs would further reduce indirect impacts. PDF BIO-4 requires an Integrated Weed Management Plan to prevent invasive weeds. PDF BIO-3 defines measures to reduce impacts from hazardous materials. PDF BIO-8 defines requirements for stormwater BMPs that would be implemented during construction. In addition, the Project

would need to comply with the requirements of the Construction General Permit, including preparation of a Project-specific Stormwater Pollution Prevention Plan (SWPPP). The Project would also implement a Hazardous Materials Business Plan and Spill Prevention Control and Countermeasures Plan to address potential impacts from hazardous materials. Due to implementation of the CMAs, PDFs, and Integrated Weed Management Plan, the indirect impact on special status species would be less than significant.

Indirect Impacts on Special Status Wildlife: BAAH switchyard
Indirect impacts on special status species from the BAAH switchyard would be the same as those for the Project site and would be significant under CEQA without mitigation, but on a much smaller scale due to the limited size of the BAAH switchyard. With implementation of the CMAs, PDFs, and Integrated Weed Management Plan described above, the indirect impact on special status species would be less than significant.

Indirect Impacts on Special Status Wildlife: Loop-in transmission lines
Indirect impacts on special status species from the loop-in transmission lines would be the same as those with the Project site and would be significant under CEQA without mitigation, but on a much smaller scale due to the limited ground disturbance of the loop-in transmission lines. With implementation of the CMAs, PDFs, and Integrated Weed Management Plan described above, the indirect impact on special status species would be less than significant.

Impact BIO-2

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? ***(Less than significant for Project Site, No impact for BAAH Switchyard and Loop-in Transmission Lines)***

Project Site Components

Riparian Areas

Mesic riparian woodland consisting of mesquite thickets was observed within the Project site along dry washes during Project surveys, as reflected in Table 4.22. The proposed Project fenceline was adjusted along the southern and western boundary to avoid and exclude areas of riparian vegetation containing mesquite thickets from development. An area of mesquite thickets occurs within the fenced portion of the Project site; however, the Project design has been adjusted to avoid development and set back from the riparian/mesquite thicket area. The riparian/mesquite thicket area would be staked for avoidance per the requirements of CMA LUPA-BIO-3 and PDF BIO-3 and would not be impacted by the Project development, as no construction, operation, maintenance, or decommissioning activities would occur in the area. Impacts would be less than significant under CEQA.

Sensitive Natural Communities

Sensitive natural community alkali goldenbush desert scrub occurs within the southwest portion of the Project Application Area and has a state rarity rank of S3 (CDFW 2023b). The Project would include removal of vegetation from the Project site and would involve ground disturbance in the areas containing alkali goldenbush desert scrub. Potential indirect impacts on

sensitive natural communities could occur during construction, operation and maintenance, or decommissioning from the introduction or spread of invasive plant species or fugitive dust that could outcompete sensitive natural communities or degrade habitat. These impacts would be significant under CEQA without mitigation.

LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the Project Application Area. This will include alkali goldenbush desert scrub. In addition, the Project would implement an Invasive Weed Management Plan (Appendix M.5) and CMA LUPA-BIO-PLANT-2 that would reduce indirect impacts on sensitive natural communities from invasive weeds or dust. CMAs LUPA-BIO-2 would require oversight of Project activities by a designated biologist and, along with LUPA-BIO-3, would require implementation of avoidance and setback measures for sensitive communities. Because the Project would compensate for habitat impacts and would implement CMAs and PDF-BIO-8 to minimize impacts to sensitive natural communities, the impact on sensitive natural communities would be less than significant.

Breaker-and-a-Half Switchyard

The BAAH switchyard does not contain any riparian habitat or sensitive natural communities. The BAAH switchyard would, therefore, avoid impacts on any riparian habitat or sensitive natural communities and no impact would occur.

Loop-in Transmission Lines

Riparian Habitat

Areas of riparian habitat and riparian vegetation communities, including mesquite thickets and tamarisk thickets, occur along the All-American Canal and in seepage areas within the loop-in transmission corridor. The loop-in transmission lines poles/structures would avoid the All-American Canal and any riparian vegetation along the All-American Canal. The structures would also be sited to avoid removal of any riparian vegetation communities per CMA LUPA-BIO-3. The transmission structures would also be sited to avoid any ephemeral drainage or other waters of the State. The loop-in transmission lines would, therefore, avoid impacts on any riparian habitat and no impact would occur.

Sensitive Natural Communities

Sensitive natural communities of Alkali goldenbush scrub and arrow weed thickets occur in the southern portion of the loop-in transmission lines corridor, along the All-American Canal. The loop-in transmission structures would span the All-American Canal and associated sensitive natural communities along the banks of the All-American Canal. The loop-in transmission structures will also be sited to avoid impacts on sensitive natural communities of alkali goldenbush scrub. The loop-in transmission lines would not require removal of any sensitive natural community and, therefore, would avoid impacts on sensitive natural communities and no impact would occur.

Impact BIO-3

Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? ***(Less than significant for Project Site and Loop-in Transmission Lines, No impact for BAAH Switchyard)***

Project Site Components

No State or federally protected wetlands occur within the Project site. Because no wetlands occur within the solar, BESS, or substation areas, the Project would avoid impacts on State or federally protected wetland areas.

The Project development would involve solar development within areas containing ephemeral drainage swales along the western portion of the Project site. The ephemeral drainage swales do not contain riparian vegetation or habitat and do not meet the criteria for wetlands but are considered waters of the State. Impacts to these areas would be potentially significant under CEQA.

Prior to development within the drainage swales, the Project would obtain a permit from the Colorado River Regional Water Quality Control Board for discharge of fill materials to waters of the State, and the CEC would incorporate into the Project's approval any conditions or other requirements identified through consultation with CDFW as being necessary to ensure project consistency with Fish and Game Code section 1600 et seq. In addition, the Project would implement PDF BIO-8 to reduce indirect impacts on waterways. Due to compliance with State requirements for impacts to waters of the State, the impacts on waters of the State would be less than significant.

Breaker-and-a-Half Switchyard

No State or federally protected wetlands occur within the BAAH switchyard or adjacent to it. Because no wetlands occur within the BAAH switchyard or adjacent to it, the Project would have no impact on State or federally protected wetland areas.

Loop-in Transmission Lines

Areas meeting the definition of *wetlands* occur along the All-American Canal. The wetland areas along the All-American Canal would be spanned by the loop-in-transmission lines, and the transmission structures would be located outside wetlands. Because the loop-in transmission lines would span all wetland areas, the loop-in transmission lines have no direct impact on State or federally protected wetlands. Due to the proximity of wetland areas, the loop-in transmission structures could result in indirect impacts to wetlands through sedimentation. PDF BIO-8 would reduce indirect impacts on waterways and the impact would be less than significant.

Impact BIO-4

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? *(Less than significant)*

Project Site Components

No regional wildlife linkages or corridors are mapped within the Project Application Area. The Project Application Area does not occur within a corridor that links between or among larger habitat areas on a regional basis and is not within any areas mapped as Essential Connectivity Areas by the California Essential Habitat Connectivity Project (CDFW 2010). The Project Application Area is bordered to the west by power lines, to the north and east by Interstate 8, and to the south by Highway 98, the All-American Canal, and the fenced U.S.–Mexico border. Local wildlife likely use the undeveloped habitats to the west and along the All-American Canal south of the Project site as well as the Algodones Dunes to the east of the Project Application Area for movement; however, Interstate 8 effectively blocks ground-dwelling species' movement in areas east and north of the Project Application Area. South of the Project application area, Highway 98, the All-American Canal, and the fenced U.S.–Mexico border blocks movement of species. Due to existing barriers to species migration in areas surrounding the Project, construction and operation of the Project would not create a significant barrier to ground-based wildlife movement. Impacts would be less than significant.

Imperial County is located within the Pacific Flyway, and the Salton Sea and surrounding agricultural areas are important stop overs for birds migrating from Mexico to Canada. While the Imperial Valley contains important habitat for migratory birds, the Project Application Area, with the exception of the All-American Canal, does not contain agricultural areas or water features that are important for migratory birds. The Project would introduce new transmission lines, PV panels, and other structures to the Project site, which could result in collisions with migratory birds flying over the Project Application Area, causing a potentially significant impact under CEQA. The Project would implement a BBCS (Appendix M.1), and PDFs BIO-6 and BIO-7 require implementation of the BBCS and flight diverters on Project transmission lines and other features to reduce the risk of bird collisions. Through proper implementation of the BBCS and measures to reduce impacts from bird collisions, the Project construction, operation and maintenance, and decommissioning activities would not substantially impact wildlife movement, and impacts would be less than significant.

The Project site contains native vegetation and soils that provide habitat for multiple species of native wildlife, including special status species discussed in Impact BIO-1, above. The removal of native vegetation and compaction of soils during construction, operation and maintenance, and decommissioning activities would impact native wildlife nursery sites for native wildlife that nest or breed in the area, causing a potentially significant impact under CEQA. The Project would implement LUPA CMA-BIO-COMP-1, which requires compensation for impacts to native vegetation and habitat at a 1:1 ratio, including compensation for flat-tailed horned lizard habitat. Due to compensation for impacts on habitat that could be used as native wildlife nursery sites, the impacts on native wildlife nursery sites would be less than significant.

Breaker-and-a-Half Switchyard

The BAAH switchyard is not within areas mapped as Essential Connectivity Areas (CDFW 2010). The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management. The impact of the BAAH switchyard on wildlife movement would be less than significant due to implementation of the BBCS, CMAs, and PDFs.

The BAAH switchyard would be located in undeveloped areas that could be used by native wildlife as nursery sites, including the native wildlife discussed in Impact BIO-1, and impacts on wildlife nursery sites could be potentially significant under CEQA. The BAAH switchyard would require removal of native vegetation within the location of those Project elements. CMA LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the BAAH. CMA LUPA-BIO-1 requires completion of pre-construction surveys and LUPA-BIO-4 requires establishment of appropriate buffers that would avoid impacts on wildlife and their young in this area. Due to compensation for impacts on habitats that could be used as native wildlife nursery sites and implementation of CMAs to avoid impacts on wildlife during construction, the impacts on native wildlife nursery sites would be less than significant.

Loop-in Transmission Lines

The loop-in transmission corridor is not within areas mapped as Essential Connectivity Areas (CDFW 2010). The All-American Canal contains water features that are important for migratory birds. The Project would not impact any water feature directly. However, the loop-in transmission lines would span the All-American Canal and could result in increased collisions with migratory birds. Impacts would be potentially significant under CEQA.

The Project would implement a BBCS (Appendix M.1) in compliance with CMA LUPA-BIO-16. PDFs BIO-6 and BIO-7 define procedures for monitoring and adaptive management, as well as requirements for bird diverters on the loop-in transmission lines to reduce collisions with Project facilities. The impact of the loop-in transmission lines would be less than significant due to implementation of the BBCS, CMAs, and PDFs.

The loop-in transmission lines would be located in undeveloped areas that could be used by native wildlife as nursery sites, including the native wildlife discussed in Impact BIO-1. Impacts on wildlife nursery sites could be potentially significant under CEQA

The loop-in-transmission poles would avoid impacts on nesting habitat for migratory birds along the All-American Canal. The transmission structures would require removal of native vegetation within the location of those Project elements.

CMA LUPA-BIO-COMP-1 requires compensation for impacts to native vegetation and habitat at a 1:1 ratio for the loop-in transmission lines. CMA LUPA-BIO-1 requires completion of pre-construction surveys and LUPA-BIO-4 requires establishment of appropriate buffers that would avoid impacts on wildlife and their young in this area. Due to compensation for impacts on habitats that could be used as native wildlife nursery sites, and implementation of CMAs to

avoid impacts on wildlife during construction, the impacts on native wildlife nursery sites would be less than significant.

Impact BIO-5

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? ***(Less than significant)***

The Imperial County General Plan (2016) contains policies for protection of biological resources. The General Plan contains the following policies for protection of biological resources:

- Provide a framework for the conservation and enhancement of natural and created open space which provides wildlife habitat values.
- Landscaping should be required in all developments to prevent erosion on graded sites and, if the area is contiguous with undisturbed wildlife habitat, the plan should include revegetation with native plant species.

The County programs for implementing the policies include identification of "Resource Areas" to conserve and enhance native vegetation and wildlife. The Project is within the range of flat-tailed horned lizard, which is defined as a Resource Area under the policy. The policy further requires that Projects within or in the vicinity of Resource Areas be designed to minimize adverse impacts on the biological resources the Resource Area was created to protect. The policy also accepts donations of land with high wildlife value and conservation of native habitat and through long-term protection. The policy further requires protection for riparian habitat and wetlands.

Project Site Components

As described in Impact BIO-1, the Project would result in impacts to occupied flat-tailed horned lizard habitat, resulting in a potentially significant impact under CEQA. CMA LUPA-BIO-COMP-1 requires specific compensation for flat-tailed horned lizard habitat per the guidance in the RMS. Because the Project would provide compensation for impacts to flat-tailed horned lizard habitat, the Project would comply with the Imperial County biological resource policy for protection of Resource Areas. As discussed in Impact BIO-2, the Project has been designed to avoid impacts to riparian habitat and wetlands. The Project would therefore not conflict with policies for protection of riparian habitat and wetlands. The Project would also implement CMA LUPA-BIO-7, which includes habitat restoration with native species. Due to implementation of CMAs LUPA-BIO-COMP-1 and LUPA-BIO-7, the Project would not conflict with any local policies protecting biological resources and, therefore, impacts would be less than significant.

Loop-in Transmission Lines

The loop-in transmission lines would be located in areas containing flat-tailed horned lizard habitat and designated as Resource Areas in the General Plan policies, resulting in a potentially significant impact under CEQA. The loop-in-transmission line would implement CMA-BIO-COMP-1, which requires specific compensation for flat-tailed horned lizard habitat per the requirements in the RMS. The loop-in transmission lines have been designed to avoid riparian areas and wetlands and would not conflict with policies for protection of riparian areas or wetlands. The loop-in-transmission line would also implement CMA LUPA-BIO-7, which

requires restoration with native species. Due to implementation of CMAs LUPA-BIO-COMP-1 and LUPA-BIO-7, the Project would not conflict with any local policies protecting biological resources and, therefore, impacts would be less than significant.

Breaker-and-a-Half Switchyard
The BAAH would be located in areas containing flat-tailed horned lizard habitat and designated as Resource Areas in the General Plan policies, resulting in a potentially significant impact under CEQA. The BAAH would implement CMA LUPA-BIO-7, which requires restoration with native species. Due to implementation of CMA LUPA-BIO-7, the Project would not conflict with any local policies protecting biological resources and, therefore, impacts would be less than significant.

Impact BIO-6

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? ***(Less than significant)***

Project Site Components
The Project Application Area is not located within any local, regional, or State conservation planning areas (CDFW, n.d.-b). Therefore, construction, operation and maintenance, and decommissioning of Project components would not conflict with any adopted HCP, NCCP, or other approved local, regional, or State HCPs. Impacts would be less than significant.

Breaker-and-a-Half Switchyard
The BAAH switchyard is not located within any local, regional, or state HCP or NCCP area. The BAAH switchyard would, therefore, not conflict with an HCP or NCCP. Impacts would be less than significant.

Loop-in Transmission Lines
The loop-in transmission corridor is not located within any local, regional, or state HCP or NCCP area. The loop-in transmission lines would, therefore, not conflict with an HCP or NCCP. Impacts would be less than significant.

4.2.3 Cumulative Impacts

Impacts of the Project would be considered cumulatively considerable if they would have the potential to combine with other past, present, or reasonably foreseeable future projects to become significant. A list of closely related past, present, and reasonably foreseeable future projects is provided in Table 4-1 and shown in Figure 4-1 in Chapter 4: Environmental Analysis. Due to the regional nature of biological resources, the scope of cumulative impact analysis includes all Projects in Imperial County, which includes over 24,000 acres of solar development.

Because the Project would cause no impact related to riparian habitats (Impact BIO-2) or State or federally protected wetlands (Impact BIO-3) nor would conflict with any Habitat Conservation Plan, Natural Community Conservation Plans, or other approved local, regional, or State habitat conservation plan (Impact BIO-6), the Project could not cause or contribute to

any significant impact on such resources. Accordingly, cumulatively, the Project would have no impact related to these biological resources, and they are not discussed further below.

Special Status Species

Project construction, operations and maintenance, and decommissioning could affect candidate, sensitive, or special status species in the Project Application Area (Impact BIO-1). Cumulative projects would have the potential to similarly impact special status species where those projects' activities occur in the presence or habitat of these species. The cumulative impact from the renewable energy projects proposed in the region is potentially significant. The Project's implementation of BMPs, PDFs, CMAs, and management plans and inclusion of compensatory habitat mitigation would avoid, minimize, or mitigate the Project's contribution to cumulatively significant impacts on special status species to less than considerable.

BAAH Switchyard

Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, with the Project's implementation of BMPs, PDFs, CMAs, and management plans and inclusion of compensatory habitat mitigation, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to special status species.

Loop-in Transmission Lines

Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, with the Project's implementation of BMPs, PDFs, CMAs, and management plans and inclusion of compensatory habitat mitigation, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to special status species.

Sensitive Natural Communities

Project construction, operations and maintenance, and decommissioning could affect sensitive natural communities in the Project Application Area (Impact BIO-2). Cumulative projects would have the potential to similarly impact sensitive natural communities where those projects' activities occur within the same sensitive natural communities. The cumulative impact on sensitive natural communities is potentially significant. Because the Project would compensate for habitat impacts through implementation of CMAs and PDFs, the Project's contribution to a cumulatively significant impact on sensitive natural communities would be less than significant.

BAAH Switchyard

Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, because the Project would compensate for habitat impacts through implementation of CMAs and PDFs, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to sensitive natural communities.

Loop-in Transmission Lines
Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, because the Project would compensate for habitat impacts through implementation of CMAs and PDFs, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to sensitive natural communities.

Migration

Project construction, operations and maintenance, and decommissioning activities could affect wildlife nursery sites, and wildlife movement and migration (Impact BIO-4). Cumulative Projects would have the potential to similarly impact wildlife nursery sites, movement, and migration where those projects' activities occur in the species' nursery habitat or movement corridors. The cumulative impact on migratory species and wildlife nursery sites is potentially significant. The Project would provide compensatory mitigation for impacts on habitats that could be used as native wildlife nursery sites consistent with the CMAs and BMPs. Due to implementation of the CMAs and BMPs, the Project's contribution to a cumulatively significant impact would be less than considerable.

Due to existing barriers to species migration in areas surrounding the Project, construction, operation, and maintenance of the Project would not create a significant barrier to ground-based wildlife movement. Through proper implementation of the BBCS and measures to reduce impacts from bird collisions, the Project construction, operation and maintenance, and decommissioning activities would not substantially impact wildlife movement. Because the Project can avoid, minimize, or mitigate these potential impacts, the Project's contribution to potentially significant cumulative impacts on wildlife nursery sites, movement, and migration would not be cumulatively considerable.

BAAH Switchyard
Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, because the Project would provide compensatory mitigation for impacts on habitats that could be used as native wildlife nursery sites consistent with the CMAs and BMPs, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to migration.

Loop-in Transmission Lines
Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, because the Project would provide compensatory mitigation for impacts on habitats that could be used as native wildlife nursery sites consistent with the CMAs and BMPs, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to migration.

4.2.4 Proposed Best Management Practices, Project Design Features, Conservation Management Actions, and Mitigation Plans

As part of the Project, the Applicant, and other entities involved in construction and operation, would implement BMPs, PDFs, and CMAs. The Applicant has also prepared mitigation plans as required by the BLM.

Project Site Components

Best Management Practices and Project Design Features

The Project would implement the following BMPs and PDFs (Appendix D.1) related to biological resources:

- BMP-17 through BMP-24 (Biological Resources)
- BMP-26 through BMP-39 (Biological Resources)
- PDF BIO-1 through BIO-8 (Biological Resources)

CMAs

The Desert Renewable Energy Conservation Plan (DRECP) requires Conservation Management Actions (CMAs) for renewable energy projects. The following CMAs (Appendix D.2) apply to biological resources:

- LUPA-BIO-PLANT-1 and LUPA-BIO-PLANT-2 (Plants)
- LUPA-BIO-SVF-1 (Special Vegetation Features)
- LUPA-BIO-SVF-6 (Microphyll Woodland)
- LUPA-BIO-VEG-1 and LUPA-BIO-VEG-2 (Plant Material)
- LUPA-BIO-IFS-10 (Flat-tailed Horned Lizard)
- LUPA-BIO-IFS-12 through LUPA-BIO-IFS-14 (Burrowing Owls)
- LUPA-BIO-COMP-1 and LUPA-BIO-COMP-2 (Biological Resource Compensation)
- LUPA-BIO-1 through LUPA-BIO-6 (Biological Resources)
- LUPA-BIO-14 through LUPA-BIO-17 (Biological Resources)
- LUPA-BIO-RIPWET-1 (Riparian and Wetland)
- LUPA-BIO-RIPWET-3 (Riparian and Wetland)
- LUPA-DFA-VPL-BIO-COMP-1 (Biological Resource Compensation)

Mitigation Plans

The Project would implement the following mitigation plans relevant to biological resources:

- Fugitive Dust Control Plan (Appendix I.1)
- Bird and Bat Conservation Strategy (Appendix M.1)
- Nesting Bird Management Plan (Appendix M.2)
- Raven Management Plan (Appendix M.3)
- Wildlife Protection and Translocation Plan (Appendix M.4)
- Restoration and Integrated Weed Management Plan (Appendix M.5)
- Decommissioning and Revegetation Plan (Appendix M.6)

Breaker-and-a-Half Switchyard

The same BMPs, PDFs, CMAs, and mitigation plans that apply to the Project site components would apply to the BAAH switchyard.

Loop-in Transmission Corridors

The same BMPs, PDFs, CMAs, and mitigation plans that apply to the Project site components would apply to the 500 kV loop-in transmission lines.

4.2.5 Laws, Ordinances, Regulations, and Standards Compliance

Table 4.2-5 Federal Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Clean Water Act (33 USC § 1344)	Prohibits the discharge of dredged or fill material into the waters of the U.S. without a permit.	The Project is not anticipated to impact any waters of the U.S. The Project will avoid impacts on wetlands and the drainage swales and ephemeral waters in the Project Application Area are not directly connected to any traditionally navigable water. Refer to Section 4.2.1 and Appendix J.2.
Federal ESA (16 USC 1531 §§ et seq.)	Designates and protects federally threatened and endangered plants and animals and their critical habitat. Applicants for projects that could result in adverse impacts on any federally listed species are required to consult with and mitigate potential impacts in consultation with USFWS.	The Project would require federal authorization due to the majority of the Project being located on federal lands. The BLM will serve as the lead agency under NEPA and will be responsible for ESA compliance, including compliance with Section 7 consultation requirements of the ESA.
MBTA (16 USC §§ 703–711)	Protects all migratory birds, including nests and eggs.	A Nesting Bird Management Plan has been prepared for the Project, which defines procedures for monitoring and avoidance of active nests during Project implementation. The Nesting Bird Management Plan is provided in Appendix M.2. Refer to Section 4.2.2 for additional details.
Executive Order 12996: Management and General Public Use of the National Wildlife Refuge System	The mission of the National Wildlife Refuge System is to preserve a national network of lands and waters for the conservation and management of fish, wildlife, and plant resources of the U.S. for the benefit of present and future generations.	The Project is not located within or in proximity to a National Wildlife Refuge and would not impact any portion of the National Wildlife Refuge System

LORS	Applicability	Compliance
National Wildlife Refuge System Improvement Act of 1997	The legislation requires that a comprehensive conservation plan (also known as comprehensive management plan) be in place for each national wildlife refuge within 15 years after passage of this bill.	The Project is not located within or in proximity to a National Wildlife Refuge and would not impact any portion of the National Wildlife Refuge System.
Salton Sea Reclamation Act of 1998	Permit the continual use of the Salton Sea as a reservoir for irrigation drainage and reduce and stabilize the overall salinity of the Salton Sea; stabilize the surface elevation of the Salton Sea; reclaim, in the long term, healthy fish and wildlife resources and their habitats; and enhance the potential for recreational uses and economic developments of the Salton Sea.	The Project is approximately 35 miles from the Salton Sea and would not affect Salton Sea Restoration.
Lea Act (16 USC §§ 695–695c; 62 stat. 238)	Authorizes the Secretary of the Interior to acquire and develop waterfowl and other wildlife management areas in California, provided the state acquires equivalent acreage.	The Project is not located on or in proximity to a wildlife management area. The Project would not affect any wildlife management area.
Desert Renewable Energy Conservation Plan	Habitat Conservation Plan/Natural Community Conservation Plan and a Bureau of Land Management Land Use Plan Amendment covering both public and private lands across seven counties, including Imperial County.	The Project is located on BLM land within a DFA. The Project will implement all applicable CMAs under the DRECP as discussed in Section 4.2.4.

Table 4.2-6 State Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
CESA (Fish and Game Code §§ 2050 et. seq.)	Species listed under this act cannot be “taken” or harmed, except under specific permit.	Species listed under the CESA that have the potential to occur in the Project Application Area and in proximity to the Project are addressed in Sections 4.2.1 and 4.2.2.

LORS	Applicability	Compliance
Title 14, CCR, Sections 670.2 and 670.5	Lists animals designated as threatened or endangered in California.	Species designated as threatened or endangered animals in California that could occur in the Project area are listed in Table 4.2-4 and impacts are addressed in Section 4.2.2.
California Public Ressources Code, division 15, chapter 6, section 25527	Prohibits placing facilities within ecological preserves, wildlife refuges, estuaries, and unique or irreplaceable wildlife habitats of scientific or educational value.	The Project is not located in an area protected by this code as discussed in Section 4.2.1.
Fish and Game Code §§ 3511, 4700, 5050, and 5515	Lists animal species that are Fully Protected in California	Fully Protected animal species that could occur in the Project Application Area are listed in Table 4.2-4 and impacts are addressed in Section 4.2.2.
Fish and Game Code §§ 3503 and 3503.5	States that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 specifically protects birds of prey.	A Nesting Bird Management Plan has been prepared for the Project, which defines procedures for monitoring and avoidance of active nests during Project implementation. The Nesting Bird Management Plan is provided in Appendix M.2. Refer to Section 4.2.2 for additional details.
Fish and Game Code § 3513	Makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any migratory bird.	A Nesting Bird Management Plan has been prepared for the Project and defines procedures for monitoring and avoidance of active nests during Project implementation. The Nesting Bird Management Plan is provided in Appendix M.2. Refer to Section 4.2.2 for additional details.
Fish and Game Code §§ 1930 et seq.	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.	Impacts on riparian areas are discussed in Section 4.2.2. The Project has been designed to avoid impacts on microphyll woodland and Appendix J.2 includes an application for impacts on waters of the State.

LORS	Applicability	Compliance
Fish and Game Code §§ 2700 et seq.	Provides funding to the Wildlife Conservation Board and CDFW for acquisition, enhancement, restoration, and protection of areas that are most in need of proper conservation.	The Project is not located in or adjacent to an area protected by this code.
Fish and Game Code §§ 1900 et seq.	The Native Plant Protection Act lists threatened, endangered, and rare plants listed by the State.	The Project will include mitigation measures to reduce impacts to state threatened, endangered, or rare plants (refer to Section 4.2.2).
California Water Code Division 7, Porter-Cologne Water Quality Act	Establishes authorities of RWQCBs and SWRCB, which regulate discharge of waste in waters of the State through dredge or fill permitting.	The Project will adhere to SWRCB and RWQCB regulations for waters of the State and will procure the appropriate permits for Project activities.
Fish and Game Code §§ 1600 et seq.	The Lake and Streambed Alteration program requires notification of and permitting for any activities that may divert, alter, use material from or discharge material into any river, stream, or lake.	Pursuant to Assembly Bill 205 subsection 25545.1, the CEC retains exclusive permitting authority over matters that would normally rest with CDFW. Pursuant to Public Resources Code section 25545.5, the Applicant and CEC would collaborate with the CDFW on review of this Opt-in Application to ensure compliance with laws related to the protection of fish and wildlife resources. (refer to Impact BIO-3).

Table 4.2-7 Local Laws, Ordinances, Regulations and Standards

LORS	Applicability	Section Discussed in the AFC
Imperial County General Plan, Conservation and Open Space Element	Identifies goals and policies to ensure the managed use of environmental resources, to conserve biological resources for future generations	Consistency with the General Plan Policies is discussed in Impact BIO-5.

4.2.6 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application is provided in Appendix E.1. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2.

Pursuant to Assembly Bill 205 subsection 25545.1, the CEC retains exclusive permitting authority over matters that would normally rest with CDFW. Pursuant to Public Resources Code section 25545.5, the Applicant and CEC would collaborate with the CDFW on review of this Opt-In Application to ensure compliance with laws related to the protection of fish and wildlife resources.

4.2.7 References

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4.3 Cultural Resources

This section discusses the potential effects of the Project on cultural resources in the project vicinity. Section 4.3.1 describes the cultural resources environment that might be affected by the Project. Section 4.3.2 provides the research design used to guide the records and archival search and subsequent fieldwork phase of the cultural resource inventory. Section 4.3.3 presents an environmental analysis of construction and operation. Section 4.3.4 evaluates potential cumulative impacts to cultural resources. Section 4.3.5 presents mitigation measures that will be implemented to avoid construction impacts. Section 4.3.6 discusses the LORS applicable to the protection of cultural resources. Section 4.3.7 lists reference materials used in preparing this section.

This section is consistent with state regulatory requirements for cultural resources pursuant to the CEQA. Cultural resources include prehistoric and historic archaeological sites; districts; objects; standing historic structures, buildings, districts, and objects; and locations of important historic events. The study scope was developed according to the California Energy Commission's (CEC's) cultural resources guidelines, and it complies with *Rules of Practice and Procedure and Power Plant Site Certification Regulations* (CEC, 2023). Per CEC Data Adequacy requirements, Confidential Appendix N.1 provides the cultural resources technical report (CRTR), including names and qualifications of personnel who contributed to this study; archival research material consisting of a complete copy of the California Historical Resources Information System (CHRIS) literature search results that include maps showing the locations of previous cultural resources studies and resources and California Department of Parks and Recreation (DPR) 523 forms for previously recorded resources occurring within a records search area (one mile radius buffer around all Project facilities); copies of correspondence with the Native American Heritage Commission, Native American Groups, and local historical societies; a map showing the location of the study area and all identified cultural resources within the study area; DPR 523 forms for newly recorded and updated resources, and copies of all previous technical reports that are either partially or entirely located within 0.25 mile of the Project area.

In accordance with CEC guidance, Chronicle Heritage defined archaeological and architectural history study areas for the proposed Project. The archaeological study area for the purposes of the Opt-in Application, includes the Project footprint encompassing the fenced solar facility plus a 200-foot buffer; for the proposed transmission line corridors, the study area includes the Project footprint with a 50-foot buffer. Based on CEC guidance for new solar plant and transmission line construction in rural settings, the architectural history study area includes all Project elements along with a 0.5-mile buffer. The archaeological study area encompasses approximately 6,640 acres and the architectural history study area is approximately 13,150 acres.

4.3.1 Affected Environment

The Project Application Area lies east of the city of El Centro and south of Interstate-8 near the United States – Mexico border in southeastern California. Several factors, including topography, available water sources, and biological resources, affect the nature and distribution of prehistoric, ethnographic, and historic-period human activities in an area. This background provides a context for understanding the nature of the cultural resources that may be identified within the region. Much of the information provided in the following sections has been adapted from a report compiled by Chronicle Heritage entitled *Cultural Resource Class I Study, Research Design, and Work Plan for the Perkins Renewable Energy Project, Imperial County, California* (Vyhmeister et al. 2024).

The Project Application Area lies in the Colorado Desert of Imperial County, the largest and most arid subdivision of the Sonoran Desert and one of the hottest and most arid environments in the United States. The Project area is within the southern portion of a major physiographic and geologic feature of the Colorado Desert, the Salton Trough. The Salton Trough is an extensive topographic and structural depression extending from the Gulf of California about 130 miles northwest through the Coachella Valley to the summit of San Gorgonio Pass. The Gulf of California is separated from the trough by the roughly 11 meters tall (36 feet tall) delta of the Colorado River. The trough slopes gradually down to the north to about 226 feet below mean sea level (bmsl) at the Salton Sea, then rises gradually through the Coachella Valley.

Prehistoric Context

Schaefer (1994) was the first to develop a chronological sequence for the Colorado Desert area. The sequence he proposed strongly resembles the scheme in use for the San Diego region, while also incorporating archaeological information from the contiguous Mojave Desert region to the north. Schaefer's reliance on these two adjacent areas is in large part due to the well-defined cultural histories that have been developed for the Mojave Desert and San Diego regions. In contrast to these two areas, the basic culture history of the Colorado Desert region has not changed dramatically since pioneering archaeologist Malcolm Rogers (1939, 1945, 1966) published his initial impressions of the desert's chronology and cultural development. Consequently, understanding the early prehistory of the Colorado Desert region still relies heavily on comparisons with, and information derived from, both the San Diego region and the Mojave Desert areas.

Paleoindian Period

The earliest well-documented prehistoric sites in Southern California belong to the Paleoindian Period (ca. 12,000–10,000 Before Present[1] [B.P.]) during the Late Pleistocene. In the western United States, most evidence for the presence of Paleoindian peoples derives from finds of

[1] Before Present is a timescale used mainly in archaeology, geology, and other scientific disciplines to specify when events occurred relative to the origin of practical radiocarbon dating in the 1950s.

large, fluted spear and projectile points (Fluted-Point Tradition) found at sites associated with big game hunting. Paleoindian sites have been documented in places such as Clovis and Folsom in the Great Basin and the northern Desert Southwest area including the Mojave Desert (Moratto 1984:79–88). In the Mojave Desert, while absolute dating remains elusive, the Paleoindian Period is assumed to span approximately 12,000 to 10,000 B.P. (Sutton et al. 2007:234–236). Elsewhere in California, most of the evidence for the Fluted-Point Tradition derives principally from scattered isolated occurrences of fluted points that have been found (Dillon 2002; Rondeau et al. 2007). Isolated occurrences of fluted points have been observed in both the Colorado Desert (e.g., Davis et al. 1980:150; Kline 2014) and in the mountains of southern San Diego County (Kline and Kline 2007). Additional finds have been made to the south in Baja California (Des Lauriers 2008; Hyland and Gutierrez 1995).

The beginning of the San Dieguito Tradition or Complex, which is associated with artifact assemblages distinct from that of the Fluted Point Tradition, is also assumed to date to the Paleoindian Period. In California (Alta California), this tradition has been documented mostly in the coastal area of San Diego County (Carrico et al. 1993a; Rogers 1966; Warren 1966, 1967; Warren and True 1961), and to a lesser degree in the Mojave Desert (Sutton et al. 2007) and Colorado Desert (Rogers 1939, 1966; Schaefer 1994; Warren 1967). In the Mojave Desert, Sutton et al. (2007:236) assign the San Dieguito Complex to the early Archaic Period during the Early Holocene. Warren dates the San Dieguito Tradition as beginning circa 10,000 B.P. and ending sometime between 8500 and 7200 B.P. (Warren 1967, 1968:4; Warren et al. 1998; Warren and Ore 2011). This tradition is characterized by an artifact inventory consisting almost entirely of flaked stone biface and scraping tools, but lacking the distinctive fluted points associated with the Fluted-Point Tradition. The subsistence system or emphasis of the San Dieguito Tradition, while not yet entirely agreed upon, appears to have been oriented towards hunting rather than gathering, based on the predominance of primarily hunting-associated tools in recovered artifact assemblages (Warren 1967, 1968).

Evidence for the Fluted-Point Tradition in the general vicinity of the Project is minimal with only two isolated flute points having been identified in the Colorado Desert (Davis et al. 1980; Kline 2014) with a third point found in the mountains of San Diego County (Kline and Kline 2007). In contrast, the San Dieguito Tradition is relatively well-documented in the San Diego area. The most substantial evidence for this tradition derives from a stratified archaeological site, the C.W. Harris Site (CA-SDI-149/316/4935B), in western San Diego County along the San Dieguito River. The Harris Site formed the original basis upon which the San Dieguito Tradition was defined (Rogers 1939, 1966; Vaughan 1982; Warren 1966, 1967, 1968; Warren and True 1961). Diagnostic artifact types and categories associated with the San Dieguito Tradition include elongated bifacial knives, scraping tools, crescentics, and Silver Lake and leaf-shaped projectile points (Carrico et al. 1993a; Knell and Becker 2017; Rogers 1966; Vaughn 1982; Warren 1966, 1967; Warren and Ore 2011; Warren and True 1961). The C.W. Harris Site also provided the oldest calibrated radiocarbon date (9968 B.P.) found in association with a subsurface San Dieguito artifact assemblage (Warren et al. 1998; Warren and Ore 2011). Another slightly younger calibrated radiocarbon date of 9130 B.P. was also acquired from a San Dieguito-associated

subsurface stratum at site CA-SDI-316 (Cooley 2013). Finally, possible evidence for the San Dieguito Tradition has been discovered at a site in the southern mountains of San Diego County; the site assemblage included complete, elongated bifacial knives, and projectile points that bear a strong resemblance to some of those recovered from the C.W. Harris Site (Pigniolo 2005).

Although Rogers (1939, 1966) has described occurrences of sites and artifacts attributable to the San Dieguito Complex in the Mojave and Colorado Desert areas, the ability to accurately determine the antiquity of these artifacts and sites by radiometric dating methods has proven to be problematic (Schaefer and Laylander 2007:247; Sutton et al. 2007:237; Warren 1967:179). Consequently, the radiometric dating of the artifacts and their context at the C.W. Harris Site has, for several decades, been the principal means of ascertaining the antiquity of these similar desert assemblages (Warren 1967). In the Mojave Desert area, the San Dieguito Complex has been largely subsumed under the Lake Mojave Complex (Sutton et al. 2007:236). Recently, calibrated radiocarbon dates from several Lake Mojave Complex associated sites have produced dates of similar antiquity to those from the C.W. Harris Site (Sutton et al. 2007:235) (i.e., ca. 10,000-9000 B.P.). In the Mojave Desert area, Lake Mojave Complex sites are frequently associated with glacial lakes that were still present at the end of the Pleistocene and the beginning of the Holocene. Such glacial-related lacustrine features were generally not present in the more southerly Colorado Desert area. However, given the discovery of Paleoindian Period and/or Lake Mojave Complex associated projectile points in the Salton Basin (Apple et al. 1997; Wahoff 1999), it is possible that this basin, too, may have been inundated, at least periodically, during this earlier period.

Archaic Period

The Archaic Period (ca. 10,000–1500 B.P.) encompasses the interval between the relatively cool/wet conditions of the early Holocene and the appearance of assemblages characteristic of the Late Prehistoric. The Archaic Period is generally differentiated from the earlier Paleoindian Period by a shift from hunting-focused subsistence systems to a more generalized economy with an increased focus on gathering and the use of grinding tools and seed-processing technology. Consequently, typical artifact assemblages in the Mojave Desert—where sites dating to the early Archaic Period are common—contain dart points, but with increasing quantities of ground stone tools (such as manos and metates) occurring into the middle and latter parts of the period. As with the Paleoindian Period, little archaeological evidence has yet been encountered in the Colorado Desert area that can be definitely attributed to the early part of the Archaic Period (i.e., from ca. 8500–4000 B.P.) (Schaefer 1994:64; Schaefer and Laylander 2007:247). Although evidence of early Archaic occupation in the Colorado Desert has long been minimal—as noted above for the Paleoindian Period—the discovery of Paleoindian Period and/or Lake Mojave Complex associated projectile points in the Salton Basin (Apple et al. 1997; Wahoff 1999) and at site CA-SDI-7074 in the mountains of southeastern San Diego County (Williams 2014), could change this paucity of evidence.

A possible early Archaic discovery in the Salton Basin occurred during an archaeological investigation at the Salton Sea Test Base (Apple et al. 1997; Wahoff 1999). This discovery consisted of an assemblage of large projectile points that were stylistically associated with early-

Archaic-style projectile points in the Mojave Desert, including Pinto and Elko styles. Although archaeological investigations did not obtain any radiocarbon dates to verify the relative dating evidence, the styles of these points appear to be associated with the early Archaic Period. More recently, excavations at site CA-SDI-7074, in the eastern foothills of the Laguna Mountains, uncovered more than 100 subsurface thermal features, many of which were likely earth ovens associated with agave roasting activity (Williams 2014). Although radiocarbon dating indicated that most of these oven features date to the Late Prehistoric Period, five of the more deeply buried features were discovered to date between 9600 and 8590 B.P. These results not only indicate the use of agave as a food resource much earlier in time than was previously realized, but also suggest a reappraisal of the dating for the inception of the early Archaic Period in the area (Williams 2014:325). Additional evidence for an early to mid-Archaic Period use at the site includes the recovery of a single Elko-style projectile point (Williams 2014:151).

Limited evidence has been found for late Archaic (beginning ca. 4000 B.P.) occupation in the western Colorado Desert. One of the few studies that have documented use during this time was completed by Love and Dahdul (2002) in the northern Coachella Valley of the Salton Basin. The contexts of several sites in the Coachella Valley, some possibly associated with ancient stands of Lake Cahuilla, were radiocarbon dated to circa 3000-2000 B.P. (Love and Dahdul 2002; Schaefer and Laylander 2007:249). Other evidence for the late Archaic use in the area includes deposits found at the Indian Hill Rockshelter (CA-SDI-2537) in Anza-Borrego Desert State Park (McDonald 1992) and at another rock shelter in Tahquitz Canyon, near Palm Springs (Bean et al. 1995; Schaefer and Laylander 2007:247). The Indian Hill Rockshelter, until recently, was the oldest radiocarbon-dated archaeological site in the area. The site contained distinctive dart-sized projectile points, ground stone implements, rock-lined caches, and inhumations, one of which was radiocarbon dated to 4070±100 years B.P. (McDonald 1992; Schaefer 1994; Wilke and McDonald 1989). The rock shelter in Tahquitz Canyon, although lacking radiocarbon dates, exhibited an assemblage similar to that found in the Indian Hill Rockshelter (Bean et al. 1995; Schaefer and Laylander 2007:247).

Evidence for settlement patterning during the Archaic Period in the Colorado Desert area is minimal. However, some of the late Archaic sites in the Coachella Valley appear to have been in contexts associated with intermittent ancient stands of Lake Cahuilla (Love and Dahdul 2002). It seems likely, therefore, that this hydrological feature had a significant influence on settlement patterns in the western Colorado Desert during at least the late Archaic. Evidence of Archaic habitation at the Indian Hill and Tahquitz Canyon rockshelter sites indicate that adjacent mountain areas were also used by prehistoric groups during the middle to late Archaic.

Late Prehistoric/Protohistoric Period

The Late Prehistoric and Protohistoric periods are represented in this region by the Patayan Complex. These periods date from approximately 1500 B.P. until the American expansion into the area at the turn of the nineteenth century. The Protohistoric Period encompasses a protracted 300-year-long period of sporadic European exploration and colonization that had little effect on aboriginal lifeways in the Southern California deserts.

Compared to those shifts noted for the middle and late Archaic Period, the changes occurring at the onset of the Late Prehistoric Period were rather abrupt. The magnitude of these changes and the short period of time within which they took place seem to indicate a significant alteration in subsistence practices circa 1500–1300 B.P. The changes observed in the archaeological record in the San Diego area during the Late Prehistoric Period include: a shift in settlement patterning indicative of population increases; a shift from hunting using the atlatl and dart to using the bow and arrow; a reduced emphasis on shellfish gathering along some areas of the coast (possibly as a result of silting-in of the coastal lagoons); the introduction and production of pottery; an increase in storage of principal foodstuffs, such as mesquite, acorns, and piñon nuts; a shift in burial practices from inhumation to cremation; and, along the Colorado River, a change in economic and settlement patterns that involved subsistence expansion and the adoption of floodplain horticulture (Gallegos 2002; McDonald and Eighmey 1998; Schaefer 1994).

In the Coachella Valley and Salton Basin area, the Late Prehistoric Period is associated with the periodic infilling and emptying of Lake Cahuilla. This substantial hydrological feature is seen as recurrently altering the course of human settlement in the area during the period (Schaefer and Laylander 2007:250–251). During times of lake absence, settlement appears to have been characterized by the occupation of semi-sedentary villages along major water courses and around springs with adjacent montane areas seasonally occupied to exploit mesquite, acorns, and piñon nuts. Tahquitz Canyon in the mountainous area west of the Salton Basin has been documented as having been an important population center during the Late Prehistoric Period (Bean et al. 1995).

Schiffer and McGuire (1982:216–222) and Waters (1982a) used a chronology originally proposed by Rogers (1945) to divide the Late Prehistoric Period in the Colorado Desert area based on the progression or changes in development of ceramic types. Referring to the period as "Patayan" (instead of the term "Yuman," used by Rogers), three phases were defined that were correlated with fillings and desiccations of Lake Cahuilla. These phases include:

- **Patayan I** begins at approximately 1200 B.P. with the introduction of pottery into the Colorado Desert. Sites dating to this phase appear to be limited mostly to the Colorado River area.
- **Patayan II** coincides with an infilling of Lake Cahuilla around 950 B.P. As described previously, the lake covered much of the Imperial Valley and created an extensive lacustrine environment that is thought likely to have attracted people from the Colorado River area. New pottery types appear at this time as a result of local production along the lakeshore and technological changes in the Colorado River area. Subsequently, Lake Cahuilla experienced several fill/recession episodes before its final desiccation.
- **Patayan III** begins around 500 B.P. as the lake receded. Colorado Buff ware became the predominant pottery type during this time period across the Colorado Desert and along the Colorado River. Several Patayan II pottery types continue into the Patayan III (Waters 1982a, 1982b).

This chronological scheme has served as a useful tool for organizing archaeological assemblages in the area. However, Schaefer and Laylander (2007:252–253) noted that data obtained from more recent archaeological investigations highlight some serious discrepancies with its use (e.g., Hildebrand 2003).

As previously noted, the beginning of the Late Prehistoric Period in the San Diego County area is marked by the appearance of several new tool technologies and subsistence shifts in the archaeological record. Movements of people during the last two millennia can account for at least some of these changes. Yuman-speaking people have occupied the Gila and Colorado river drainages of what is now western Arizona at least 2000 years ago (Moriarty 1968); over time, these groups appear to have migrate westward through the Colorado Desert and the mountains of the Peninsular Ranges to the coast. An analysis by Moriarty (1966, 1967) of materials recovered from the Spindrift Site in La Jolla indicated a preceramic Yuman phase. Based on his analysis and a limited number of radiocarbon samples, Moriarty concluded that Yumans, lacking ceramic technology, penetrated and occupied what is now the San Diego coastline circa 2000 B.P. Subsequently, by approximately 1200–1300 B.P., ceramic technology diffused into the coastal area from the eastern deserts. Although these Yuman speakers may have shared cultural traits with the people occupying what is now eastern San Diego County before 2000 B.P., their influence is better documented throughout present-day San Diego County after 1300 B.P. with the introduction of small points, ceramics, Obsidian Butte obsidian from the Salton Basin, and the practice of cremation of the dead.

Two distinct archaeological complexes have been proposed for the Late Prehistoric Period in what is now San Diego County. The Cuyamaca Complex is based on analysis by True (1970) of archaeological excavations undertaken in the Cuyamaca Rancho State Park and analysis of archaeological collections at the San Diego Museum of Man. Using data from this study, True (1970) was able to define a Late Prehistoric Period Complex for southern San Diego County. This complex differs from the San Luis Rey Complex, which Meighan (1954) identified in the northern portion of the county. The two complexes are primarily differentiated by the presence or absence, or differences in the relative occurrence, of certain diagnostic artifacts in site assemblages. For example, Cuyamaca Complex sites generally contain both Cottonwood Triangular-style and Desert Side-notched arrow points, while Desert Side-notched points are quite rare or absent in San Luis Rey Complex sites (Pigniolo 2001). Other examples include use of Obsidian Butte obsidian, which is far more common in Cuyamaca Complex sites than in San Luis Rey Complex sites and ceramics. While ceramics are present during the Late Prehistoric Period throughout the region, pottery occurs earlier in time and appears to be somewhat more specialized in form at Cuyamaca Complex sites. Burial practices at Cuyamaca Complex sites are almost exclusively cremations, often in special burial urns for interment. In contrast, archaeological evidence from San Luis Rey Complex sites indicates use of both inhumation and cremation. Based on ethnographic data, it is now generally accepted that the Cuyamaca Complex is associated with the Yuman Diegueño/Kumeyaay and the San Luis Rey Complex with the Shoshonean Luiseño/Juaneño.

Compared to Archaic Period sites, Late Prehistoric Period sites attributable to the San Luis Rey or Cuyamaca complexes, while not absent, are less common in the near-coastal areas of the county. As noted by Gallegos (1995:200):

> "for San Diego County, there is temporal patterning, as the earliest sites are situated in coastal valleys and around coastal lagoons. Late Prehistoric Period sites are also found in coastal settings but are more common along river valleys and interior locations."

In contrast, numerous Late Prehistoric Period sites, attributable to the San Luis Rey or Cuyamaca complexes, have been identified in the inland foothill areas of the region (e.g., Carrico and Cooley 2005; Chace and Hightower 1979; Cooley and Barrie 2004; McCown 1945; McDonald et al. 1993; Raven-Jennings and Smith 1999; Willey and Dolan 2004).

Ethnographic Context

Schaefer (2006:21) has previously indicated that the location of the Project area is in a boundary area of the traditional territories of two tribal groups, the Yuman-speaking Tipai (Kamia) to the south and the Shoshonean-speaking Cahuilla to the north (Schaefer 2006:21). Schaefer's use of the term "Tipai" has evolved in the literature, through time, as the one applicable to the people living in the area of eastern San Diego and Imperial counties. A third Yuman-speaking group, the Cocopah, also have ties to the Project Area.

The general early term applied for the Yuman-speakers in the area was "Diegueño," from the mission with which they came to be associated, the San Diego Mission de Alcalá. This term was later adopted by anthropologists (e.g., Kroeber 1925) and further divided into the southern and northern Diegueño. Subsequently, Shipek (1982) initiated the use of a Yuman language term, "Kumeyaay," for the people formerly designated as the Diegueño. According to Carrico (1998:V-3):

> "The linguistic and language boundaries as seen by Shipek (1982) subsume the Yuman speakers into a single nomenclature, the Kumeyaay, a name applied previously to the mountain Tipai or Southern Diegueño by Lee (1937), while Almstedt (1974:1) noted that 'Ipai applied to the Northern Diegueño with Tipai and Kumeyaay for the Southern Diegueño. However, Luomala (1978:592) has suggested that while these groups consisted of over 30 patrilineal clans, no singular tribal name was used and she referred to the Yuman-speaking people as 'Ipai/Tipai…"

Other researchers designated the Kumeyaay living north of the San Diego River as 'Ipai (Northern Diegueño) and those living south of the river and into Baja California as Tipai (Southern Diegueño) (Hedges 1975:71–83; Langdon 1975:64–70). Gifford (1931) designated the Kumeyaay living in the eastern San Diego and Imperial counties as the Kamia, who were distinguished by a desert orientation, with contacts and travel most frequently between eastern San Diego County and the Imperial Valley. This term has generally been replaced with the

designation of eastern Kumeyaay or Tipai (Gifford 1931:2; Hedges 1975; Langdon 1975; Luomala 1978). Recently, however, Schaefer (2006:25) stated that:

> "The Kamia specifically were also directly related to the Tipai (southern Kumeyaay) of the mountains and coastal areas of San Diego County and northern Baja California. Their dialect, however, is closely related to the Cocopah and other delta Yumans"

According to Schaefer (2006:21), the Tipai (Kamia) and the Cahuilla "consider the cultural resources of the general area as part of their cultural and historical legacy." As such, both groups are described herein.

Cahuilla

The Cahuilla are a subgroup of the Takic family of the Uto-Aztecan stock and are therefore closely related linguistically to other "Shoshonean" speaking groups including the Gabrielino, Luiseño, and Serrano. These Takic-speaking groups are thought to represent a migration into the area occurring approximately 1500 B.P. (Schaefer 2006:21). According to Schaefer (2006:22):

> What role these Takic speakers had in the development of the Patayan pattern in the Colorado Desert remains unclear, although it may have been considerable. The ancestors of the Colorado River Yumans are most often identified as the source of ceramics, cremation practices, agriculture, some architectural forms, and some stylistic and symbolic representations. The Takic migrations may coincide with the introduction of bow-and-arrow technology, but no direct association can be made. They may have contributed specific hunter and gatherer techniques as well as cosmological and symbolic elements to the Patayan cultural system.

The diversity of Cahuilla territory reflects the range of environmental habitats in inland Southern California. Topographically, their territory ranged from the summit of the San Bernardino Mountains to the Coachella Valley and Salton Sink. Ecological habitats included the full range of mountains, valleys, passes, foothills, and desert areas. Villages were typically situated in canyons or on alluvial fans near water and food resources, and a village's lineage owned the immediately surrounding land (Bean 1978). Well-developed trails were used for hunting and travel between settlements. Village houses ranged from brush shelters to huts 15–20 feet long. Important plant foods exploited from the Cahuilla's diverse habitat included mesquite and screw beans, piñon nuts, and various cacti. Other important plant foods included acorns, various seeds, wild fruits and berries, tubers, roots, and greens. Women were instrumental in the collection and preparation of vegetal foods.

Cahuilla settlement and subsistence patterns were impacted by fill and recession episodes of Lake Cahuilla. When the lake was present, the desert area becoming a more productive resource area. Schaefer (2006:22) states that "Cahuilla mythology and oral tradition also indicate that when Lake Cahuilla dried up, it was the mountain people who resettled the desert floor. The time of Lake Cahuilla is also best documented in the oral traditions of the Cahuilla, both

with regard to settlement patterns, song cycles, and the effects of Lake Cahuilla on patrilineal clan segmentation." According to Strong (1929:36), "the derivation of the term Cahuilla is obscure, and it is regarded by the Indians to be of Spanish origin."

The earliest Spanish contact with the Cahuilla may have been with the Juan Bautista de Anza expedition trips in 1774 and 1777. The route followed San Felipe Creek adjacent to Carrizo Creek and then through Borrego Springs, up into the San Jacinto Mountains (Pourade 1962:164; Schaefer 2006:23). The impact of the Spanish mission system and colonization was much less immediate and profound among the Cahuilla compared to Native American groups residing along the coast. It was not until 1819, after the establishment of the San Bernardino estancia and cattle ranch at San Gorgonio, that a more direct Spanish influence was felt. By 1823, members of the Romero Expedition documented that the Cahuilla at Toro were growing corn and melons and were already familiar with the use of horse and cattle, indicating a familiarity with Hispanic practices (Bean and Mason 1962).

During the Spanish Period and into the Mexican Period, political leadership became more centralized as Juan Antonio from the Mountain Cahuilla and Chief Cabazon in the desert emerged as central figures (Strong 1929). Juan Antonio's group played a significant role during the Mexican American War, siding with the Mexicans against the Luiseño who supported the American invasion (Phillips 1975). Along with the rise of powerful chiefs and political restructuring, Mexican language, clothing, and food were incorporated into traditional culture during this era.

With the 1848 signing of the Treaty of Guadalupe Hidalgo, the U.S. Government promised to preserve the liberty and property of the inhabitants of California. In 1952, a treaty was drafted to settle land rights issues for the Cahuilla (as well as Serrano and Luiseño). The treaty was never ratified by Congress and the best farming and grazing lands were claimed by Euro-American settlers. In addition, Executive Orders enacted in the 1960s and 1970s resulted in the establishment of reservations that substantially reduced Cahuilla land. The result of these orders created a checkerboard of 48 sections of reservation lands spread across the eastern edge of the Santa Rosa and San Jacinto mountains and the Coachella Valley (Cultural Systems Research, Inc. [CSRI] 1983). Although various modifications have occurred over time, this has remained the permanent home of the Cahuilla to date.

Tipai/Ipai (Kamia)/Kumeyaay

The Tpai-Iipai/Kumeyaay were also hunter-gatherers who seasonally altered between the mountainous western portions of their territories and the eastern desert areas to maximize resource exploitation. Similar to the Cahuilla, the lifeways of the Tpai-Iipai/Kumeyaay were impacted by the fill and recession of Lake Cahuilla. Schaefer (2006:26) states that "Lake Cahuilla figures prominently in the Kamia's origin myth (Gifford 1931:75–83) and except for the Cahuilla, represents the only other major recorded oral tradition regarding the ancient lake." The Tipai/Kamia were closely connected to the Quechan on the Colorado River and served as trading partners between the coastal and desert groups, using a travel route through the Mountain Springs Grade. These trading partners also were frequently politically allied against

other groups to the north and south (Cook et al. 1997:9). The earliest Spanish contact may have been in 1785 by Pedro Fagés or during the Anza expedition journeys in 1774 and 1777 (Cook et al. 1997; Schaefer 2006). By this time, the Tpai-Iipai/Kumeyaay were hostile to the Spaniards and were in alliance with other groups, actively resisting Spanish rule in the area. In 1775, this resistance culminated in open revolt when tribal members from at least 14 local villages banded together and attacked, and burned, the Mission San Diego de Alcalá (Carrico 2008:32–33). The Tipai-Ipai/Kumeyaay continued to resist European and Anglo rule through the Mexican Period and into the American Period.

Although Mexico's governance of Alta California did not last long, it did help to cement the changes brought by the Spanish missionization and colonization of the area. One major alteration occurred in 1835 when the missions were secularized, and their large land holdings were made available to private citizens. Although some large grants of land were made prior to 1834, secularization of the mission's large grazing holdings ushered in the Rancho Era.

One impact was the dissolution of the mission as a residential and labor center for territorially disenfranchised Native Americans. Many mission neophytes had little option but to work on the new Mexican ranchos. Communities living farther from the ranchos were able to maintain their traditional lifeways for a bit longer. New ranches put new pressures on California's native populations, as grants were made in inland areas still occupied by the Kumeyaay, forcing them to acculturate or relocate farther into the backcountry. In rare instances, former mission neophytes were able to organize pueblos and attempt to live within the new confines of Mexican governance and culture. The most successful of these pueblos was the Pueblo of San Pasqual, located inland along the San Dieguito River Valley, founded by Kumeyaay who were no longer able to live at the Mission San Diego de Alcalá (Carrico 2008; Farris 1994).

During the American Period, railway systems began to connect the people and products of Southern California to the rest of the United States. Increased American settlement and claims on the land for residential, mining, agricultural, and ranching purposes in the second half of the nineteenth century meant that many remaining lands sustaining Native American populations were marked, surveyed, or even fenced as private, again changing the landscape of what are now San Diego and Imperial counties. Native American reservations were established, ostensibly to provide land for Native American populations, but these holdings made available only the poorest of subsistence lands and forced many indigenous peoples to adopt a more sedentary lifestyle, reliant on the Anglo economic system as an alternative to moving to reservations (Carrico 2008).

Quechan

According to Quechan oral tradition, their territorial range extended along the Colorado River from Blythe in the north to Mexico in the south. At the time of sustained European contact in the seventeenth century, the Quechan people numbered in the thousands. The largest concentration of Quechan traditionally lived at the confluence of the Colorado and Gila rivers, although they were strangely not reported in that area in 1540, when the Alacon and Diaz expeditions reached the confluence (Forbes 1965; Forde 1931). Nevertheless, in the following century, large Quechan villages existed in the area.

The Quechan economy was based on a combination of horticulture, fishing, and gathering. During the winter and spring, Quechan groups lived in seasonal village settlements located on terraces above the river floodplain. After the spring floods receded, small family groups dispersed to their agricultural plots along the river to plant crops. After the harvest in the fall, the Quechan gathered again in the large villages on the terraces, where stored agricultural foods, fishing, and limited gathering allowed them to live together through the winter (Bee 1983; Forde 1931). In all times but high flood, fishing in the Colorado River provided an important source of protein.

Numerous named villages were located along the terraces above the lower Colorado River flood zone. The village known as *Avi Kwotapai* was located on the west side of the Colorado River between Blythe and the Palo Verde Valley, and *Xenu mala vax* was on the east side of the river near present-day Ehrenberg (Bee 1982). Quechan and other Yuman-speaking groups report well-traveled trails that extend along the Colorado River, as well as trail networks between peaks and other significant landscape features (see discussions in Cleland and Apple 2003). Primary ethnographic sources for the Quechan include Bee (1983), Castetter and Bell (1951), and Forde (1931).

The contemporary Quechan community is concentrated in the lands of the Fort Yuma-Quechan Reservation and has its main headquarters in Fort Yuma, Arizona. The reservation is approximately 45,000 acres and is located along the lower Colorado River in both Arizona and California just north of the United States/Mexico border.

Cocopah

The Cocopah Indian Tribe, also known as the *Xawiłł Kwñchawaay* ("Those Who Live on the River"), *Kwapa*, or River People, is a federally recognized tribe located on the three-part Cocopah Indian Reservation in Arizona (Kelly 1977; Tisdale 1997; Wright and Hopkins 2016). This reservation has two sections on the Mexico-Arizona border, the first a short distance northwest of Yuma and the second to the south along the east bank of the Colorado River. The third section is off the river to the east near the city of Somerton. An additional group of Cocopah people resides west of the Mexico-Arizona border in Baja California in *ejidos* and *colonias* (Tisdale 1997).

The Cocopah are Yuman speakers that lived for centuries between the confluence of the Colorado and Gila Rivers, and the Colorado River delta in Mexico. Other Yuman speaking tribes that are closely related to the Cocopah include the Halyikwamai, Kumeyaay, and Kohuana (Golla 2011; Wright and Hopkins 2016).

The creation myths of the Cocopah tell of the existence of twin gods that emerged from beneath the water to create the earth, its creatures, things, and customs. However, much of the details of the Cocopah creation myth was not preserved in oral histories or their song cycles. This is due to their beliefs concerning death that prevent any direct mention of the deceased and because informants told ethnographers that they should not share stories that they had only heard, but not formally learned (Gifford 1933; Kelly 1977; Wright and Hopkins 2016).

Archaeological studies have suggested that the Cocopah migrated south from perhaps as far north as the Great Basin sometime between 3,000 and 2,000 years ago. They settled in the lower valleys of the Gila and Colorado rivers, residing there until they were forced south between A.D. 1400 and 1500 by other Yuman speakers who were displaced by the desiccation of Lake Cahuilla. While the Cocopah are hard to distinguish from other Yuman groups within the archaeological record, they associate themselves with the Patayan archaeological tradition. The Patayan Tradition is defined by traditions, lifeways, and material culture, such as household structures, funerary features, and pottery, which archaeologists have attributed to the Cocopah and other Yuman-speakers in the region (Alvarez de Williams 1983; Wright and Hopkins 2016).

Warfare was a common and important activity for the Cocopah that had spiritual origins reaching back to the time of their creation. The Quechan and the Mojave were considered hereditary enemies of the River People, as well as the Yavapai and the Chemehuevi. The Cocomaricopa, Xalychidom, and Akimel O'odham were considered allies (Alvarez de Williams 1983; Wright and Hopkins 2016).

The core of Cocopah traditional territory is within the lower Colorado River and Delta and was surrounded by a broader area that at times included the lower valleys of the Gila and Colorado rivers. However, their history of long-distance travel and trade gives cause to expand their area of concern significantly and they maintain a particular connection the Colorado River north of their territory and to the Great Bend area of the Gila River. These areas overlapped with other groups. For example, the Cocopah historically shared a fish and shellfish gathering area (Kwurksispeuwahan) with the Hia C'ed O'odham into the late 1920s (Wright and Hopkins 2016). The mountains surrounding their traditional territory are seen as the homes of deities, including Awikwame (Spirit Mountain/Newberry Peak, near Needles), Awikwil (near Laveen, south of Phoenix), Wii Shpa ("Eagle Mountain", Black Butte in Baja California, Sakupai (Mount San Jacinto), and Awichauwas ("Feather Mountain" near San Felipe in Baja California) (Gifford 1933; Wright and Hopkins 2016). Like other Yuman groups, they have narrative songs that connect oral histories with places in the landscape.

The Cocopah Tribe established their first constitution and a tribal council in 1964 under the Indian Reorganization Act. Between 1956 and 1985, the Cocopah gained legal access to more land, including an additional 4,800 acres through the Cocopah Land Acquisition Act which also annexed 61 acres near Yuma (North Reservation). Today, the reservation consists of three parcels amounting to 6,527 acres, of which 6,009 acres are trust land, which are located west, southwest, and south of Yuma, Arizona. In the 1970s and 1980s, the Cocopah Tribe began initiating economic development on their reservation through the installation of utilities, home construction, and infrastructure development (Tisdale 1997; Wright and Hopkins 2016). The Cocopah Reservation is located 13 miles south of Yuma, Arizona and is composed of the East, West, and North Reservation which border Arizona, California, and Mexico. There are now approximately 1,000 tribal members that live and work on or near the reservations.

During previous large-scale projects with significant environmental impacts, the Cocopah expressed concern for the lack of proper consideration of cultural resources. In particular, they

stress the importance of considering the landscape as a whole rather than individual resources. They reference the significance of the deserts and mountains surrounding the Colorado River for prehistoric resource gathering, travel, and spiritual use, not only by the Cocopah, but also numerous other tribes in the region (Cocopah Indian Tribe 2020).

Historic Context

The history of the region is generally divided into Spanish (1769–1821), Mexican (1821–1846), and American (1846–present) periods. The Spanish Period is marked by the establishment of a mission and presidio on a hill overlooking San Diego Bay in July 1769. The Spaniards introduced European crops, cattle, and other livestock. The Mexican Period began in 1821 when Mexico achieved independence from Spain. During the 1820s, a small village began to form at the base of Presidio Hill that became the Pueblo of San Diego (present-day Old Town). The town served as a market center and port for numerous ranchos in the region that were chiefly employed in cattle raising for the exportation of hides and tallow. In 1846, San Diego was occupied by American troops and officially became part of the United States when the Treaty of Guadalupe Hidalgo formalized the transfer of territory from Mexico to the United States in 1848.

European contact with coastal southern California began as early as 1542, with the voyage of Juan Rodríguez Cabrillo. However, intensive interactions and contacts with interior areas only came after the establishment of the Spanish presidio and mission of San Diego in 1769. During the Spanish Period, exploratory probes into eastern San Diego County were made by Pedro Fagés and others, and the southern immigrant trail came into use by colonists from Sonora. Mission culture may have begun to impact Native culture on the western extreme of the Project area.

In the 1800s, most travel from Arizona to San Francisco by Mexican soldiers, and later by American settlers, followed Anza's route, which is roughly 13 miles south of the Project area in Mexico (NPS 2017). While the historic activity in the area during the early nineteenth century was limited primarily to travel with little settlement or resource exploitation, more intensive activity began in the 1820s, with the onset of limited placer mining in the eastern Colorado Desert. Early Spanish prospectors named the Cargo Muchacho ("loaded boy") Mountains after the gold they found there.

Mexico obtained independence from Spain in 1821. Soon thereafter, California's administrators began to shift their focus away from the Franciscan mission system and toward Hispanic lay settlement of the province. Avenues for foreign trade were opened, and private land grants became more numerous and extended farther inland from the coast.

During the Mexican American War of 1846–1848, California was occupied and subsequently annexed by the United States (U.S.). From the 1840s through the 1880s, the U.S. Cavalry established a series of camps and forts throughout Arizona, Nevada, and the California desert to protect settlers and immigrants from hostile tribes (Rice et al. 1996). Land ownership was complicated by this transition. The Treaty of Guadalupe-Hidalgo, signed in February 1848,

obligated the U.S. Government to recognize legitimate land claims in Alta California. While Mexicans initially made up most of the population, the Gold Rush after 1849 stimulated large-scale immigration into the region. Despite large land holdings and a strong cattle industry, many Mexican landowners found themselves overextended when the northern California miners' demand for meat dwindled. To pay their taxes and bills, some were forced to offer up their lands at public auction (Garcia 1975:22). Small farmers had difficulty maneuvering through the process and acquiring land (Garcia 1975:16). Settlers increasingly squatted on land that belonged to Mexicans, citing their preemption rights, which was the tradition that squatters had the first opportunity to buy the unimproved, unclaimed land for a fair price before auction (Garcia 1975:22). Squatters increasingly challenged the validity of Spanish-Mexican claims through the Board of Land Commissioners created by the California Land Claim Act of 1851 (Garcia 1975:22-23). Most Californios did not retain their original land holdings by 1860, including Santiago Arguello, who was granted the former Mission San Diego land in 1846 and eventually lost $24,000 in property (Garcia 1975:24).

Following the establishment of forts throughout the area, the California desert region again opened for exploration and settlement. As part of an effort to establish a railroad route from St. Louis to the Pacific Ocean, the U.S. Government conducted a series of surveys between 1853 and 1855 to identify feasible routes. One of the railroad survey parties, led by Lieutenant R.S. Williamson, included a young geologist, William Phipps Blake, who was the first to identify the Salton Trough as an ancient lakebed (Cory and Blake 1915; Rice et al. 1996). It was during this time that the 1856 U.S. Government Land Office survey documented several historic trails within the region, as well as the Tipai settlement at San Sebastian Marsh (von Till Warren and Roske 1981; Warren et al. 1981).

By 1860, most of the land in San Diego region was unimproved farmland and some ranches (Garcia 1975:15). Settlement of the area occurred through homesteading primarily, which was authorized by the Homestead Act during the Civil War. The Timber Act, passed in 1873, also spurred settlement. It required a 10-year cultivation period of healthy trees. Some speculators and ranchers used this law as a way to obtain land for purposes other than what the patent stated. In the 1870s and 1880s, small farming communities were quickly established throughout San Diego County as settlers took up homestead claims on government land or small holdings purchased from real estate developers.

Significant economic development of the Colorado Desert region began in the 1870s and came to fruition in the early part of the twentieth century. Development was dependent largely on transportation and the availability of potable water. The first of these came in 1872 with the construction of the Southern Pacific Railroad from Los Angeles to present-day Indio, and eventually to Yuma. The early townsite of Indio, the midpoint between Los Angeles and Yuma, was created to provide living quarters for train crews and railroad workers. The first trains ran on May 29, 1876 (Pittman 1995:36). The Southern Pacific continued east, paralleling an 1857 road along the eastern side of the Salton Trough. Railroad stops were built at Walters (now called Mecca), Woodspur (Coachella), and Thermal, among others. The same large dunes that had hindered de Anza's expedition hindered construction of the railroad.

The Southern Pacific Railroad was finally forced to build along the eastern edge of what came to be known as the Imperial Sand Dunes. Railroad sidings in the area with names such as Glamis, Amos, and Ogilby developed into small company towns. The second Transcontinental Railroad was completed when the Southern Pacific and Atchison, Topeka, and Santa Fe Railroads were linked at Deming in New Mexico Territory on March 8, 1881, providing settlers relatively quick and easy access to the region. The citizens of Imperial Valley petitioned the Southern Pacific Company to build a branch line south, connecting the valley to the main Southern Pacific Railroad. In 1903, the line was completed from Old Beach (Niland) to Imperial. By 1904, the line had been extended to Calexico (Heath 1945). A branch line ran from El Centro to Seeley, connecting the Southern Pacific to the San Diego and Arizona Eastern Railroad (Farr 1918). The San Diego and Arizona Eastern Railroad ran from 1919 to 1983, connecting San Diego and Imperial Counties (Crawford 2010).

The completion of the railroad resulted in an unprecedented real estate boom for the city and county of San Diego. The population of San Diego swelled by 700 percent from 5000 in 1885 to 40,000 in 1889 (Hector et al. 2004:18). Most of the growth was concentrated in the coastal areas and adjacent inland valleys west of the present Project area, but interior areas began to experience significant development during the first decade of the twentieth century, with the inauguration of an irrigation system tapping the waters of the Colorado River.

The County of Imperial was founded on August 15, 1907 from the eastern portion of San Diego County. It was the last county to be organized in California and measures 4,087 square miles in area (O'Dell 1957:8). Largely unoccupied by Euro-Americans through much of the early nineteenth century, the historic development of the western portion of the Imperial County has been influenced by three major water bodies. These include the Alamo River, Salton Sea, and the New River. All three landforms are the result of a manmade accident that occurred between 1905 and 1907.

The Alamo Canal, completed in 1901 by the California Development Company, was the first canal to serve Imperial County. By 1905, Imperial County had 80 miles of canals and 700 miles of distribution canals. Most of the water was redirected from Colorado River, providing water to 12 water districts that served Imperial Valley. During 1905 and 1906, a series of flash flood events on the Colorado River caused repeated breaches in the manmade levee system. As a result, the river changed course and most of its discharge flowed north until the levee system was finally repaired in early 1907. The result of these flood events was the formation of California's largest freshwater lake, the Salton Sea. Left on its own, the water in the Salton Sea would have eventually evaporated. But in 1928, Congress acted to designate the area as storage for wastes and seepage water from irrigated lands in Imperial Valley. Since then, the sea has been used mainly as a repository for agricultural wastewaters (Ponce 2005).

Prior to 1936, the water supply for the Imperial Valley was silt laden. The canal system quickly became clogged and dredging the system was difficult and expensive. The California Development Company did not have the financial resources to keep the system clear. As described above, construction of a new control gate in 1905, coinciding with unusually heavy

floods, led the Colorado River to overflow its banks and flood the Imperial Valley. A total of 13,000 acres of irrigable land was destroyed as a result and an additional 30,000 acres left without a water supply. All crops were lost and by 1909, the California Development Company was bankrupted.

The Imperial Irrigation District (IID) was formed in 1911 under a state charter to acquire properties of the bankrupt California Development Company. By 1922, the IID had acquired 13 water companies and between 1930 and 1940, the All-American Canal (AAC) was built to replace the Alamo Canal (Dowd 1956:88). The AAC provided reliable water to the valley from the Colorado River and by 1942, became the sole source of imported water for the Imperial Valley. Today, approximately 1,667 miles of canals and laterals distribute irrigation water within IID's service area (Bureau of Reclamation n.d.).

4.3.2 Research Design for the Cultural Resources Inventory

A research design is an explicit statement of the theoretical and methodological approaches to be followed in a cultural resources study (OHP, 1990). Inventory studies, such as this one, rely on data from archaeological and historical resources visible on or above the ground surface with supplemental information provided by archival research and literature review (OHP, 1991). In such studies, the focus of the research design is to ensure the adequacy of the identification effort. Should any identified resources within the Project area have sufficient age and integrity to warrant consideration for California Register of Historical Resources (CRHR) eligibility, then relevant research questions and data requirements may be posed to evaluate the significance of the resource and make recommendations regarding determinations of eligibility.

For the purposes of this study, four prehistoric research domains and one historic research domain were identified. Prehistoric research domain consists of: (1) Cultural chronology; (2) subsistence, settlement, and mobility; (3) lithic technology; and (4) trade and exchange. Agriculture and ranching are the historic research domains discussed in this study.

Cultural Chronology

Chronological information can be used to understand the trajectory and rate of cultural change and to establish relationships among sites at both a local and regional level. The oldest radiocarbon dates obtained in San Diego County indicate that the area has been occupied for over 9,000 years (Kyle et al. 1998; Warren and Ore 2011: Warren et al. 1998; Williams 2014). While such early dates are lacking for the western Colorado Desert, archaeologists Malcolm Rogers and Julian Hayden asserted that certain lithic assemblages found embedded in stable desert pavements were of great antiquity. The lack of sites with subsurface stratified deposits has precluded absolute dating methods for these types of sites. However, surface assemblages of biface projectile points stylistically associated with Early Archaic style projectile points in the Mojave Desert, including Pinto and Elko series, have been identified in the Salton Basin which may be indication of early use by prehistoric populations (Apple et al. 1997; Wahoff 1999). The further development and refinement of chronological sequences of prehistoric people in the western Colorado Desert region is an important research emphasis for the Project.

Chronology is of basic importance to any archaeological research endeavor because it provides a context for addressing many other research issues. Thus, the precision and accuracy of dates are critical because they form the baseline for the other research topics. For example, chronological data potentially can contribute to our understanding of the nature and timing of population movements in the area and can help to establish relationships among sites in the local or broader region. Chronological determinations may also assist in refining regional or local culture historical sequences.

Chronology building continues to be a major research emphasis in the western Colorado Desert. Most of the sites known in the region are surface sites consisting of small quantities of lithic and ceramic artifacts. As previously noted, stratified sites of any kind are very rare in the western Colorado Desert (Cleland and Apple 2003; Schaefer 1994). Thus, various factors have conspired to hinder the development of an adequate cultural chronology of the region.

One of the most important research goals of any prehistoric research program in the western Colorado Desert should be the refinement of the regional chronological framework. Any site that contains organic cultural remains suitable for radiocarbon dating could prove useful in this endeavor, as would any site with chronologically sensitive artifacts such as projectile points and ceramics. Beyond this general observation, key chronometric topics for the region are (1) the reliability of regional dating methods, (2) the earliest phases of human occupation of the region, (3) the poorly understood Archaic period occupation, and (4) a refinement of the regional ceramic sequence.

Absolute dating techniques are preferable to relative dating of diagnostic artifacts because absolute dating is an independent assessment of the age of the site. Radiocarbon dating is an extremely accurate and reliable method for establishing the age of organic materials (e.g., charcoal, wood, burned floral remains, bone, shell, organic-rich soil). Obsidian hydration is an alternative means of dating that can provide relatively reliable results, provided the source of the material is known and multiple samples are submitted to omit any outliers. Thermoluminescence dating of ceramics and fire-affected rock is a less common method for establishing absolute dates, but it can be effective and reliable when sample sizes are sufficiently large.

If there is no material appropriate for establishing absolute dates for a site, a relative chronology may be established by linking temporally diagnostic artifact types (e.g., projectile points, ceramics, shell beads, etc.) present at the site to the regional culture history. However, this latter relative dating method would be much less precise. Ideally, relative dating results from the site would support absolute dating results, so that ages obtained through radiocarbon, obsidian hydration, or thermoluminescence techniques can be used in conjunction with diagnostic time-marker artifacts to assess the overall age of a site.

The early- to middle-Holocene chronological sequences that are widely accepted for the Mojave Desert and southwestern Great Basin are largely based on changing projectile point forms, along with some other artifactual evidence, such as the increasing importance of stone milling

technology, possible changes in the degree of formality in tools, and changing lithic raw material preferences. In contrast to the situation farther north, recognized middle-Holocene sites in the Colorado Desert are notably uncommon. Early- and middle-Holocene sites in the area are most likely to be recognized by diagnostic flaked lithic tools such as projectile points, as well as the absence of late prehistoric materials. When such sites are identified, finding appropriate strategies to arrive at absolute dates for such remains will be crucial.

The signature archaeological elements of Late Prehistoric occupations include human cremation (in place of inhumation), small projectile points (indicating the replacement of the atlatl and dart by the bow and arrow), and pottery. Well-dated sites in the Coachella Valley support the proposition that pottery was not widely used until ca. A.D. 1000, although the tradition is presumed to have been present on the Colorado River by ca. A.D. 500. One aspect to be considered in the introduction of ceramics is the attraction of Lake Cahuilla for groups living on the lower Colorado River; the lake undoubtedly afforded greater opportunity for cultural interaction, which may have included the sharing of Colorado River pottery and pottery traditions. Absolute dating of archaeological deposits that contain diagnostic Late Prehistoric remains, as well as late Holocene deposits that lack some, or all, of these diagnostic materials, will be the key to refining the regional chronology. Relative dating, for instance, based on intra-site vertical superposition or inter-site horizontal contrasts, may also shed light on the sequence in which the Late Prehistoric innovations occurred.

Site types that may be associated with this research domain include temporary camps and habitation sites, lithic scatters and flaking stations with obsidian or temporally diagnostic projectile points, ceramic scatters and pot drops, thermal features containing dateable organic materials or fire-affected rocks, and cremations or human remains.

Research Questions:

- When was the site used? Which cultural period (Paleoindian, Early or Late Archaic, Late Prehistoric/Protohistoric) or complex (San Dieguito, Pinto, Amargosa, Patayan) does the site represent? Does the site consist of single or multiple components?
- Is there chronological evidence to suggest intermittent use of the site or extended use over a period of time?
- Do the chronological data at the site contribute to our understanding of the relationships between different periods or phases within established cultural sequences, or between archaeological sites in this region?
- Taken as a group, do chronological data from the sites examined here suggest patterns in the prehistoric use of the area? Which periods are well-represented with available dates, and which are not represented at all?
- When did the changes in material culture that distinguish the Late Prehistoric period manifest themselves in the Project area? Did these changes appear simultaneously, or did their adoption span a period of several centuries, or even

longer? If the changes were not original, local innovations, from what direction(s) did they come?

It is anticipated that the types of data needed to address these questions will derive primarily from in-field analysis of surface artifacts that are temporally diagnostic, including projectile points, beads, milling tools, or pottery that has stylistic attributes. Degree of patination on lithic materials may also be indicative of age. Later sites within this period also show greater richness of the types and functions of lithic artifacts within their assemblages (Schaefer 2006). The presence of obsidian artifacts (i.e., Obsidian Butte materials) may also provide chronological information. If subsurface testing is required as part of the evaluation process, then radiocarbon samples (i.e., charcoal or other organic material) may be obtained that could be beneficial in addressing questions related to chronology.

Subsistence, Settlement, and Mobility

Environmental conditions influencing prehistoric use and occupation of the Project area and surrounding regions changed over the millennia. Paleoenvironmental, paleobotanical, and geomorphologic investigations suggest that the climate, vegetation, and landscape of the Southern California region changed dramatically at the end of the Pleistocene, from wet and cool conditions to a drier and warmer regime. Schaefer (2006) has drawn attention to this variability as important in understanding changing land use in the western Colorado Desert. Paleoenvironmental reconstruction, based on data from adjacent desert areas, has suggested that the latest period of prehistory (circa 800–200 B.P.) was particularly prone to decadal to century-long variability in precipitation, with two particularly significant drought cycles occurring during the Medieval Climatic Anomaly (Jones et al. 1999; Stine 1994).

Human responses and adaptations to changing environmental conditions would most likely be evidenced in changes in subsistence and settlement practices. Subsistence and settlement systems of hunter-gatherer societies are flexible, ranging in a spectrum from "foragers" to "collectors," with foragers primarily employing a strategy of movement of the group to resource patches, and collectors moving resources to residential areas (Binford 1980). Archaeological sites that exhibit a rich, diverse, and dense collection of artifacts and features can potentially be indicative of a more permanent habitation site. Archaeological sites with more limited material culture could indicate the location of a temporary or seasonal encampment or site. It is also important to note that the development of modern infrastructure (i.e., roads, gas lines, bridges, etc.) have altered the hydrographic features of the desert landscape. This may have the effect of obscuring the locations of prehistorically favorable washes that would have supported a variety of plant and animal resources. Researchers should consider these landscape alterations in examining prehistoric settlement and land use issues.

Beyond the depositional and cultural historical considerations, the recordation and excavation of sites potentially provides valuable information regarding prehistoric behaviors. Here, the focus is on elucidating aspects of the subsistence economy and settlement strategies on a seasonal basis. Such analyses provide a context to better understand the diet of the prehistoric inhabitants at a site, as well how they positioned themselves in relation to the biotic resource

structure (plants, animals) on a seasonal basis. Understanding the season during which plant resources were ripe and available for processing can provide valuable information on settlement strategies. Such analyses provide clues to which resources were available and when the Project area likely had the most food resources seasonally available. They also can provide an estimate as to where sites might fall in the overall settlement pattern or seasonal round.

The Project area may only encompass a small part of a prehistoric population's territory. As such, archaeological sites within the Project area may only represent a portion of a much larger prehistoric settlement system.

Understanding settlement patterns will require chronological control to ascertain which sites were occupied during the same periods. In addition to preservation of faunal and botanical material (e.g., pollen or macrobotanical remains) that help to identify the local resource base, specialized studies of certain tool types provide important information useful for expanding on the subsistence strategies used at a site. For example, ground stone can be analyzed for the presence and variety of starches, phytoliths, pollen, and protein residues. These analyses potentially indicate whether ground stone tools (e.g., manos, metates, mortars) were used to process plants (e.g., seeds, roots, tubers) or animals, and provide insights about the past climate. Protein residue analysis conducted on chipped stone tools provides insights into the types of animals (usually identified to the family level, sometimes to the species level) a tool was used to process.

The Project is in an area that has been categorized as a resource procurement area for highly mobile desert groups and the more sedentary Colorado River populations. The Project area lies approximately one mile east of the prehistoric shoreline of Ancient Lake Cahuilla (URSpatial 2015; Rockwell et al. 2022). According to current knowledge, the area was used most intensively in the Late Prehistoric and Protohistoric periods (Singer 1984). Nevertheless, archaeological research in the western Colorado Desert has only begun to address the use of low-yield desert pavement regions with few resources, minimal evidence of human habitation, and no nearby water (e.g., Flenniken and Spencer 2001; Singer 1984).

Site types in the vicinity that may relate to this research domain include temporary camps and habitation sites, lithic scatters and flaking stations, ceramic scatters and pot drops, cleared circles, rock rings, and thermal cobble features.

Research Questions:

- What was the function of the site? How are these functions evidenced by the artifact and features at the site (e.g., chipped stone, ground stone, bone tools, flaked stone tools with use wear, shell, unmodified faunal bone, or features such as hearths, storage pits, or burials)?
- What was the subsistence economy at the site, and did it change through time? Did it correlate with a specific season or seasons? Did the patterns of resource exploitation undergo significant changes during the prehistoric period, perhaps becoming more or less intensive or extensive in response to demographic changes,

shifts in the technologies available for their exploitation, or the scheduling demands of agriculture?
- What types of chipped stone artifacts are present at the site, and what cultural activities do these artifact types represent? Are the represented chipped stone types indicative of lithic tool manufacture, retouching, and/or use?
- If utilized flakes or utilized tools are present, what resources were processed with them?
- Does the site reveal evidence of intraregional interaction and/or mobility? Are artifacts of nonlocal material or type present at the site? If so, can the source of these materials be ascertained? What types of tools are made from exotic materials?
- Are patterns in site function discernable when contemporary sites are analyzed as a group? What resource procurement and mobility behaviors are suggested by this pattern? Which areas were a focus of sedentism and which were a focus of resource gathering?

Data requirements involve accurate mapping of all resources located, including point provenience mapping of loci, features, and diagnostic artifacts identified within sites. Documentation of artifact types and counts will support analysis of relative site richness, and specific constituents of artifact assemblages could allow sites to be interpreted and categorized by function. Additionally, any potential food remains, such as bone and shell, should be documented and species tentatively identified. Any potential stream channels noted should be mapped and analyzed for correlations with the locations of other resources.

Lithic Technology

Mobile hunter-gatherers and part-time agriculturalists organized the procurement, manufacture, and discard of flaked stone tools with regard to a number of factors: the relative availability and quality of toolstone within a territorial range; the intended tool functions; the extent and character of trade networks; the frequency and nature of residential moves; the organization of work groups; and the nature of labor division based on age, gender, and status (e.g., Bamforth 1990; Beck et al. 2002; Eerkens et al. 2007; Kelly, 1988). Therefore, the material remains of lithic tool production, use, refurbishment, and disposal aid in the understanding of more general questions regarding group territoriality, mobility, settlement patterns, social organization, and trade and exchange. For example, research suggests that highly mobile peoples often make new tools to replace broken or exhausted tools when they encounter high-quality toolstone (Kelly and Todd 1988). In doing so, they discard curated tools, often from distant sources, and create a concentration of tool-making debris.

Binford (1979) has described how lithic procurement could be "embedded" within the organization of basic subsistence strategies, being scheduled and accomplished at little cost while people were in the process of securing food resources. Embedded procurement can be contrasted to a "direct" strategy in which people made planned, specific trips to lithic source locations for the sole purpose of obtaining stone. The use of an embedded procurement strategy implies greater residential mobility and a lithic technology designed for portability and either

flexibility or versatility (Kelly 1988), while direct procurement infers an importance of logistic mobility and a more diverse technology designed for reliability (Kelly 1983). Therefore, changes in toolstone procurement behavior may reflect a variety of social changes, including an intensified use of a more restricted territory, a reorganization of seasonal subsistence-related mobility, a change in social relationships between groups, or changes in the subsistence base such as the inclusion of horticulture.

Unlike most flaked stone tools, which are relatively lightweight and easily transported, ground stone tools are heavy. Mobile groups rarely carry ground stone tools with them as they move from camp to camp, preferring to leave the tools behind at habitation locales to which they intend to return (AECOM 2016). Thus, ground stone tools are often excellent indicators of relatively intensive or long-term habitation. In addition to studying ground stone tool use and disposition, archaeologists have also investigated the production of ground stone tools in the western Mojave Desert. In the study by Pendleton et al. (1986), a manufacturing area of ground stone artifacts was documented in the Chocolate Mountains north of the Project area. Located in an area containing extensive lava flows of mostly basalt, production appears to have focused on the manufacture of manos. Dozens of what appeared to be flaking stations were observed to be present that were characterized by large flakes and lozenge-shaped cores that were often found in a broken state.

The material being worked was almost exclusively vesicular basalt with angular cobbles of this same material functioning most often as the hammerstones used in the manufacturing process. It appeared that the time-consuming final stage of pecking and/or shaping the milling implements into final form likely occurred at home bases away from the quarries. A second ground stone manufacturing study was conducted in the eastern Colorado Desert adjacent to Colorado River (AECOM 2016). The study found that ground stone tools were nearly exclusively produced from cobbles obtained from alluvial fans and washes. Cobbles of volcanic, granitic, schist, or sandstone materials, which appear to have been selected because they had a natural tabular shape, were obtained for use as metates with the margins of some flaked by percussion, apparently not for shaping, but to reduce weight and increase their portability. This selection of naturally tabular materials and then the use of percussion flaking to further decrease their weight, suggests an importance for easier transport to facilitate the mobility of the groups using these tools.

Site types that may relate to this research domain include habitation sites with lithic production debris, quarry and lithic procurement sites, and lithic scatters and flaking stations.

Research Questions:

- Can remanufacture of earlier projectile point forms be identified in any recovered projectile points? If so, are such artifacts found in sufficient numbers to skew chronological data derived from projectile point styles?
- Does the lithic assemblage present at sites reflect material acquisition and initial reduction, or subsequent tool manufacture or reshaping?

- Do prehistoric sites identified in the Project area show a preference of locally accessible materials for the manufacturing or processing of lithic tools? If so, are there any sites that exhibit a combination of local and imported lithic material?
- Is it possible to determine site functionality based on the stages of lithic reduction, as determined by the analysis and documentation of debitage, tools, and other implements present?
- Can diagnostic lithic tools such as projectile points, bifaces, unifaces, or other such items be identified at prehistoric sites, and can these artifacts provide information regarding manufacturing techniques or technology that is believed to be of local origin? Are there diagnostic indicators of technological manufacture techniques or objects that might originate outside of the region and are therefore related to the importation of ideas? If imported, can the region of origin be identified?
- Is there a correlation between material selection and artifact function?
- Are different core reduction technologies apparent in the lithic assemblages examined? How are these related to the size and shape of the source materials chosen for reduction? What regional patterns of material exploitation are suggested by comparing contemporary assemblages across sites?
- Is there any evidence that scatters of flaked stone are the result of ritual activities?
- What types of flaked stone tools are present? Are the tools expedient types, suggesting that they were manufactured, used, and discarded on site, or were they curated types that were intended for later use elsewhere? What regional patterns of tool production and use are suggested by comparing contemporary assemblages across sites?
- Are ground stone implements present that may indicate repeated or relatively intensive habitation? Do the type and size of these implements provide evidence of the plants that were being processed or the seasons in which the area was occupied? What regional patterns of ground stone tool production and use are suggested by comparing contemporary assemblages across sites?

The data required to address these questions would be generated from the diagnostic stylistic attributes of flaked stone artifacts such as projectile points. Additionally, tallies of lithic artifacts by type would be required to assess the relative richness of assemblages at different sites. The reduction stage of each artifact should be noted so the relative prevalence of percussion reduction as opposed to pressure flaking can be analyzed. Additionally, the specific material that lithic items are made from should be documented.

Trade and Exchange

Lithic raw materials that may occur at sites in the Project area may have been procured from distant quarry sources by travel or trade. For example, cryptocrystalline silicates (CCS) materials such as wonderstone are known to be present in bedrock sources nearby the Carrizo Creek region (Pigniolo 1995), or from a quarry source in Mexico (Apple et al. 1997; Pigniolo 1995; Schaefer and Laylander 2007). More distant CCS sources include gravels present along the Colorado River to the east (Singer 1984:42). A prehistoric quarry site CA-SDI-12377, located to

the west in the mountain foothills of San Diego County, is a known source for a CCS material sometimes referred to as "Proctor Valley chert" (Carrico et al. 1993b).

Materials such as obsidian, while not immediately available locally, could have been obtained by limited travel to or trade from, the Obsidian Butte quarry source located along the southeastern margin of the Salton Sea. This source, however, was unavailable periodically when it was inundated by Lake Cahuilla. Obsidian originating from Eastern Sierran sources (e.g., Coso and Casa Diablo) could also be present at Project sites which would be indicative of an even more extensive trade network.

Ground stone tools were likely made mostly from local sources, either from sandstone slabs or from granitic rocks, likely available as cobbles eroded from the Peninsular Range Mountains. Soapstone (steatite) objects such as beads or arrow-shaft straighteners have possible sources in the Cuyamaca Mountains and/or Jacumba Valley, or they can come from more distant sources such as Santa Catalina Island.

Another raw material of importance was clay for ceramics. Ceramics made from clays sourced to the Salton Basin area have been documented at coastal sites to the west (Cooley and Barrie 2004:40) and the Colorado River area to the east (; Townsend 1986:195; Waters 1982b:565), an indication of travel and/or trade of these materials.

Thus, these toolstone and ceramic materials may come from both relatively local and more distant sources, suggesting local procurement and possible travel and/or trade to and from more distant locales.

Site types that may relate to this research domain include trails and sites with non-local toolstone, ceramic, and shell materials.

Research Questions:

- Are non-local obsidian and local CCS tools or debitage present that may provide evidence of long-distance trade or external relationships with other groups?
- Do the non-local sources of toolstone change through time, and/or is there an increasing emphasis on the use of local materials?
- Does the presence of other exotic materials, such as shell or steatite, illustrate these trade networks and the distances travelled?
- Are ceramics with vessel types or clays from non-local sources present in the sites that may be indicative trade long-distance trade or local relationship networks for such materials within the Colorado Desert and San Diego mountain areas?

For a site to be able to answer the above research questions and increase our understanding of past cultures or life ways, the site must contain non-local materials, including obsidian from identified sources and other exotic materials such as shell or ceramics. The artifacts would also need to be found in a datable context to address questions of change over time.

Agriculture and Ranching

California's agricultural economy boomed during the Gold Rush and expanded further in the late nineteenth century with the passage of the Homestead Act in 1862, the California Swamp and Overflow Act of 1874, and the Desert Land Act of 1877. Passage of these acts opened vast areas of public land to private citizens who were interested in developing the land for agriculture or livestock and allowed agriculture to develop in the Imperial Valley. The AAC provided reliable water to the Imperial Valley from the Colorado River and by 1942, became the sole source of imported area into the area.

Historic period use within the Project vicinity was initially associated with mining. Due to the remoteness and limited accessibility of resources, permanent settlements were few and far between. Despite this, the ever-prominent search for mineral wealth potentially hidden in the remote areas of California brought individuals, as well as more organized mining ventures, to the western Colorado Desert. Eventually, the construction of access routes, the establishment of a prosperous mining industry, and the development of essential utilities such as water and electricity during the late-nineteenth and early-twentieth centuries encouraged an increased settlement of the desert. Beginning in the late nineteenth century, the development of the valley for agriculture spurred settlement.

Site types and features potentially relevant to this research domain typically include historic-period camps, residential structures, and features of various kinds (including wells, fences, privies, ramps, and other features), and refuse scatters and dumps. To meet the significance criteria, such sites would need to have integrity and clear historical associations or contain important information that is not readily obtainable from archival sources or surface recordation.

Research Questions:

- What evidence of historical agriculture and ranching is present in the Project area?
- What evidence is available that can provide additional information related to the agricultural or ranching context and function of the site?
- What are the technological changes (e.g., horse-drawn, self-propelled) as well as the interrelated changes?
- How is the irrigation technology/history of this site unique to other area farmsteads? Did it rely on a well, pump, or canal delivery system?
- Do undisturbed historic-period deposits/features contain evidence of a specific social, ethnic, or economic group?
- Is there evidence of poverty, status, or wealth in the deposit?

The presence of an inventory of well-dated historic period artifacts would be required to address the types of agriculture and ranching performed in the area, as well as to examine variation in the social, ethnic, or economic makeup of the area's farmers and homesteaders. Creating such a dataset would be challenging since it is likely that most of the older agricultural, irrigation, and ranching equipment is gone, with only an occasional part or piece of equipment remaining. To address questions on the construction or maintenance of canal

systems, archaeological remains of work camps, canal machinery, or other artifacts pertaining to canal construction or maintenance activities would need to be identified. Individual artifacts (e.g., imported fine porcelain, mass-produced items), associated faunal remains (e.g., comparison of the quality of the animal parts or species represented), and the refuse contained in privies or dumps may define the economic structure related to homesteading and contribute to this research issue. Recovered artifacts would probably need to be compared with local collections or relevant documentation. USGS historic maps, GLO township plat maps, BLM land patent records, master title plat maps, Historical Index data sheets and other archival documents may be required to address questions of land ownership, claims, and landscape modification.

Resource Definitions

The *Instructions for Recording Historical Resources* (OHP 1995) has adopted the National Register of Historic Places (NRHP) resource categories as a basis for the classification of California's historical resources. The NRHP categories that have been defined by the National Park Service (NPS 1990) include the following:

- **Building:** A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity. "Building" may also be used to refer to a historically and functionally related unit, such as a courthouse and jail or a house and barn.
- **Structure**: The term "structure" is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.
- **Object**: The term "object" is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is associated with a specific setting or environment.
- **Site:** A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.
- **District:** A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.

For the purposes of this study, a "site" is defined as a location that has material evidence of past life, activities, and culture. The California standard is to record any cultural resources over 45 years of age, despite the NRHP threshold of 50 years of age. In general, an archaeological site should exhibit at least one of the following:

- One or more features;
- Three or more artifacts in clear association within a 25 square meters (5 by 5 meters) area; or

- Fewer than three artifacts that have data potential or are "diagnostic" (i.e., fluted points).

Resources separated by more than 30 meters or located on different landforms will be recorded as distinct sites or as isolates, unless other indicators suggested a close association. Resources were recorded as isolates if they are composed of two or fewer artifacts, including collections of artifacts that can be retrofit into two or fewer artifacts.

Survey Methods

Archaeological Survey

Prior to survey of the archaeological study area, a smaller, limited survey was conducted on portions of BLM-managed land within the overall study area encompassing proposed boring and MET Station locations and access roads for geotechnical investigations to be conducted for the Project (herein known as the Geotechnical Study Area). The Geotechnical Study Area totaled 89.9 acres.

An intensive pedestrian survey of the Geotechnical Study Area was completed by Chronicle Heritage on January 10 and 11, 2024. The cultural resource survey was conducted in accordance with the BLM Manual Section 8110.2.21.C., which is designed to identify all cultural properties "locatable from surface and exposed profile indications" within the target area defined by the Project disturbance areas (BLM 2004). The archaeologists systematically examined the ground surface using transect widths ranging to no more than 15 m (49 ft), carefully inspect landforms with potential for or containing sensitive cultural resources, unusual contours, soil changes, distinctive vegetation patterns, features (e.g., road cuts, ditches, and stream cuts), and other potential cultural sites and markers.

The survey crew navigated transects using real time maps on tablets in the ArcGIS Field Maps application. An iSX-Blue data collector global position system (GPS) unit with sub-meter accuracy was used in conjunction with the georeferenced maps. Surveyed portions of the Geotechnical Study Area were documented with digital photographs that included general views of the topography and vegetation density. A photograph log was maintained to include, at a minimum, photograph number, date, orientation, photograph description, and comments.

Architectural Survey

Prior to survey of the architectural study area, a smaller, limited survey was conducted on portions of BLM-managed land within the overall study area encompassing proposed boring and MET Station locations and access roads for geotechnical investigations to be conducted for the Project (herein known as the Geotechnical Study Area). The Geotechnical Study Area totaled 89.9 acres.

Prior to conducting the survey of the Geotechnical Study Area, records search results and historical aerial images and maps were inspected to identify the locations of potential historic built-environment resources in the survey area. During the field work effort, each of the locations identified by the desktop analysis was visited to determine if standing structures were

present in these areas. Additionally, a pedestrian survey of the entire architectural study area was completed to ensure that there were no additional historic built-environment resources in the study area that had not been identified by the desktop analysis.

Resources Inventory

A cultural resources inventory, which included archival research and Native American Coordination were conducted for the Project. The study areas for the Project were determined in accordance with the latest CEC Rules of Practice and Procedure & Power Plant Site Certification Regulations (CEC 2023) for assessing potential impacts on archaeological and architectural resources. The results of the resource inventory are presented in the following sections. Figure 4.3-1 to Figure 4.3-3 shows the archaeological study area and architectural history study area. The archaeological study area includes the Project footprint encompassing the fenced solar facility plus a 200-foot buffer; for the proposed transmission line corridors, the study area includes the Project footprint with a 50-foot buffer. Based on CEC guidance for new power plant and transmission line construction in rural settings, the architectural history study area includes all Project elements along with an up to 0.5-mile buffer.

Archival Research

An initial record search for the proposed Project area was completed at the SCIC at San Diego State University on April 20, 2022. The record search included the Project area and surrounding 1-mile-buffer. Due to subsequent changes in the Project's design, a supplemental SCIC records search was conducted November 1, 2023. The objective of the record searches was to identify prehistoric and historic period cultural resources that have been previously documented in the Project area by prior cultural resource investigations.

As part of the cultural resources inventory, Chronicle Heritage staff also conducted archival research and examined historical maps and aerial images to characterize the developmental history of the Project area and surrounding area. A summary of the results of the record search and background research is provided below.

Sixty-five previous cultural resource investigations have been conducted in the record search area since 1977 (Table 4.3-1). These include 19 transmission line projects, 4 infrastructure projects, 2 transportation-related projects, 5 telecommunications projects, 13 water projects, 2 recreational projects, 10 regional cultural inventories, 2 security projects, 7 geothermal or geo-testing projects, and 1 study of unknown purpose. Forty-four of these studies intersect the Project area.

Figure 4.3-1 Cultural Resource Study Areas (Map 1 of 3)

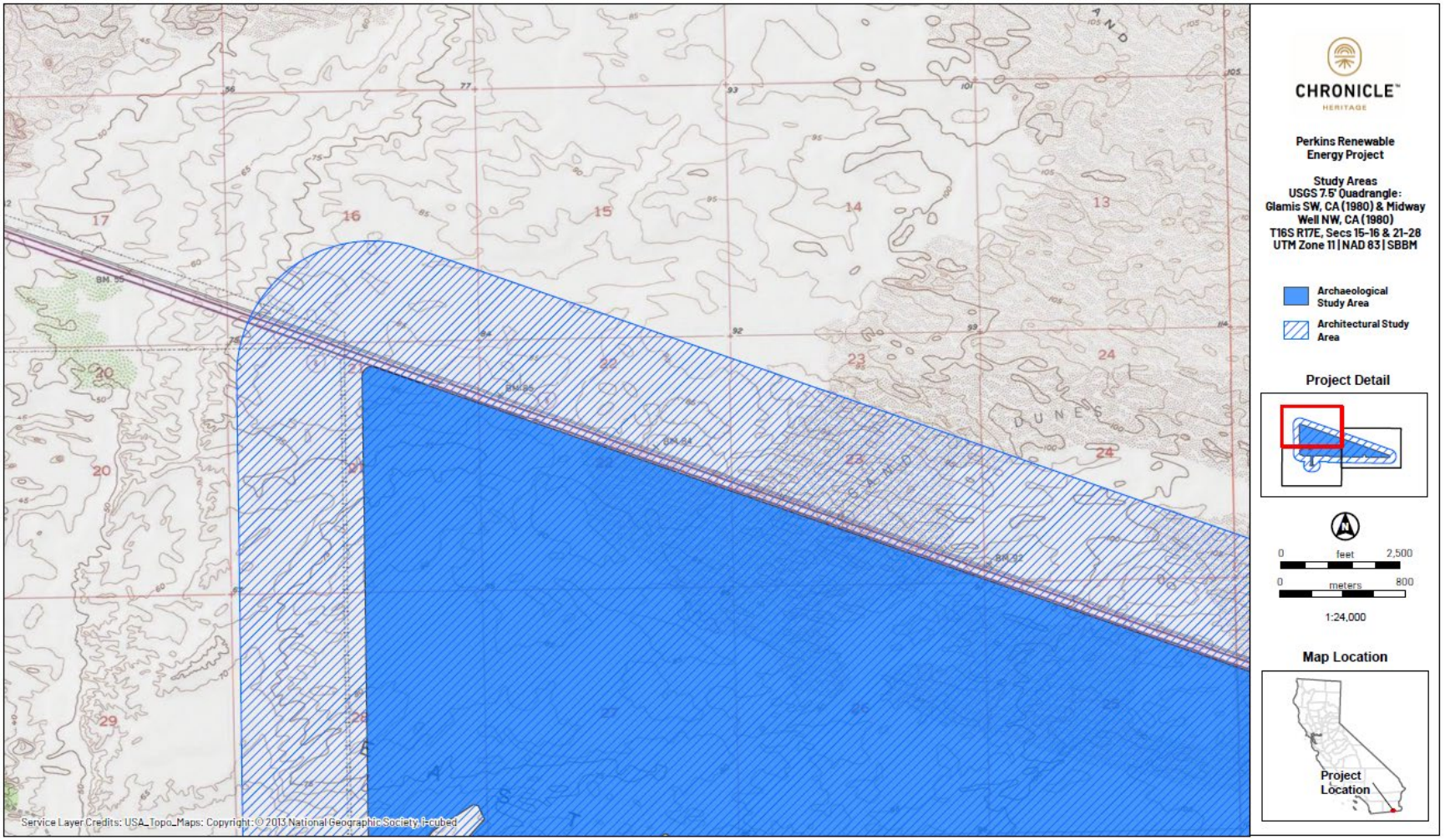

Figure 4.3-2 Cultural Resources Study Areas (Map 2 of 3)

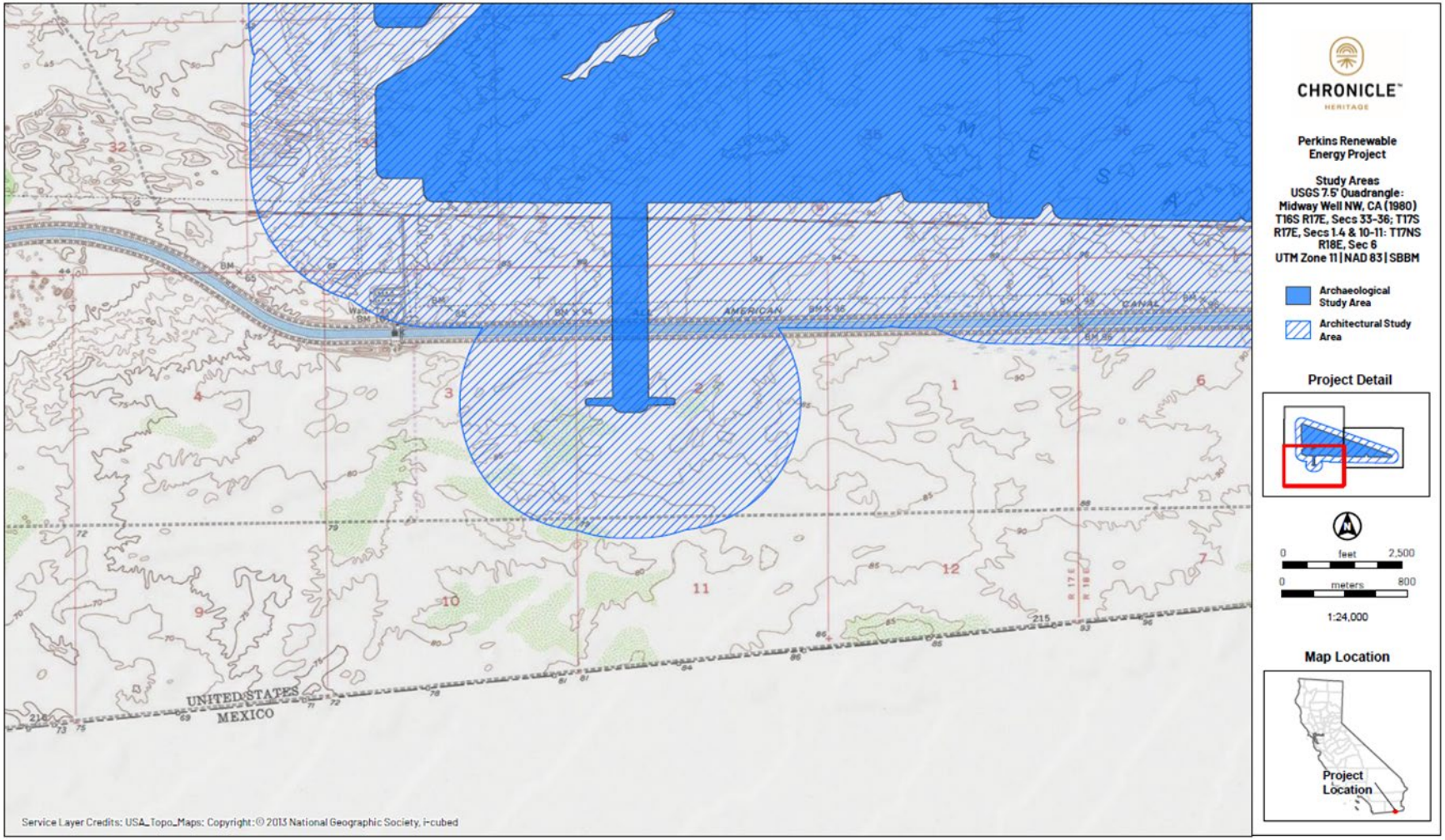

Figure 4.3-3 Cultural Resources Study Area (Map 3 of 3)

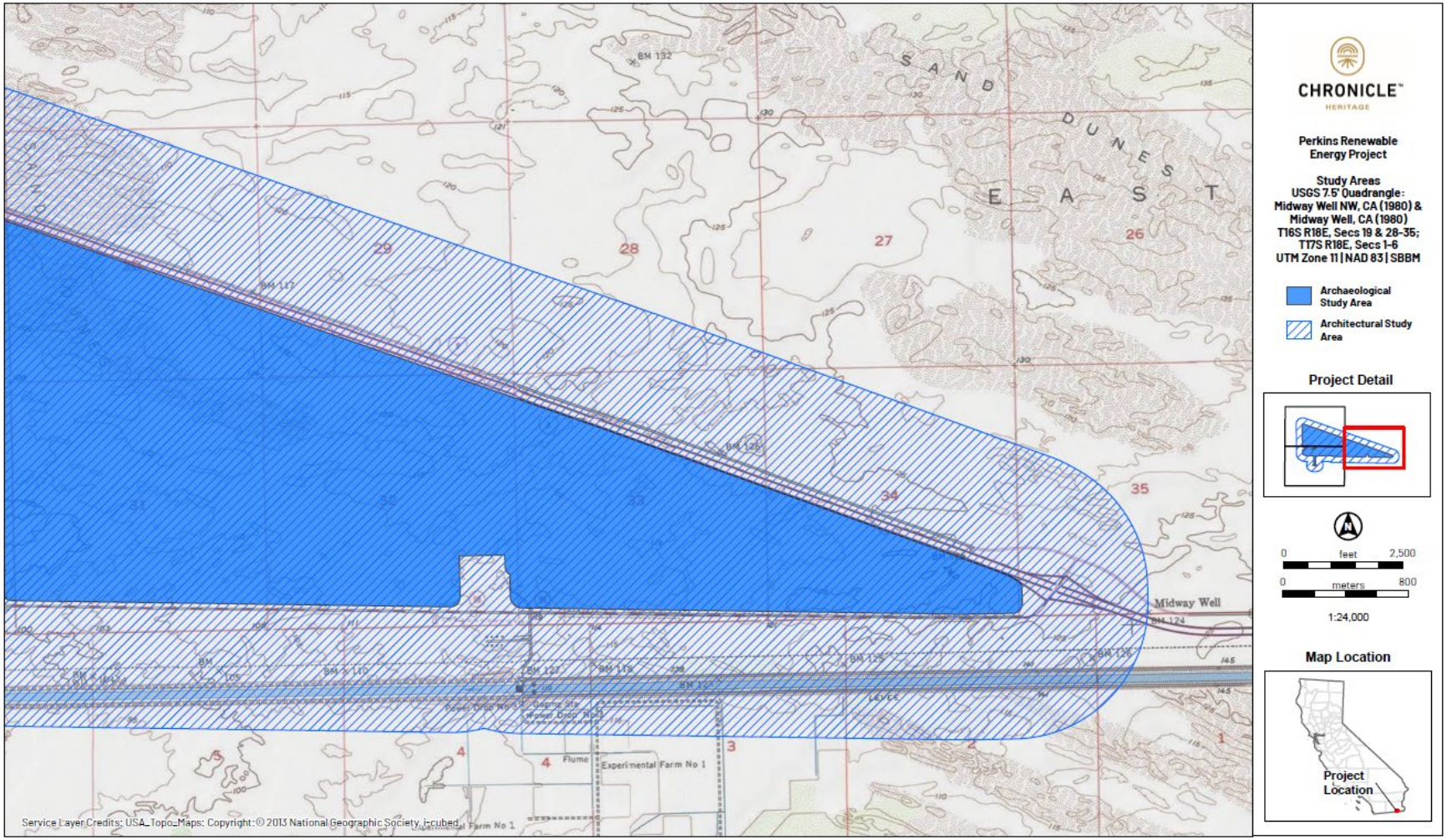

Table 4.3-1 Cultural Resources Reports within the Records Search Area

Report Authors	Date	CHRIS Catalogue NADB Numbers
Ellis, Robert R. And Robert H Crabtree	1974	IM-00010
Barker, Michael A	1974	IM-00011
Atlantis Scientific	1978	IM-00142
Eckhardt, William T.	1979	IM-00187
Eckhardt, William T.	1979	IM-00189
Walker, Carol, Charles Bull And Jay Von Werlhof	1979	IM-00199
Gallegos, Dennis	1979	IM-00203
Davis, Emma Lou	1980	IM-00207
Von Werlhof, Jay And Karen Mcnitt	1980	IM-00210
Bureau Of Land Management	1980	IM-00224
Walker, Carol, Charles Bull, And Jay Von Werlhof	1981	IM-00233
Bureau of Land Management	1981	IM-00235
Shackley, M. Steven	1982	IM-00279
Townsend, Jan	1984	IM-00311
Townsend, Jan	1984	IM-00313
Shackley, M. Steven	1984	IM-00316
Shackley, M. Steven	1984	IM-00319
Geo Operator Corporation	1987	IM-00377
Gallegos, Dennis	1987	IM-00380
Westec Services, Inc.	1987	IM-00386
Gallegos, Dennis	1988	IM-00411
Gallegos, Dennis and Andrew Pigniolo	1989	IM-00419
Green, Eileen And Joan Middleton	1994	IM-00506
Schaefer, Jerry and Collin O'Neill	1998	IM-00525
Schaefer, Jerry, Drew Pallette, and Collin O'Neill	1998	IM-00530
Burkenroad, David	1979	IM-00536
Wirth Associates, Inc.	1979	IM-00537

Report Authors	Date	CHRIS Catalogue NADB Numbers
County of Imperial	1979	IM-00538
Cultural Systems Research, Inc.	1982	IM-00547
Bureau of Land Management	1982	IM-00586
CSRI	1982	IM-00595
Schaefer, Jerry	1998	IM-00628
Schaefer, Jerry and Collin O'Neill	1998	IM-00655
Schaefer, Jerry, et al.	1998	IM-00656
Bureau of Land Management	1994	IM-00674
Dames & Moore	1993	IM-00677
Welch, Pat	1984	IM-00681
York, Andrew, Rebecca McCorkle Apple, Alex Kirkish, and Jackson Underwood	2000	IM-00703
Dominici, Debra A.	1981	IM-00732
Romulus, Mark S.	2000	IM-00755
Imperial Irrigation District	1973	IM-00786
Bureau Of Land Management	2001	IM-00824
Schaefer, Jerry and Collin O'Neill	2001	IM-00829
Hangan, Margaret	2001	IM-00853
Buysse, Johnna and Brian F. Smith	2002	IM-00914
Buysse, Johnna, Mihael Tuma, and Brian F. Smith	2002	IM-00920
Caltrans	2002	IM-00944
Schaefer, Jerry and Mark Giambastiani	2004	IM-00974
AEI Consultants	2002	IM-00976
Underwood, Jackson	2003	IM-00979
Schaefer, Jerry and Drew Pallette	1999	IM-01039
Schaefer, Jerry and Drew Pallette	1999	IM-01040
YOST, Stephen W., Michael Mirro, Lori Rhodes, J. David ING, and Howard Higgins	2001	IM-01182
Bureau of Land Management	2003	IM-01192
Bureau of Land Management	2003	IM-01193

Report Authors	Date	CHRIS Catalogue NADB Numbers
Bureau of Land Management	2007	IM-01242
Bureau of Land Management	2006	IM-01243
Ellis, Robert	1973	IM-01288
Wirth Associates, Inc	1980	IM-01306
Townsend, Jan	1983	IM-01308
Wirth Associates, Inc	1980	IM-01313
Shackley, Steven	1982	IM-01315
Schaefer, Jerry and Sherri Andrews	2005	IM-01377
Rayle, Christopher E. and Steve Swanson	2017	IM-01678
Bandy, Matthew and Jim Railey	2013	n/a

NADB = National Archaeological Database

Source: CHRIS South Central Coastal Information Center. See Appendix 5.3C for full bibliographic references.

The records search results indicated that 114 cultural resources have been previously recorded within 1 mile of the Project area (Table 4.3-2). These include 77 prehistoric resources, 36 historic period resources, and 1 resource of unknown age. Thirty-one resources are mapped within the Project area including 20 prehistoric resources and 11 historic period resources. Ninety-one resources are mapped within the architectural study area including 64 prehistoric resources, 26 historic period resources, and 1 resource of unknown age.

Prehistoric resources include several archaeological sites and isolated artifacts. Prehistoric sites consist mostly of ceramic and/or lithic scatters, although several trail segments are also represented. Features and artifacts associated with trail sites include rock concentrations, cleared circles, single vessel scatters, ceramic scatters, and lithic scatters. Isolated artifacts consist of single or small numbers of ceramic and lithics artifacts.

Historic period resources consist of archaeological sites, structures, and isolated artifacts. Historic-era archaeological sites include debris scatters, road remnants, machinery remnants, and concrete and cobble masonry structures. The historic period object is a General Lands Office (GLO) survey marker. Historic period structures include the AAC, road segments, and transmission line corridors. Finally, isolates dating to the historic period consist of single or small numbers of metal cans, bottles and bottle fragments, a glass insulator, a metal license plate, a metal pail, and miscellaneous debris.

Table 4.3-2 Previously Recorded Resources within 1 Mile of the Perkins Renewable Energy Project Area

Primary Number	Trinomial	Type	Age	Description
P-13-000309	CA-IMP-9309	Site	Prehistoric	Trail, cleared circles
P-13-000312	CA-IMP-312	Site	Prehistoric	Sherd breakage lithic shop
P-13-000314	CA-IMP-314	Site	Prehistoric	Trail, rock concentrations, and ceramic scatter
P-13-000315	CA-IMP-315	Site	Prehistoric	Habitation debris and including ceramic sherds
P-13-001390	CA-IMP-1390	Site	Prehistoric	Ceramic scatter
P-13-001391	CA-IMP-1391	Isolate	Prehistoric	Ceramic sherd
P-13-001392	CA-IMP-1392	Site	Prehistoric	Ceramic scatter
P-13-001394	CA-IMP-1394	Isolate	Prehistoric	Ceramic sherd
P-13-003048	CA-IMP-3048	Site	Prehistoric	Ceramic scatter
P-13-003049	CA-IMP-3049	Isolate	Prehistoric	Orange chert flake
P-13-003050	CA-IMP-3050	Site	Prehistoric	Trail segments and ceramic scatters
P-13-003052	CA-IMP-3052	Site	Prehistoric	Ceramic scatter
P-13-003053	CA-IMP-3053	Site	Prehistoric	Trail segment and ceramic scatter
P-13-003054	CA-IMP-3054	Site	Prehistoric	Ceramic scatter
P-13-003055	CA-IMP-3055	Site	Prehistoric	Trail segment and ceramic scatter
P-13-003123	CA-IMP-3123	Site	Prehistoric	Ceramic scatter
P-13-003125	CA-IMP-3125	Site	Prehistoric	Lithic scatter consisting of 1 core and 1 flake
P-13-003126	CA-IMP-3126	Site	Prehistoric	Ceramic scatter
P-13-003128	CA-IMP-3128	Site	Prehistoric	Ceramic scatter
P-13-003129	CA-IMP-3129	Site	Prehistoric	Ceramic scatter
P-13-003130	CA-IMP-3130	Site	Prehistoric	Ceramic scatter
P-13-003131	CA-IMP-3131	Isolate	Prehistoric	Jasper core
P-13-003648	CA-IMP-3648H	Site	Historic	Trash dump
P-13-003649	CA-IMP-3649/H	Site	Historic	Communications site, two insulators connected by 15 feet of wire
P-13-003805	CA-IMP-3805	Isolate	Prehistoric	Rim sherd
P-13-003806	CA-IMP-3806	Isolate	Prehistoric	Chert flake

Primary Number	Trinomial	Type	Age	Description
P-13-003807	CA-IMP-3807H	Site	Historic	Two debris scatters, a link of stakes linked together by wire, remnants of a structure, and a hearth
P-13-003808	CA-IMP-3808	Site	Prehistoric	Ceramic scatter
P-13-003809	CA-IMP-3809	Site	Prehistoric	Ceramic scatter consisting of 2 pot sherds of Lower Colorado River Buff Ware
P-13-003810	CA-IMP-3810	Site	Prehistoric	Ceramic scatter consisting of 4 pot sherds of Lower Colorado River Buff Ware
P-13-003817	CA-IMP-3817	Site	Prehistoric	Trail with lithic scatter consisting of 2 cores
P-13-003821	CA-IMP-3821	Site	Prehistoric	Ceramic scatter consisting of 9 potsherds of Tumco Buff - Yuman II
P-13-003822	CA-IMP-3822	Site	Prehistoric	Ceramic scatter consisting of 4 potsherds of Lower Colorado River Buff Ware
P-13-003823	CA-IMP-3823	Isolate	Prehistoric	Two ceramic sherds
P-13-003824	CA-IMP-3824	Isolate	Prehistoric	Chalcedony core
P-13-004238	CA-IMP-4238	Site	Prehistoric	Ceramic scatter consisting of 30+ sherds of Colorado Buffware
P-13-004239	CA-IMP-4239	Site	Prehistoric	Ceramic scatter
P-13-004240	CA-IMP-4240	Isolate	Prehistoric	Single sherd of Colorado Buffware
P-13-004241	CA-IMP-4241	Isolate	Prehistoric	Single brown/black agate flake with a worked edge (scraper)
P-13-004242	CA-IMP-4242	Site	Prehistoric	Ceramic scatter
P-13-004243	CA-IMP-4243	Isolate	Prehistoric	Two isolated lithics - one porphyry chopper and 1 shaped granite stone
P-13-004399	CA-IMP-4399	Site	Prehistoric	Ceramic scatter consisting of 36 Tizon brownware sherds
P-13-004400	CA-IMP-4400	Site	Prehistoric	Ceramic scatter consisting of 16 sherds of Tizon brownware, several of which are smoke blackened
P-13-004401	CA-IMP-4401	Site	Prehistoric	Ceramic scatter consisting of 20-30 Tizon brownware sherds within a single locus (two loci present)

Primary Number	Trinomial	Type	Age	Description
P-13-004754	CA-IMP-4754	Site	Prehistoric	Two rock scatters (possible deflated cairns), and ceramic scatter
P-13-004755	CA-IMP-4755	Site	Prehistoric	Lithic scatter consisting of 3 cores, 3 primary flakes, and 2 secondary flakes
P-13-004756	CA-IMP-4756	Isolate	Prehistoric	Quartz flake
P-13-005514	CA-IMP-5514-I	Isolate	Prehistoric	Two ceramic rim fragments (retrofit)
P-13-006075	CA-IMP-6075-I	Isolate	Prehistoric	1 quartzite secondary flake with cobble cortex and 1 Salton Buff body sherd
P-13-007130	CA-IMP-7130H	Structure	Historic	All-American Canal
P-13-007885	CA-IMP-7684H	Site	Historic	Old vehicle parts consisting of pressed rounded fenders, rivetted fenders with running boards, gas tank, seat areas, wooden cushions between metal parts, and various metal parts
P-13-007887	CA-IMP-7887	Site	Prehistoric	Lithic scatter, ceramic scatter, charcoal
P-13-007888	CA-IMP-7687	Site	Prehistoric	Lithic scatter
P-13-007889	CA-IMP-7688	Site	Prehistoric	Sparse lithic scatter with 1 ground stone component
P-13-007890	CA-IMP-7689	Site	Prehistoric	Lithic scatter
P-13-007891	CA-IMP-7690	Site	Prehistoric	Lithic scatter
P-13-007893	CA-IMP-7692	Site	Prehistoric	Lithic scatter
P-13-007894	CA-IMP-7693	Site	Prehistoric	Lithic scatter
P-13-007897	CA-IMP-7696	Site	Prehistoric	Lithic scatter
P-13-007991	CA-IMP-7723	Site	Prehistoric	Lithic scatter
P-13-008325	CA-IMP-7818	Site	Prehistoric	Ceramic scatter
P-13-008326	CA-IMP-7819H	Site	Historic	Small trash dump containing domestic items
P-13-008519	CA-IMP-7950H	Site	Historic	Experimental Farm No. 1 (farm/ranch) foundation remnants
P-13-008776	CA-IMP-8245H	Site	Historic	Refuse scatter consisting of 1 Penzoil sign, three beer cans, and one headlamp bracket
P-13-008778	CA-IMP-8247	Site	Prehistoric	Ceramic scatter

Primary Number	Trinomial	Type	Age	Description
P-13-008934		Isolate	Historic	"Half pint" liquor bottle
P-13-008953	CA-IMP-8363H	Site	Historic	Refuse scatter consisting of various machinery remains
P-13-008981	CA-IMP-8366	Site	Prehistoric	Very light lithic scatter with short trail segment
P-13-008982	CA-IMP-8367	Site	Prehistoric	Short trail segment
P-13-011260		Isolate	Prehistoric	Two ceramic sherds
P-13-011261	CA-IMP-102595	Site	Historic	Refuse scatter
P-13-011311	CA-IMP-10279	Site	Prehistoric	Trail with lithics and ceramics.
P-13-011838	CA-IMP-10658	Site	Prehistoric	Ceramic scatter consisting of 21 buffware body sherds and 1 pecking stone
P-13-011933		Isolate	Prehistoric	Two ceramic body sherds (retrofit)
P-13-011935		Site	Prehistoric	Ceramic scatter
P-13-011942		Isolate	Historic	Cable associated with construction of the All-American Canal
P-13-011943	CA-IMP-10712	Site	Historic	Machinery dump
P-13-012749	CA-IMP-11190	Site	Historic	Trash dump
P-13-014627		Isolate	Historic	One broken colorless glass Kerr Mason canning jar and hinged tobacco can
P-13-014628		Isolate	Prehistoric	Single ceramic sherd broken into four pieces
P-13-014629		Isolate	Prehistoric	One Tumco Buff or Colorado Beige rim sherd (of possible water jar)
P-13-014630		Object	Historic	One 1915 General Land Office survey quarter-section marker
P-13-014631		Structure	Historic	Two discontinuous segments of California State Route 98 (SR 98)
P-13-014632		Structure	Historic	One electricity transmission distribution line (non-operational)
P-13-014633	CA-IMP-12238	Site	Prehistoric	Lithic scatter, ceramic scatter
P-13-014634	CA-IMP-12239	Site	Prehistoric	Lithic scatter
P-13-014635	CA-IMP-12240	Site	Prehistoric	Ceramic scatter and one lithic artifact

Primary Number	Trinomial	Type	Age	Description
P-13-014636	CA-IMP-12241	Site	Prehistoric	One discreet concentration of forty-eight Salton Buff ceramic sherds
P-13-014637	CA-IMP-12242	Site	Prehistoric	Fifteen Tumco Buff ceramic sherds
P-13-014639	CA-IMP-12244	Site	Prehistoric	Dense scatter of 37 possible Colorado Beige ceramic sherds
P-13-014640	CA-IMP-12245	Site	Historic	Refuse scatter
P-13-014641	CA-IMP-12246	Site	Prehistoric	Ceramic scatter
P-13-014642	CA-IMP-12247	Site	Prehistoric	Two concentrations of Colorado Beige ceramic sherds
P-13-014643	CA-IMP-12248	Site	Prehistoric	Dense scatter of 18 Tumco Buff ceramic sherds
P-13-014644	CA-IMP-12249	Site	Prehistoric	Two concentrations of Colorado Beige or Salton Buff ceramic sherds
P-13-014645	CA-IMP-12250	Site	Historic	Refuse scatter
P-13-014646	CA-IMP-12251	Site	Historic	Refuse scatter consisting of glass bottles, hole-in-cap cans, milled lumber, and a paint can
P-13-014647	CA-IMP-12252	Site	Historic	Refuse scatter containing sanitary cans, bullet casings, bailing wire, a glass bottle, and two vertical metal pipes
P-13-014648	CA-IMP-12253	Site	Prehistoric	Ceramic scatter containing Tumco Buff or Colorado Buff ceramic sherds
P-13-014649		Structure	Historic	Single pole utility
P-13-014650		Structure	Historic	One 8-mile segment of an unpaved road, appears part of original alignment of "Ocean-to-Ocean Highway"
P-13-017209	CA-IMP-12803	Site	Historic	Refuse scatter
P-13-017210	CA-IMP-12804	Site	Historic	Refuse scatter
P-13-017211		Isolate	Historic	Shattered glass Pepsi Cola bottle
P-13-017212		Isolate	Historic	Fragments of shattered glass clear bottle
P-13-018244		Isolate	Historic	Pail with lugs for wire handle
P-13-018245		Isolate	Unknown	Pile of chert cobbles
P-13-018247		Isolate	Historic	Small non-ribbed sanitary can

Primary Number	Trinomial	Type	Age	Description
P-13-018256		Isolate	Historic	Thin, shell clothing button
P-13-018273		Structure	Historic	Dirt road, once paved in the past, now called Wooden Pole Line Road
P-13-018274		Structure	Historic	Wooden Pole Power Lines
P-13-018275	CA-IMP-13267	Site	Historic	Low-density trash scatter
P-13-018278	CA-IMP-13270	Site	Historic	Trash scatter
P-13-018280	CA-IMP-13272	Site	Historic	Trash scatter consisting of a piece of SCA glass and 3 bullet casings

Native American Coordination

A Sacred Lands File (SLF) search request of the Project APE was sent to the Native American Heritage Commission (NAHC). A response from the NAHC was received on August 30, 2022. The response stated that sacred lands listed in the SLF are present in the search area. The NAHC also provided a list of Native American representatives who may have an interest in the Undertaking.

Information request letters to these individuals were sent on February 22 and 23, 2022, via the U.S. Postal Service and email. The letter requested information on cultural resources within the Perkins Renewable Energy Project site. A round of follow up calls were subsequently conducted on March 8, 2023, to those tribes and tribal contacts who had yet to respond to the letter request.

To date, the following responses have been received:

Ms. Erica Pinto of the Jamul Indian Village responded via email on February 23, 2023, and stated that that the Tribe defers to Tribes located in closer proximity to the Project area.

Ms. Jill McCormick, the Tribal Historic Preservation Officer for the Quechan Tribe of the Fort Yuma Reservation, responded via email on February 23, 2023, requesting additional maps to clarify the Project location. Once received, Ms. McCormick responded via email February 23, 2023, stating that the Project is within the traditional lands of the Tribe and requesting for a Quechan Tribal Cultural Monitor to accompany Project survey crews. Ms. McCormick responded again on March 8, 2023, stating that the Tribe will consult directly with the Lead Agency. In December 2023, Mr. Alan Hatcher, a Quechan Tribal Cultural Monitor, was retained by Chronicle Heritage to accompany the crew during archaeological surveys of Geotechnical Study Area.

Mr. Daniel Tsosie of Campo Band of Mission Indians responded via email to the BLM on September 26, 2023, expressing interest in the Tribe providing monitors to accompany archaeological monitors during cultural resources surveys.

The results of the NAHC SLF search, the list of contacts, a sample outreach letter, a contact/response matrix, and copies of correspondence will be provided later.

The BLM has conducted outreach to Native American Consulting Parties as part of the cultural resources DRECP package, which was sent on January 10, 2024. To date, responses have been received from the Jamul Indian Village. Ms. Lisa Cumper of the Jamul Indian Village responded on January 18, 2024, requesting to participate in archaeological surveys.

4.3.3 Impact Analysis

This section describes the environmental impacts of Project construction and operation.

Summary of Results

Will be provided later.

Table 4.3-3 Summary of Cultural Resources in Project Study Area (will be provided later)

Primary Number	Trinomial	Type	Age	Description

Impact Evaluation Criteria

Appendix G, Environmental Checklist Form of the CEQA guidelines, addresses significance criteria with respect to cultural resources (PRC Sections 21000 et seq.). Appendix G (V)(a, b, d) indicates that an impact may be significant if the project will have the following effects:

- Cause a substantial adverse change in the significance of a historical resource
- Cause a substantial adverse change in the significance of an archaeological resource
- Disturb any human remains, including those interred outside formal cemeteries

Impacts and Mitigation Measures

Impact CUL-1: The Project will cause a substantial adverse change in the significance of a historical resource.

Construction and Operations

Will be provided later.

Loop-in Transmission Line and BAAH

Will be provided later.

Impact CUL-2: The project will cause a substantial adverse change in the significance of an archaeological resource.

Construction and Operations

Will be provided later.

Loop-in Transmission Line and BAAH

Will be provided later.

Impact CUL-3: The Project will disturb any human remains, including those interred outside of formal cemeteries.

Construction and Operations
Will be provided later.

Loop-in Transmission Line and BAAH
Will be provided later.

4.3.4 Cumulative Impacts
Will be provided later.

4.3.5 Proposed Best Management Practices, Project Design Features, Conservation Management Actions, and Mitigation Plans
As part of the Project, the Applicant and other entities involved in construction and operation, would implement BMPs, PDFs, and CMAs. The Applicant has also prepared mitigation plans as required by the BLM.

Project Site Components

Best Management Practices and Project Design Features
The Project would implement the following BMPs and PDFs related to cultural resources. See Appendix D.1 for the full language of the BMPs.

- PDF CUL-1 through PDF CUL-8 (Cultural Resources)

BAAH Switchyard
The same PDFs would apply to the BAAH switchyard.

Loop-In Transmission Line
The same PDFs would apply to the loop-in transmission lines.

4.3.6 Laws, Ordinances, Regulations, and Standards Compliance
The federal and state LORS that may apply to the Project related to cultural resources are summarized in Table 4.3-4 and Table 4.3-5, respectively. No local laws, ordinances, regulations, or standards for cultural resources are applicable to the Project.

Table 4.3-4 Federal Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
National Environmental Policy Act of 1969	Requires analysis of potential environmental impacts to cultural resources for federal undertakings that may have significant effect on human environment.	Will be addressed in the National Environmental Policy Act document
Section 106, National Historic Preservation Act (NHPA)	Applies if the project would require a federal permit (such as a PSD permit). The lead federal agency must take into account the effect of issuing the permit on significant cultural resources.	Will be addressed in the National Environmental Policy Act document
Desert Renewable Energy Conservation Plan (DRECP) Programmatic Agreement (PA)	Compliance with Section 106 of NHPA guided by DRECP as portions of Project area located within Imperial East Solar Energy Zone and DRECP Land Use Plan Amendment Development Focus Area	Will be addressed in the National Environmental Policy Act document
Archaeological Resources Protection Act (ARPA)	Establishes standards for permissible excavation and requirements for cooperation with federal agencies	Will be addressed in the National Environmental Policy Act document
Antiquities Act of 1906	Establishes penalties for persons who excavate or destroy cultural resources on federal land without permission from agency with jurisdiction over said land	Will be addressed in the National Environmental Policy Act document
Federal Land Policy Management Act	Applies to projects located on BLM-administered land	Will be addressed in the National Environmental Policy Act document
Native American Graves Protection and Repatriation Act (NAGPRA)	Applies should human remains be encountered on federal lands	Will be addressed in the National Environmental Policy Act document

Table 4.3-5 State Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Warren-Alquist Act	Requires cultural resources be considered.	Addressed in Section 4.3 and cultural appendices.

California Environmental Quality Act (CEQA) Guidelines	Project construction may encounter archaeological and/or historical resources.	Addressed in Section 4.3 and cultural appendices.
California Health and Safety Code Section 7050	Construction may encounter Native American graves; coroner calls the NAHC.	Addressed in Section 4.3 and cultural appendices.
California Public Resources Code Section 5097.98	Construction may encounter Native American graves; NAHC assigns Most Likely Descendant	Addressed in Section 4.3 and cultural appendices.
California Assembly Bill 52	Requires consultation with California Native American tribes for projects that may affect tribal cultural resources.	Addressed in Section 4.3 and cultural appendices.

4.3.7 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application is provided in Appendix E.1. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2.

4.3.8 References

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4.4 Geologic Hazards and Resources

This section discusses the Project's potential impacts related to geologic hazards, adverse soil conditions, topsoil loss, mineral resources, and geothermal resources. It also addresses potential impacts related to the site's suitability for the septic system planned to serve restrooms at the O&M facilities.

Section 4.4.1 describes the Project's geologic setting. Section 4.4.2 discusses the impacts of Project construction, operation and maintenance, and decommissioning and provides the criteria used to assess impact significance. Section 4.4.3 addresses cumulative impacts related to geologic hazards and resources. Section 4.4.4 describes the measures that will be incorporated into the Project to avoid and reduce impacts. Section 4.4.5 provides an overview of relevant federal, State, and local LORS and evaluates the Project's consistency with applicable requirements.

4.4.1 Environmental Setting

Regional Context

The Project Application Area is located on the eastern side of the Imperial Valley, which forms the southern portion of the Salton Trough geomorphic low within the larger context of California's Colorado Desert geomorphic province (Crowell and Sylvester 1979; Norris and Webb 1976). The Salton Trough has long been recognized as one of only a few locations where the juncture between a divergent plate boundary (the East Pacific Rise in the Gulf of California) and a major transform fault system (the San Andreas fault and related structures) is expressed on land (Crowell and Sylvester 1979).

Topography in the Imperial Valley and greater Salton Trough is largely controlled by active faulting. The west side of the Valley is bounded by a complex set of fault-related features; principal strands from north to south include the San Jacinto fault and allied structures, the Coyote Creek fault zone, the Superstition Hills fault, and the Imperial fault zone. The east side of the Valley is bounded by the San Andreas fault and farther south by the Sand Hills and Algodones faults (California Geological Survey [CGS] 2015).

The Salton Trough itself is a deep, alluviated valley. To the west lies the Peninsular Ranges uplift, comprising a core of Mesozoic crystalline (granitic) rock flanked by complexly faulted sedimentary strata that include both marine and non-marine units and range in age from Tertiary to Pleistocene (Strand 1962; Jennings 1967). To the east are the Orocopia, Chocolate, and Cargo Muchacho mountains, all broadly considered to lie within the highly extended terrane of the Southern Basin and Range province (Richard and Sherrod 1993), and generally characterized by a central core of crystalline rocks flanked by complexly faulted sedimentary strata of Tertiary age (Strand 1962; Jennings 1967; Haxel et al. 1988; Oyarzabal, Jacobson, and Haxel 1997; Powell, Fleck, and Cossette 2018).

Site Geology

Detailed geologic mapping of the site vicinity is not currently available; neither the U.S. Geological Survey (USGS) nor the California Geological Survey (CGS) has so far produced comprehensive 7.5-minute (1:24,000-scale) maps of the area. The most detailed available mapping that covers the entirety of the site is CGS's 1:250,000-scale ("2-degree sheet") regional mapping. This shows the site as situated primarily on alluvium of Holocene (Recent) age, with overlying dune sands present along the northeastern edge of the site (Strand 1962) (see Figure 4.4-1).

Geologic Hazards

The State of California issues official 1:24,000-scale regulatory mapping showing active fault corridors (earthquake fault zones) and areas subject to seismically induced landslide and liquefaction hazards (seismic hazard zones) pursuant to the Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act. However, due to a priority focus on the most affected and most heavily populated portions of the state, the Project Application Area is not covered by mapping issued to date, and areas to the immediate east of the Project Application Area also remain unmapped (CGS 2015). To the west of the Project Application Area, extensive regulatory mapping is available (CGS 1974; 1990a; 1990b; 1990c; 1990d; 1990e; 1990f; 1990g; 1990h; 2012), and the entire Imperial Valley area is covered by CGS's online active faults mapping tool (CGS n.d.), which draws heavily on Alquist-Priolo Act mapping but does not have regulatory weight.

Active Faulting and Surface Fault Rupture Hazard

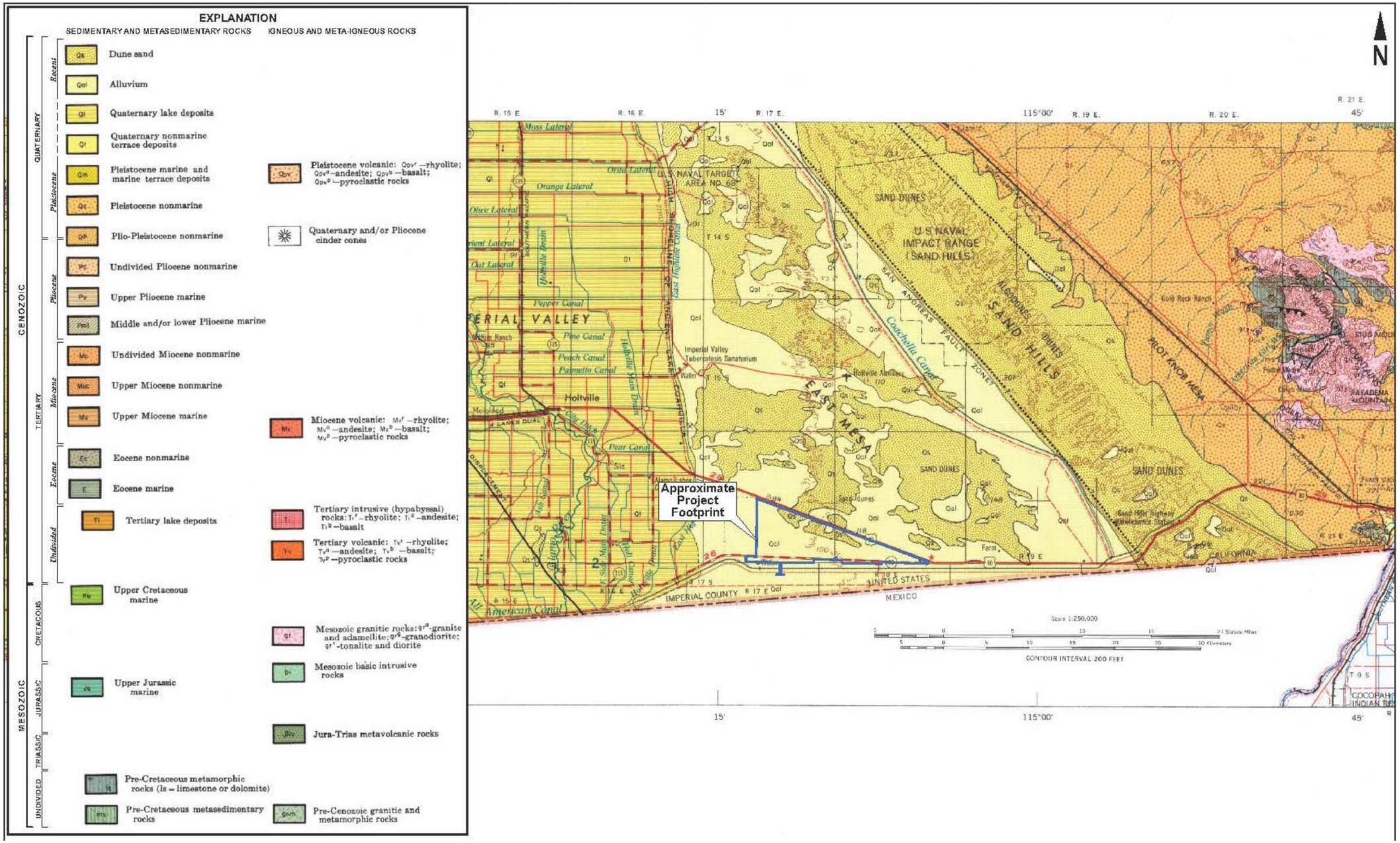
The Project Application Area does not contain any active faults (CGS 2015), as shown in Figure 4.4-2, and is therefore provisionally considered unlikely to be subject to surface fault rupture hazard.[1]

Numerous active faults are present in the region surrounding the Project Application Area. The following faults to the west of the Project Application Area are shown in Figure 4.4-2 and are zoned by the State and considered active (CGS 1974; 1990a; 1990b; 1990c; 1990d; 1990e; 1990f; 1990g; 1990h; 2012):

- Superstition Hills fault, Wienert fault (strands of San Jacinto fault zone)
- Imperial fault zone (multiple unnamed strands)
- Brawley fault zone (multiple unnamed strands)

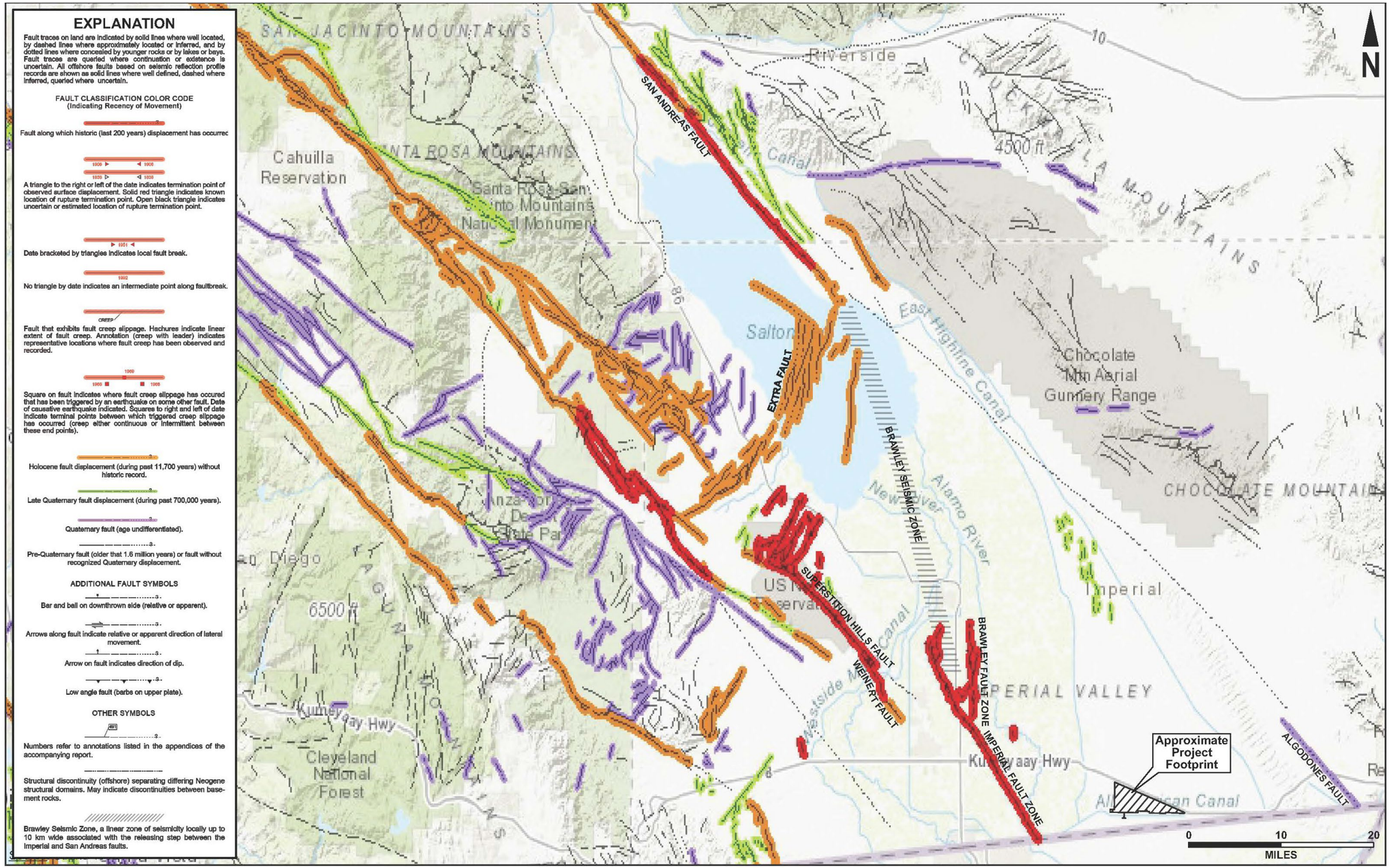
[1] This section uses the term *active* as it is defined for purposes of the Alquist-Priolo Act to refer to faults that show evidence of rupture within the last 11,700 years or within Holocene (Recent) time (CGS, n.d.-a).

Figure 4.4-1 Geologic Mapping



Source: Geologic Map of California, Olaf P. Jenkins Edition, San Diego – El Centro Sheet (Strand 1962)

Figure 4.4-2 Active Faults



Source: Geologic Map of California, Olaf P. Jenkins Edition, San Diego – El Centro Sheet (Strand 1962)

To the northeast, the San Andreas fault is also active, although the Salton Trough segment has not (or not yet) been zoned by the State (CGS 2012b; 2015). Multiple strands of the extra fault and allied structures within the Salton Sea, as well as the Brawley Seismic Zone, which connects the southern terminus of the San Andreas fault with the Imperial fault zone, are also active (CGS 2015; Hauksson, Stock, and Husker 2022; Kyriakopoulos et al. 2019). The Algodones fault to the east of the Project Application Area is known to be of the Quaternary age but is blanketed by undisplaced deposits of Holocene age and is therefore not considered active (Pearthree, Bryant, and Haller 2011).

Seismic Groundshaking Hazard

The Salton Trough is world-renowned as a seismically active area and, as noted above, the Project Application Area is located in proximity to a number of active faults, as well as smaller, potentially seismogenic features. Table 4.4-1, below, provides an overview of maximum probable earthquake events and their recurrence intervals on the major active structures in the vicinity of the Project site, where available. Fault locations are shown relative to the Project Application Area on Figure 4.4-2.

The last several decades have seen a continuous push towards improved forecasting of earthquake events and better assessing earthquake risks throughout California (Working Group on California Earthquake Probabilities 1988; 1990; 1995; 2003; 2008; 2013; Field et al. 2015). The most recent generalized predictions for the southern California region are summarized in Table 4.4-2, below.

Table 4.4-1 Overview of Seismically Active Faults in Project Vicinity

Structure	Probable maximum event	Recurrence interval
San Jacinto fault zone	M_w 6.5–7.5	100 to 300 years (per segment)
Superstition Hills fault	M_w 6.0–6.8	150 to 300 years
Imperial fault zone	M_w 6.0–7.0	Considered a "remarkably active structure"; recurrence interval varies depending on magnitude of event (M_w 6.4 events may occur every 30 to 40 years; M_w 6.9 events may occur as infrequently as every 700 years.
Brawley fault zone	M_w 5–6.5 alone; could be larger if rupture occurs in conjunction with Imperial fault zone	Uncertain; may depend on Imperial fault zone activity
Brawley Seismic Zone	Has produced events with $M_w > 5.5$	Uncertain
San Andreas fault zone	M_w 6.8–8.0	Averages approximately140 years on southern (Mojave) segment

Source: Southern California Earthquake Data Center and Seismicity in a Weak Crust: The Transtensional Tectonics of the Brawley Seismic Zone Section of the Pacific – North American Plant Boundary in Southern California, USA (SCEDC 2013; Hauksson, Stock, and Husker 2022)

Table 4.4-2 30-Year Earthquake Potential for Southern California

Event magnitude	Average repeat interval in region	Potential to occur in next 30 years
5	0.24 year	100%
6	2.3 years	100%
6.7	12 years	93%
7	25 years	75%
7.5	87 years	36%
8	522 years	7%

Source: U.S. Geological Survey (USGS 2015)

The Brawley Seismic Zone, the Imperial fault zone, and the southern Mojave segment of the San Andreas fault are among the ten structures statewide that are considered most likely to generate an earthquake with magnitude 6.7 of above over the next 30 years (Field et al. 2015).[2] In this context, the Project Application Area may experience strong seismic groundshaking within the lifespan of the Project.

Landslide and Seismically Induced Landslide Hazards

The Project Application Area is located on the Imperial Valley's gently sloping East Mesa. Elevations at the west end of the Project Application Area range from about 65 feet above mean sea level to about 80 feet above mean sea level, increasing gradually eastward to as much as 131 feet above mean sea level near the east end of the Project Application Area (Google Earth 2018). Slopes are fairly gentle and gradual for the most part and are not considered to be at substantial risk of landslides although minor localized failures are possible if oversteepening occurs. The State of California has not defined zones of seismically induced landslide hazard in the immediate vicinity of the Project Application Area (CGS, n.d.-b; 1990a; 1990b; 1990c; 1990d; 1990e; 1990f; 1990g; 1990h; 1990i; 2012a). However, like landslides in general, seismically induced landslides are not considered a primary concern at the site due to low relief and generally subtle topography.

Liquefaction Hazard

The State of California has not defined zones of liquefaction hazard in the vicinity of the Project site (CGS, n.d.-b; 1974; 1990a; 1990b; 1990c; 1990d; 1990e; 1990f; 1990g; 1990h; 1990i; 2012a), although the potential for liquefaction to affect areas within the Imperial Valley and greater Salton Trough has been recognized for some time (Bennett et al. 1984; 1981; Youd and

[2] Forecasts by the Working Group on California Earthquake Probabilities use a 30-year window. The most recent statewide predictions were issued in 2013–2015 (Working Group on California Earthquake Probabilities 2013; Field et al. 2015); consequently, "over the next 30 years" should be understood as "before about 2043".

Wieczorek 1982; Reyna and Chameau 1991; County of Imperial 1997; USGS and CGS 2011). In particular, as a result of the magnitude 6.5 Imperial Valley earthquake of October 1979, liquefaction was documented in the Bonds Corner area west of the Project Application Area (Youd and Wieczorek 1982) and at localities along the East Highline Canal, Alamo River, and Ash Main Canal south of Holtville (Johnson, Rojahn, and Sharp 1982), among others. The magnitude 7.2 El Mayor–Cucapah earthquake of April 2010 also resulted in liquefaction at a site east of the Alamo River as well as numerous locations farther west in Imperial County (USGS and California Geological Survey CGS 2011).

Liquefaction occurs when saturated, unconsolidated soil or sediment materials at or near the ground surface (typically at depths < 50 feet) lose their strength and flow in response to seismic shock (Neuendorf and American Geological Institute 2005; USGS, n.d.). In order for liquefaction to take place, specific conditions must be present: unconsolidated granular substrate materials and fairly shallow groundwater. Groundwater levels within the Project site were observed at 11 to 24 feet below ground surface during geotechnical testing in 2023. Based on the subsurface soil conditions and encountered depth of groundwater, soil conditions are potentially susceptible to liquefaction (Valdez and Morgan 2024).

Soils

Soil units in the Project Application Area are described in Section 4.11 Soils.

Mineral Resources

The State of California evaluates and classifies lands throughout the state for their mineral resource potential pursuant to the Surface Mining and Reclamation Act (see Section 3.4.5, below) but to date has not published mineral resource zone (MRZ) maps for the Project vicinity or for greater Imperial County (CGS 2015a). The County is rich in mineral resources, with economically viable deposits of gold, gypsum, sand, gravel, lime, clay, stone, kyanite (used in the manufacture of heat-resistant materials), limestone, salt, potash, and manganese, among others. Metals mining has generally concentrated in the eastern third of the county. Extraction of non-metallic resources, including sand and gravel, has occurred throughout the county, with denser concentrations of activity near the County Center, along the western edge of the county, and along the East Highline Canal (County of Imperial 2015).

Recent interest has focused on development of lithium resources associated with brines at the Salton Sea geothermal area (see next section) (Office of Energy Efficiency and Renewable Energy 2023). California Senate Bill (SB) 125, signed into law in mid 2022, authorizes the State to assist in developing these resources. With support from SB 125 funds, the County is currently developing a Specific Plan for the approximately 52,000-acre Lithium Valley area along the Salton Sea shoreline near Niland to guide and expedite development of additional power plants, mineral recovery, lithium battery manufacturing, and related industries. An Initial Study for the Lithium Valley Specific Plan was completed in late 2023 (County of Imperial 2023). The Specific Plan is being drafted as of early 2024, and the Program EIR for the Specific Plan is expected to be available in spring 2024 (County of Imperial, n.d.).

County planning maps show no prior or active mineral resource extraction sites within the Project site, although sand and gravel for construction has been extracted immediately to the northwest near the East Highline Canal (County of Imperial 2015; 2016). The Project Application Area is well outside the Lithium Valley area (County of Imperial, n.d., tit. Lithium Valley Planning).

Geothermal Resources

The Salton Sea Known Geothermal Resource Area (KGRA), one of the world's most important geothermal resources, is located on the southeast shore of the Salton Sea, extending east toward Niland and Calipatria and south toward Westmorland. Other, smaller known geothermal areas in Imperial County include Brawley, Calipatria, Heber, and East Mesa. A geothermal power plant is located approximately 2 miles northwest of the Project site, in East Mesa.

The Salton Sea geothermal field has been in commercial production since the early 1980s (California State Lands Commission 2015; Kaspereit et al. 2016; Dobson et al. 2023). A total of 11 geothermal power plants are currently in operation. The KGRA deep wells extract superheated brines associated with subsurface magma centers and convey them to the surface, where they flash to steam that is used to turn generator turbines. Cooled brines are then reinjected into the subsurface (California State Lands Commission 2015; EnergySource 2024; B.H.E. Renewables, n.d.). Recent estimates suggest that the total power generation potential of the field may be as much as 2,950 MW (Kaspereit et al. 2016). Binary geothermal power plants are operated in other geothermal resource areas within Imperial County, including the East Mesa geothermal field. Three geothermal power plants have been developed in the East Mesa field: Ormesa I, Ormesa II, and Ormesa III (Sonnelitter, Krieger, and Schochet 2000).

4.4.2 Impact Analysis

Methodology

Project impacts related to geologic hazards, mineral and geothermal resources, and soil conditions were evaluated based on available information on site geology and soils (summarized in Section 4.4.1) and in consideration of Project design and the BMPs incorporated into the Project to address site geology and soils-related concerns.

Impact Evaluation Criteria

The potential for impacts related to geologic hazards and resources were evaluated using the relevant criteria described in the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines). In 2015, the California Supreme Court in California Building Industry Association v. Bay Area Air Quality Management District (CBIA v. BAAQMD, 2015, 62 Cal.4th 369) held that CEQA generally does not require a lead agency to consider the impacts of existing environmental conditions on the future occupants or users of a project. However, if a project could exacerbate pre-existing environmental hazards or conditions, then the lead agency must analyze the impact of that exacerbated condition on the environment, which may include future occupants and users within the Project Application Area. Consistent with Appendix G of CEQA

Guidelines, a geologic hazard and resource impact would be considered significant if the Project would:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault
  - strong seismic ground shaking;
  - seismic-related ground failure, including liquefaction; or
  - landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, with the potential to result in on- or off-site landslide, lateral spreading, subsidence, or collapse;
- Be located on an expansive soil, as defined in the applicable building code, creating substantial direct or indirect risks to life or property;
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water;
- Result in loss of availability of a known mineral resource that would be of value to the region and the residents of the state;
- Result in loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Impact GEO-1

Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (*No Impact*)

Construction, Operation and Maintenance, and Decommissioning:

Project Site Components,

As discussed in Section 4.4.1 and shown in Figure 4.4-2 (page 4.4-4), the Project site is not known to be traversed by any active faults and is not in immediate proximity to known active faults. The Project is therefore considered unlikely to be subject to surface fault rupture hazard. No impact related to surface fault rupture is anticipated during construction, operation and maintenance, or decommissioning of the Project.

Breaker-and-a-Half Switchyard

As discussed in Section 4.4.1 and shown in Figure 4.4-2 (page 4.4-4), the BAAH switchyard area is not known to be traversed by any active faults and is not in immediate proximity to known active faults. The Project is therefore considered unlikely to be subject to surface fault rupture hazard. No impact related to surface fault rupture is anticipated during construction, operation and maintenance, or decommissioning of the Project.

Loop-in Transmission Lines

As discussed in Section 4.4.1 and shown in Figure 4.4-2 (page 4.4-4), the loop-in transmission line corridors are not known to be traversed by any active faults and are not in immediate proximity to known active faults. The loop-in transmission lines are therefore considered unlikely to be subject to surface fault rupture hazard. No impact related to surface fault rupture is anticipated during construction, operation and maintenance, or decommissioning of the Project.

Impact GEO-2

Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking? (*Less than Significant*)

Construction

Project Site Components

The Project site is located in a seismically active region. Project construction would last approximately 24 months. While the construction period would be short in duration, if an earthquake were to occur during construction, there is the potential for it to generate strong seismic groundshaking, which would expose workers to seismic shaking and associated risk of injury or death.

All grading and construction would adhere to the specifications, procedures, and site conditions contained in the Project geotechnical reports and final design plans, which would be fully compliant with the seismic recommendations provided by the California-registered professional engineer in accordance with California Building Code (CBC) requirements. The required measures encompass site preparation, foundation specifications, and protection measures for buried metal. The final structural designs would be subject to approval and follow up inspection by the CEC. Final design requirements would be provided to the on-site construction supervisor and the CEC to ensure compliance. Furthermore, the components would be constructed in accordance with all applicable codes, which require property line and public roadway setbacks that would protect the general public from potential hazards associated with the components that could result from an earthquake.

Construction of the Project does not include the injection of water or liquid wastes or the extraction of crude oil or natural gas in close proximity to a known earthquake fault zone or regional Quaternary faults. Accordingly, the Project would not directly include construction activities that could trigger movement along a fault.

Implementation of the applicable CBC requirements, including design requirements provided in the site-specific geotechnical reports, such as scarification and compaction of subgrade soil; cleaning, sloping, and shoring of excavation areas; use of appropriate fill materials, and preparation specifications for both shallow and deep foundations along with CEC enforcement would ensure that Project construction would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Therefore, impacts related to ground shaking during construction of the Project site components would be less than significant.

Breaker-and-a-Half Switchyard

The BAAH switchyard is located in a seismically active region. Construction of the BAAH switchyard is anticipated to last approximately 10 months. While the construction period would be short in duration, if an earthquake were to occur during construction, there is the potential for it to generate strong seismic groundshaking, which would expose workers to seismic shaking and associated risk of injury or death.

Similar to construction of the Project site components, construction of the BAAH switchyard would be subject to CBC requirements, including the design requirements included in the geotechnical reports. Due to implementation of CBC requirements and CEC enforcement, construction of the BAAH switchyard would not cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic groundshaking. Therefore, impacts related to groundshaking during construction of the BAAH switchyard would be less than significant.

Loop-in Transmission Lines

The loop-in transmission corridor is located in a seismically active region. Construction of the loop-in transmission lines is anticipated to last approximately 2 months. While the construction period would be short in duration, , if an earthquake were to occur during construction, there is the potential for it to generate strong seismic groundshaking, which would expose workers to seismic shaking and associated risk of injury or death.

Similar to construction of the Project site components, construction of the loop-in transmission lines would be subject to CBC requirements, including the design requirements included in the geotechnical reports. Due to implementation of CBC requirements and CEC enforcement, construction of the loop-in transmission lines would not cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic groundshaking. Therefore, impacts related to groundshaking during construction of the loop-in transmission lines would be less than significant.

Operation and Maintenance

Project Site Components

The Project site is located in a seismically active region. As discussed in Section 4.4.1 (Table 4.4-2), current projections estimate a 100-percent likelihood that the greater southern California region will experience at least one earthquake of magnitude 6 within the next 30 years, with a 93-percent regional probability of a magnitude 6.7 event, and 75-percent probability of at least one magnitude 7 event over the same timeframe (USGS 2015). The Imperial fault zone, southern San Andreas fault, and Brawley Seismic Zone are considered among the ten structures statewide that are most likely to produce an earthquake of magnitude 6.7 or greater during that period (Field et al. 2015). Project facilities may thus experience strong seismic groundshaking within the Project lifespan, which is anticipated to be 50 years.

All Project facilities, including the O&M building, would be designed and constructed in accordance with applicable requirements of the CBC and would be inspected by the CEC. The gen-tie line, Project substation, BESS, and other electrical facilities would be designed to meet

Institute of Electrical and Electronics Engineers (IEEE) Standard 693-2018 for seismic design of substations, as amended. The recommendations of the site-specific geotechnical investigations that would be conducted for the Project would also be implemented in the Project design. Adherence to these requirements would reduce the potential for damage and corollary impacts due to seismic groundshaking, consistent with the prevailing standard of care. Residual impacts, if any, are considered less than significant.

Breaker-and-a-Half Switchyard

The risk of strong seismic groundshaking over the operational life of the BAAH switchyard would be the same as the risk within the Project site as discussed above. Similar to the Project site components, the BAAH switchyard would be designed to meet IEEE Standard 693-2018 for seismic design and would address the recommendations of the geotechnical reports for the facilities. Adherence to the geotechnical standards and regulatory requirements would reduce the impact of strong seismic shaking on the BAAH switchyard to less than significant.

Loop-in Transmission Lines

The risk of strong seismic groundshaking over the operational life of the loop-in transmission lines would be the same as the risk within the Project site as discussed above. Similar to the Project site components, the loop-in transmission lines would be designed to meet IEEE Standard 693-2018 for seismic design and would address the recommendations of the geotechnical reports for the facilities. Adherence to the geotechnical standards and regulatory requirements would reduce the impact of strong seismic shaking on the loop-in transmission lines to less than significant.

Impact GEO-3

Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction? (*Less than Significant*)

Construction

Project Site Components

There is a potential for seismically induced ground failure, including liquefaction, within the Project site, given the potential for shallow groundwater and high seismic activity in the region. Liquefaction during construction could expose construction workers to risk of harm. In addition, any installed facilities would be subject to potential damage.

However, as discussed in Impact GEO-2 above, the Project facilities would be designed and constructed in accordance with applicable requirements of the California Building Standards Code, the Institute of Electrical and Electronics Engineers (IEEE) Standard 693-2018 for seismic design of substations, as amended, and recommendations of the site-specific geotechnical investigations, which address the potential for liquefaction and other types of seismically induced ground failure and to include requirements to avoid and reduce damage to Project facilities. Adherence to seismic requirements in the CBC, IEEE, and geotechnical recommendations would reduce the potential for damage and impacts on construction workers due to seismically induced ground failure, and the impact would be less than significant.

Breaker-and-a-Half Switchyard
Similar to the Project site, the BAAH switchyard would be sited on areas that are subject to potential liquefaction in the event of seismic activity. While construction of the BAAH switchyard would last less than a year, there is a potential for liquefaction to occur during construction. The BAAH switchyard would be designed to address seismic risk, including liquefaction in accordance with IEEE Standard 693-2018 and through implementation of the recommendations in the geotechnical reports prepared for the Project. Because structural foundations would be properly designed to address liquefaction, as appropriate, the impact of seismically induced ground failure during construction of the BAAH switchyard would be less than significant.

Loop-in Transmission Lines
Similar to the Project site, the loop-in transmission lines would be sited on areas that are subject to potential liquefaction in the event of seismic activity. While construction of the loop-in transmission lines would last less than a year, there is a potential for liquefaction to occur during construction. The transmission lines would be designed to address seismic risk, including liquefaction, in accordance with IEEE Standard 693-2018 and through implementation of the recommendations in the geotechnical reports prepared for the Project. Because structural foundations would be properly designed to address liquefaction, as appropriate, the impact of seismically induced ground failure during construction of the loop-in transmission lines would be less than significant.

Operation and Maintenance
Project Site Components
Liquefaction and related types of seismic ground failure could result in substantial damage to Project facilities during the operational life of the Project, with potentially serious safety risks if structural damage were to be involved, particularly in any occupied structures.

The Project facilities would be designed and constructed in accordance with applicable requirements of the California Building Standards Code, the Institute of Electrical and Electronics Engineers (IEEE) Standard 693-2018 for seismic design of substations, as amended, and recommendations of the site-specific geotechnical investigations that will be conducted for the Project. The geotechnical investigations will be required to address the potential for liquefaction and other types of seismically induced ground failure and to include requirements to avoid and reduce damage to Project facilities. Adherence to these requirements would reduce the potential for damage and corollary impacts due to seismically induced ground failure, consistent with the prevailing standard of care. Residual impacts, if any, are considered Less than significant.

Breaker-and-a-Half Switchyard
The BAAH switchyard would not be occupied during operation. The BAAH switchyard would be designed to address seismic risk, including liquefaction, in accordance with IEEE Standard 693-2018 and through implementation of the recommendations in the geotechnical reports

prepared for the Project. Because the BAAH switchyard would be designed to address liquefaction risk, the impact from seismic induced ground failure would be less than significant.

Loop-in Transmission Lines

The loop-in transmission lines would not be occupied during operation. The loop-in transmission lines would be designed to address seismic risk, including liquefaction, in accordance with IEEE Standard 693-2018 and through implementation of the recommendations in the geotechnical reports prepared for the Project. The loop-in transmission lines would span the All-American Canal, and the transmission structures would not affect the integrity of the All-American Canal in the event of liquefaction. Because the loop-in transmission lines would be designed to address liquefaction risk, the impact from seismic induced ground failure would be less than significant.

Impact GEO-4

Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides? (*No Impact*)

Construction, Operation and Maintenance, and Decommissioning

Project Site Components

Slopes within the Project Application Area are generally flat, with slopes ranging from 0 to 2.5 percent. Due to the virtually flat topography, landslide risk within the Project Application Area, including the Project site, would be minimal. Construction and operation of the Project would not cause a landslide because the Project would be located on flat to gentle terrain that is not prone to landslides; therefore, Project construction, operation and maintenance, and decommissioning would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides, and no impact would occur.

Breaker-and-a-Half Switchyard

Slopes within the BAAH switchyard are generally flat, with slopes ranging from 0 to 2.5 percent. Due to the virtually flat topography, landslide risk within the BAAH switchyard would be minimal. Construction and operation of the BAAH switchyard would not cause a landslide because the BAAH switchyard would be located on flat to gentle terrain that is not prone to landslides; therefore, Project construction, operation and maintenance, and decommissioning would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides, and no impact would occur.

Loop-in Transmission Lines

Slopes within the loop-in transmission lines are generally flat, with slopes ranging from 0 to 2.5 percent. Due to the virtually flat topography, landslide risk within the loop-in transmission corridor would be minimal. Construction and operation of the loop-in transmission lines would not cause a landslide because the loop-in transmission lines would be located on flat to gentle terrain that is not prone to landslides; therefore, loop-in transmission line construction, operation and maintenance, and decommissioning would not directly or indirectly cause

potential substantial adverse effects, including the risk of loss, injury, or death involving landslides, and no impact would occur.

Impact GEO-5

Would the project directly or indirectly result in substantial soil erosion or the loss of topsoil?

The potential for soil erosion and loss of topsoil is addressed in Section 4.11 (see Impact SOI-1).

Impact GEO-6

Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? (*Less than Significant*)

Seismically induced substrate instability (including liquefaction and related hazards such as lateral spreading) are addressed in Impact GEO-3, and landslide/slope failure hazards are addressed in Impact GEO-4. The discussion below focuses on other types of substrate instability, such as subsidence, compressible soils, and collapse.

Construction

Project Site Components

Construction of the Project would require minimal excavation and fill. Cut and fill is expected to be balanced on site. The Project construction would also not change the underlying geologic or soil conditions. Construction of the Project would, therefore, not cause any geologic unit to become unstable. Construction would require a total of approximately 1,000 acre-feet of water over a 2-year construction period. Because the aquifer underlying the Project Application Area is not in decline and the Project demand for water would be short term (limited to the 2-year construction period), the extraction of groundwater during construction is not expected to cause subsidence due to the low total volume of water that would be extracted over the Project site (2000 acre feet over 6,000 acre area) for a short period of time (2 years); however, additional investigation into groundwater resources and geotechnical considerations in the Project Application Area is currently in process.

Breaker-and-a-Half Switchyard

BAAH switchyard construction would also not change the underlying geologic or soil conditions. Construction of the BAAH would, therefore, not cause any geologic unit to become unstable. Because the aquifer underlying the Project Application Area is not in decline and the Project demand for water would be short term (limited to the 2-year construction period), the extraction of groundwater during construction of the BAAH (approximately 50 acre feet of the total construction water demand over a 2 year period) is not expected to cause subsidence; however, additional investigation into groundwater resources in the Project Application Area is currently in process.

Loop-in Transmission Lines

Loop-in transmission line construction would also not change the underlying geologic or soil conditions. Construction of the loop-in transmission lines would, therefore, not cause any geologic unit to become unstable. Because the aquifer underlying the Project Application Area

is not in decline and the Project demand for water would be short term (limited to the 2-year construction period), the extraction of groundwater during construction of the loop-in transmission lines (approximately 50 acre feet of the total construction water demand over a 2 year period) is not expected to cause subsidence; however, additional investigation into groundwater resources in the Project Application Area is currently in process.

Operation and Maintenance

Project Site Components

The preliminary geotechnical investigation indicate the potential for compressible soils in the near surface (Valdez and Morgan 2024). The risk of compressible or collapsible soils within the Project site would be addressed through compliance with applicable building standards and recommendations of the Project-specific geotechnical investigations conducted for the Project. Adherence to these requirements would reduce the potential for impacts related to substrate instability consistent with the prevailing standard of care, and the impact from collapsible or compressible soils would be less than significant.

The amount of water required during operation and maintenance would be limited to 50 acre-feet per year. If Project operations and maintenance water is ultimately supplied from an onsite groundwater well or well(s), the extraction of groundwater during operation is not expected to cause subsidence due to the limited amount of water that would be extracted; however, additional investigation into groundwater resources in the Project site is currently in process.

Breaker-and-a-Half Switchyard

The BAAH switchyard would not require water during operation and would therefore have no effect on subsidence. The BAAH switchyard could be located on potentially collapsible or compressible soils or unstable geologic units similar to the Project site components. Compliance with CBC and IEEE standards for design, as well as implementation of recommendations of the Project-specific geotechnical investigations, would address the risk of collapsible or compressible soils to affect the BAAH switchyard. The impact from unstable geologic units would be less than significant due to compliance with regulatory requirements and implementation of geotechnical recommendations designed to protect the Project.

Loop-in Transmission Lines

The loop-in transmission lines would not require water during operation and would therefore have no effect on subsidence. The loop-in transmission line could be located on potentially collapsible or compressible soils or unstable geologic units similar to the Project site components. Compliance with CBC and IEEE standards for design, as well as implementation of recommendations of the Project-specific geotechnical investigations, would address the risk of collapsible or compressible soils to affect the loop-in transmission lines. The impact from unstable geologic units would be less than significant due to compliance with regulatory requirements and implementation of geotechnical recommendations designed to protect the Project.

Impact GEO-7

Would the project be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1994), creating a substantial risk to life or property?

The potential for the Project to be located on an expansive soil unit is addressed in Section 4.11 (see Impact SOI-2).

Impact GEO-8

Would the project be located on soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? (*No Impact*)

Construction

Project Site Components

Construction of the Project, including the Project site components, would use portable restroom facilities that would be serviced by licensed providers. No septic system would occur on the site during construction; therefore, no impact related to wastewater would occur during construction.

Breaker-and-a-Half Switchyard

Construction of the Project, including the BAAH switchyard, would use portable restroom facilities that would be serviced by licensed providers. No septic system would occur on the site during construction; therefore, no impact related to wastewater would occur during construction.

Loop-in Transmission Lines

Construction of the Project, including the loop-in transmission lines, would use portable restroom facilities that would be serviced by licensed providers. No septic system would occur on the site during construction; therefore, no impact related to wastewater would occur during construction.

Operation and Maintenance

Project Site Components

The Project site is not currently served by sanitary sewer infrastructure. The restrooms for use by operation and maintenance facility staff would be served with an on-site septic system.

Site soils have so far not been evaluated for their capability to support septic systems; however, the design of the septic system would need to meet Imperial County Department of Public Health standards including compliance with the County ordinance regulating on-site wastewater treatment systems (Imperial County Code title 8, chapter 8.8). With these requirements in place, no impact is anticipated with regard to improperly sited or designed septic or alternative wastewater disposal systems.

Breaker-and-a-Half Switchyard

The BAAH switchyard would not contain any septic tanks or alternative wastewater disposal system. Therefore, the BAAH switchyard would have no impact related to septic tanks or alternative wastewater disposal systems.

Loop-in Transmission Lines
The loop-in transmission lines would not contain any septic tanks or alternative wastewater disposal system. Therefore, the loop-in transmission lines would have no impact related to septic tanks or alternative wastewater disposal systems.

Impact GEO-9

Would the Project result in loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? (*Less than Significant*)

Construction, Operation and Maintenance

Project Site Components
As noted in Section 4.4.1, the State of California has not issued MRZ maps for Imperial County. However, the county is rich in mineral resources, which have historically been important to the regional economy and to the state as a whole (County of Imperial 2016) and are therefore also presumed to be of local importance. Metals mining has generally been concentrated in the eastern portion of Imperial County. Extraction of sand and gravel for construction has occurred throughout the county, with denser concentrations of activity near the county center, along the county's western edge, and along the East Highline Canal. Two sand/gravel operations active until at least 2015 to 2016 are located near the East Highline Canal, west of the Project Application Area (County of Imperial 2015; 2016). No recent or current extractive operations are within the Project Application Area, and no information specific to resources at the site appears to be available. There may thus be some potential that implementing the Project would render existing mineral resources unavailable during the operating life of the Project but, given the widespread occurrences of multiple economically important minerals throughout the county and the fact that no extraction has occurred at the Project site, any impacts on mineral resources availability would be less than significant. After decommissioning of the Project, any mineral resources that may occur within the Project Application Area would be available for future extraction. Because no mineral resources are known to occur within the Project Application Area, no impact on known mineral resources would occur.

The potential to extract economically viable lithium from geothermal brines at the Salton Sea KGRA has also been the subject of intensive recent study, and the County is currently developing a Lithium Valley Specific Plan to guide and facilitate recovery of these resources, which are recognized as important to the region, the state, and potentially to the nation (County of Imperial, n.d.). The Project site is approximately 30 miles southeast of the Lithium Valley Specific Plan area, the boundaries of which coincide roughly with those of the Salton Sea KGRA. As a result, the Project would have no impact on future recovery of lithium from geothermal brines.

Breaker-and-a-Half Switchyard
The impacts of the BAAH switchyard would be the same as those for the Project components. Any impacts on mineral resources availability would be less than significant and the BAAH would have no impact on future recovery of lithium from geothermal brines.

Loop-in Transmission Lines
The impacts of the loop-in transmission lines would be the same as those for the Project components. Any impacts on mineral resources availability would be less than significant and the loop-in transmission lines would have no impact on future recovery of lithium from geothermal brines.

4.4.3 Cumulative Impacts

Impacts of the Project would be considered cumulatively considerable if they would have the potential to combine with other past, present, or reasonably foreseeable future projects to become significant. The Project would not have impacts related to fault rupture or landslides and would not result in loss of any known mineral resource or any locally important mineral resource. The Project would therefore not contribute to any cumulative impacts from fault rupture, landslides, or mineral resource availability.

The geographic scope for cumulative geologic hazards impacts is limited to development sites directly adjacent the Project. This geographic scope is appropriate for geologic hazards because geologic hazards can affect directly adjacent sites but do not impact regional areas in a cumulative manner. A list of all cumulative projects within a 6-mile radius is provided in Table 4-1, and all renewable energy projects in Imperial County are listed in Table 4-2. Cumulative projects are shown in Figure 4-1 and Figure 4-2.

The only cumulative project that is proposed in proximity to the Project is the North Gila–Imperial Valley 500 kV Transmission Project. All other cumulative projects are separated from the Project by a distance at which cumulative geologic hazard impacts would not occur. Both the North Gila–Imperial Valley 500 kV Transmission Project, and the Project would be required to comply with CBC and IEEE standards for seismic design of transmission lines and facilities. Compliance with seismic design standards would reduce any potential cumulative geologic hazard from the Project site components, BAAH switchyard, and loop-in transmission lines to less than significant.

Breaker-and-a-Half Switchyard
Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to geologic hazards and resources.

Loop-in Transmission Lines
Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project,

the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to geologic hazards and resources.

4.4.4 Proposed Best Management Practices, Project Design Features, Conservation Management Actions, and Mitigation Plans

As part of the Project, the Applicant and other entities involved in construction and operation would implement BMPs, PDFs, and CMAs. The Applicant has also prepared mitigation plans as required by the BLM. No PDFs or mitigation plans specifically apply to geologic hazards and resources.

Project Site Components

Best Management Practices

The Project would implement the following BMPs related to geologic hazards:

- BMP 79 and BMP 80
- BMP 83
- BMP 90
- BMP 93 and BMP 94
- BMP 97

Conservation Management Actions

The Project would implement the following DRECP CMAs relevant to geologic hazards:

- LUPA-BIO-5
- LUPA-BIO-9

Breaker-and-a-Half Switchyard

The same BMPs and CMAs that apply to the Project site components would apply to the BAAH switchyard.

Loop-in Transmission Corridors

The same BMPs and CMAs that apply to the Project site components would apply to the 500 kV loop-in transmission lines.

4.4.5 Laws, Ordinances, Regulations, and Standards Compliance

The following tables (Table 4.4-3, Table 4.4-4, and Table 4.4-5) provide an overview of federal, State, and local laws, ordinances, regulations, and standards (LORS) relevant to geologic hazards and resources and assess the Project's consistency with these requirements.

In addition to applicable provisions of the building codes referenced in Table 4.4-4 and Table 4.4-5, the Project would comply with the Institute of Electrical and Electronics' (IEEE's) Standard 693-2018, as amended. IEEE 693-2018 (Recommended Practice for Seismic Design of Substations) lays out seismic design recommendations for substation facilities, including qualification of different equipment types, seismic criteria, qualification methods and levels,

structural capacities, performance requirements for equipment operation, installation methods, and documentation.

Table 4.4-3 Federal Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Federal Earthquake Hazards Reduction Act of 1977 (NEHRA), as amended (42 USC §§ 7701 et seq.)	NEHRA established the National Earthquake Hazards Reduction Program (NEHRP) to reduce risks to life and property resulting from seismic activity. NEHRP is charged with • developing effective earthquake hazards reduction measures; • promoting the adoption of such measures by federal, state, and local governments; national standards and model code organizations; and other entities engaged in planning and construction; • improving understanding of earthquakes and their effects through interdisciplinary research; • developing, operating, and maintaining an Advanced National Seismic Research and Monitoring System. NEHRP is overseen by the Interagency Coordinating Committee on Earthquake Hazards Reduction, chaired by the Director of the National Institute of Standards and Technology and consisting of the Directors of the Federal Emergency Management Agency, the U.S. Geological Survey, the National Science Foundation, the Office of Science and Technology Policy, and the Office of Management and Budget. NEHRA also required the adoption of seismic safety standards for buildings constructed or leased for federal government use. It does not promulgate specific standards at the state level.	The Project would be privately owned and operated and thus is not subject to NEHRA requirements. NEHRA is not discussed further in this section.

Table 4.4-4 State Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Alquist-Priolo Earthquake Fault Zoning Act (PRC §§. 2621 et seq.)	The Alquist-Priolo Act (APA) was passed into law in 1972, in the wake of structural damage and fatalities resulting from the 1971 San Fernando Earthquake, and is intended to reduce risks to life and property from surface fault rupture during earthquakes. It prohibits the siting of most types of structures	The Project would not include any structures for human occupancy, as defined in the APA.[a] Thus, the APA would not directly regulate the Project. However, the State's mapping of active fault traces can serve as

LORS	Applicability	Compliance
	intended for human occupancy across the traces of active faults and regulates construction in state-mapped corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults and establishes a process for reviewing building proposals within earthquake fault zones, delegating the regulatory responsibility to local jurisdictions (cities and counties). Cities and counties typically use their building permit process to enforce APA requirements.	a useful resource for assessing surface fault rupture risks to all types of facilities; this is discussed further in Section 4.4.1. The Project does not span any active faults.
Seismic Hazards Mapping Act (PRC §§ 2690–2699.6)	Like the APA, 1990's Seismic Hazards Mapping Act (SHMA) aims to reduce damage resulting from earthquakes, focusing on hazards not addressed by the APA: strong groundshaking, liquefaction, and seismically induced landslides. Its approach is similar to that of the APA; the State is charged with mapping areas at risk of strong groundshaking, liquefaction, and landslides, and cities and counties are required to regulate development within those sSate-mapped *seismic hazard zones* (SHZs). Like the APA, SMHA relies on local jurisdiction permit review as its primary enforcement mechanism. Cities and counties are prohibited from issuing development permits for sites within SHZ unless appropriate site-specific studies have been carried out and measures to avoid or reduce the potential for damage have been incorporated into the development plans.	As noted above, the Project would not include any structures for human occupancy and thus would not fall under direct SHMA regulation. However, as with active fault traces, SHMA-mandated state mapping of other seismic hazards is a useful source for assessment of risks to all types of facilities; this is discussed further in Section 4.4.1.
Surface Mining and Reclamation Act (PRC §§ 2710–2719)	The Surface Mining and Reclamation Act of 1975 (SMARA) was intended to manage conflicts between urban growth and essential mineral production. It includes a comprehensive surface mining and reclamation policy that balances encouraging the conservation and production of mineral resources with the need to ensure that: • the adverse environmental effects of mining are avoided or minimized; • mined lands are reclaimed and residual hazards to public health and safety are eliminated;	There are no active or prior mines within the Project Application Area, and the Project would not involve mineral resource extraction; SMARA is thus not expected to be directly relevant to the Project. Additionally, as discussed in Section 4.4.1, although Imperial County is rich in mineral resources, the State of California has not issued mineral resource zoning for the County to date. SMARA is not discussed further in this section

LORS	Applicability	Compliance
	• values such as recreational use, wildlife resources, watershed health, and aesthetic quality are considered when decisions to allow mining are made. SMARA is administered at the statewide level by the State Mining and Geology Board and the Office of Mine Reclamation. Under SMARA, lands throughout California are evaluated and classified into Mineral Resource Zones (MRZs), based on their mineral potential, as follows. • MRZ-1: areas where no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence • MRZ-2: areas where significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists • MRZ-3: areas with mineral deposits whose significance cannot be evaluated based on available data • MRZ-4: areas where available information is inadequate to assign any other MRZ Based on this information, the State Mining Board may designate "specific geographic areas of the state" as areas of statewide or regional significance for mineral resources. Local lead agencies with areas of statewide or regional significance within their jurisdiction must establish mineral resource management policies for incorporation into their general plans within 12 months of receiving information on the state's designation of these areas. Policies are subject to review and comment by the Board, and must: • assist in managing land uses that affect access to designated areas of statewide and regional significance; and • emphasize conservation and development of identified mineral deposits. Local jurisdictions are thus required to take mineral resource values into account in their land use planning and in project approvals.	except as it relates to the setting information presented in Section 4.4.1.
California Building Standards	Building codes in California are adopted at	The Project would adhere to all applicable requirements of the

LORS	Applicability	Compliance
Code (CBC) (CCR title 24)	the local jurisdiction level. However, the CBC applies to most facilities ("occupancies") statewide regardless of whether the local jurisdiction has formally adopted it or not and accordingly serves as a statewide minimum standard. Local governments may adopt ordinances amending the CBC if they (1) make express findings that amendment is necessary because of local conditions, and (2) the amendments are more stringent than the CBC itself. Amendments are not effective until both the findings and the amendments themselves are filed with the California Building Standards Commission. Local jurisdiction adoptions and amendments are typically contained in the Municipal Code (for cities) or County Code (for Counties). County-adopted codes and amendments apply only in unincorporated areas of each County; within City limits, the City-adopted code and amendments supersede. The CBC Is comprehensive in that it includes not only the Building Code *per se* and standards specific to residences, but also the California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, and California Green Building Standards Code. Standards for solar energy systems are contained in CBC chapter 31. The CBC is reviewed and updated every three years. The current version was published in 2022.	CBC, including seismic safety requirements and any requirements related to collapsible soils or other relevant geologic hazards.
California Fire Code (CFC) (CCR title 24, part 9)	The California Fire Code, which is part of the California Building Standards Code discussed above, represents the minimum standard for fire-safe construction in the state. Of particular relevance to the Project, the CFC includes standards for installation, operation, and maintenance of electrical energy storage systems. These include a requirement that stationary storage battery systems comply with CBC chapter 16 requirements for seismic design, including but not limited to floor loading limitations.	The Project would adhere to all applicable requirements of the California Fire Code, including seismic design requirements for battery storage facilities.

[a] For purposes of the APA, a *structure for human occupancy* is defined as one "used or intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year"—i.e., more than 40 hours per week for 50 weeks out of any given year (CCR, title 14, div. 2, section 3601(3)).

Table 4.4-5 Local Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
County General Plan Land Use Element Goal 7: Extractive Resources	General Plan Land Use Goal 7 charges County planners with identifying and protecting areas of regionally significant mineral resources in locations suitable for extractive (mining) uses. Objectives under this goal include: • providing space and land use classifications to meet current and projected economic needs for extractive activities; and • requiring extractive uses to be designed and operated such that adverse environmental effects are avoided, and compliance with SMARA (see Table 4.4-4) and County Surface Mining and Reclamation Ordinance (discussed below) is ensured.	As discussed in Section 4.4.1, the State of California has not issued Mineral Resource Zone maps for Imperial County. However, the Project site is not located in a portion of the County where previous extractive activities have concentrated and it is well outside the Lithium Valley area currently undergoing planning for lithium recovery. The Project is therefore not expected to conflict with County planning for extractive uses. The Project would not involve extractive uses and thus is not subject to SMARA (see Table 4.4-4). Consistency with the County Surface Mining and Reclamation Ordinance is discussed further below.
County General Plan Land Use Element Goal 9: Protection of Environmental Resources, Objective 9.1	Land Use Objective 9.1 targets open space preservation and establishment of compatible minimum lot sizes for lands subject to seismic hazards along with lands supporting environmental resources such as watersheds, aquifer recharge areas, sensitive vegetation, wildlife habitats, and historic/prehistoric sites.	As Section 4.4.1 describes, the Project site (like all of Imperial County) is subject to seismic hazards. The Project would result in facilities development on currently vacant land but would not introduce residential uses and thus is generally consistent with this objective's intent to minimize exposure to seismic risks.
County General Plan Conservation and Open Space Element Goal 4: Conservation of Geological Resources	General Plan Open Space and Conservation Goal 4 identifies the need to protect geologic, soil, aggregate, and mineral resources for extraction while minimizing the effects of mining on surrounding land uses and the environment. Specific objectives include: • requiring the use of "latest	The Project would not involve extractive activities; the portions of this goal that apply to extractive technologies and mine reclamation are therefore not directly applicable and are not discussed further in this section. As discussed in Section 4.4.1 and above, the Project site is well outside the Lithium Valley area

LORS	Applicability	Compliance
	technologies" for extraction, to protect the desert environment; • requiring mineral extraction and mine reclamation to be conducted in a manner that is compatible with surrounding land uses and minimizes adverse environmental effects; • safeguarding the use and development of mineral deposits; • regulating development around mineral deposits and geothermal operations for safety; and • preserving significant geologic features, including the Algodones Dunes, Imperial Sand Dunes, and Salton Buttes.	currently undergoing specific plan development and is not known to support other economically viable mineral resources. As discussed in Section 4.4.2, Impact GEO-9, the Project is not expected to conflict with use or development of mineral resources and is therefore consistent with this goal.
County General Plan Seismic and Public Safety Element Goal 1: Land Use Planning and Public Safety	County General Plan Seismic and Public Safety Goal 1 emphasizes the need to incorporate public health and safety considerations into land use planning. This includes: • ensuring that information on geologic hazards is considered in the land use and development review processes; • regulating development in the vicinity of mineral deposits and geothermal operations; • requiring avoidance of those seismic risks that can be avoided, and implementing measures to reduce injury/fatality, property destruction, and disruption of services due to seismic hazards; • requiring developers to provide information on geologic/seismic hazards when siting projects; • encouraging reclamation of mined lands.	As discussed in Section 4.4-2 (Impacts GEO-1 through GEO-3) and in Table 4.4-4, the Project would be designed, constructed, and maintained in consideration of seismic hazards at the site, including compliance with applicable seismic design codes and recommendations of site-specific geotechnical investigations. It is therefore consistent with the first objective under this goal. As discussed in Section 4.4.1 and above, the Project site is not located in areas with known mineral resources or in proximity to known geothermal resources. The second objective is therefore not applicable and is not discussed further. Complete avoidance of seismic risks is arguably infeasible for any site in Imperial County (see Section 4.4.1). However, as noted above and discussed further in Section 4.4.2, the Project would be constructed in compliance with applicable seismic design codes and site-specific geotechnical recommendations, and would thus be consistent with

LORS	Applicability	Compliance
		the third objective. To the extent they are currently known, geologic/seismic hazards affecting the site are discussed in Section 4.4.1, consistent with the fourth objective. The Project would not involve mining; the final objective is therefore not applicable and is not discussed further.
County General Plan Seismic and Public Safety Element Goal 2: Emergency Preparedness	County General Plan Seismic and Public Safety Goal 2 aims to minimize hazards to public health, safety, and welfare from natural and human-induced emergency events. Specific objectives include: • reducing risk and damage due to seismic hazards through regulation; • maintaining, using, and providing geologic and seismic information provided by the State Geologist; • requiring seismic rehabilitation of structurally unsound buildings; • reducing risks of damage from subsidence due to groundwater extraction and geothermal energy production;	This goal and its specific objectives are intended to guide County planning decisions and therefore do not apply to the Project. It is not discussed further in this section.
Renewable Energy and Transmission Element, County General Plan	Goal 7 requires the County to actively minimize the potential for land subsidence as a result of renewable energy operations. Objective 7.3 requires renewable energy facility permittees to establish and monitor subsidence detection networks in areas affected by permitted project activities and Objective 7.4 requires monitoring programs to determine the possibility or extent of induced subsidence.	The Project is not anticipated to cause subsidence as discussed in Impact GEO-6.
County Code title 9, division 15, Geological Hazards	This ordinance implements the County's responsibilities under the Alquist-Priolo Act (see Table 4.4-4). It includes standards for new and replacement residences within "special studies zones" (earthquake fault zones, or EFZs), application requirements for permitting within EFZs, and limitations on the types	As noted in Table 4.4-4 and discussed further in sections referenced there, the Alquist-Priolo Act is not directly applicable to the Project since the Project would not include structures for human occupancy.

LORS	Applicability	Compliance
	and locations of structures that may be approved within EFZs.	
County Code title 9, division 20, Surface Mining and Reclamation	This ordinance implements the County's oversight responsibilities under SMARA (see Table 4.4-4). With certain exceptions, it prohibits the conduct of surface mining operations without a County permit and County-approved reclamation plan and financial assurances for reclamation and lays out the application and review processes for those materials. Administrative and enforcement responsibility rests with the County Department of Planning and Development Services. Mining permits and reclamation plans are subject to Planning Commission approval as well as the State-level review and comment process.	As noted in Table 4.4-4 and discussed further in sections referenced there, SMARA is not directly applicable to the Project since it would not involve mining activities of any kind.
County Code, title 9, division 26, Seismic Safety	Chapter 1 of this ordinance (the only chapter) is also referred to as the Unreinforced Masonry Ordinance. It is intended to reduce seismic risks associated with unreinforced masonry bearing wall buildings constructed prior to October 1, 1973, and lays out minimum standards for structural seismic resistance.	The Project would not involve unreinforced masonry buildings of any kind and, in particular, would not involve older structures built before October 1, 1973. This ordinance is therefore not applicable to the Project and is not discussed further.
County building code	The County uses the 2022 CBC (see Table 4.4-2). Based on the County Code available at https://library.municode.com/ca/imperial_county/codes/code_of_ordinances, the County does not appear to have formally adopted or amended the CBC. Note however that the Unreinforced Masonry Ordinance (see previous item in this table) still references the Uniform Building Code, which was superseded in 2000 by the International Building Code, the basis for the current CBSC.	As noted in Table 4.4-4, the Project will adhere to all applicable requirements of the CBSC and thus would also be consistent with the County's adopted building code.

4.4.6 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application is provided in Appendix E.1. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2.

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4.5 Hazardous Materials Handling

This section describes the hazards and hazardous materials in, near, and used by the Project and the potential effects associated with hazardous resources that could result from construction, operation and maintenance, and decommissioning of the Project. A Phase I ESA was conducted and is provided in Appendix P.

Section 4.5.1 discusses the environmental setting. Section 4.5.2 identifies potential impacts that may result from Project construction, operation (including maintenance), and decommissioning, including releases of hazardous materials from equipment and materials during construction, demolition, and operation, exposure to hazardous materials from existing hazardous materials sites, wildfires, airport safety, and emergency access and response plans. Section 4.5.3 evaluates potential cumulative impacts from hazardous materials handling. Section 4.5.4 discusses mitigation measures to address impacts. Section 4.5.5 provides an overview of federal, State, and local laws, ordinances, regulations, and standards applicable to the Project and compliance therewith.

4.5.1 Environmental Setting

The following discussion defines the terms used in the hazards and hazardous materials evaluation and describes the hazardous conditions of the region and Project area.

Definitions of Hazardous Materials

Terms used in the characterization of baseline conditions, regulatory framework, and impact analysis for hazards and hazardous materials are defined below.

- Hazardous material: Hazardous materials, hazardous substances, hazardous wastes, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. Section 25501(n) of the California Health and Safety Code defines hazardous material as any material that, because of its quantity, concentrations, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.
- Hazardous waste: A waste that, because of its quantity, concentration, or physical, chemical, or infectious characteristic, causes or significantly contributes to an increase in mortality or illness or poses substantial or potential threats to public health or the environment (42 U.S. Code [USC] § 6903(5)). Hazardous wastes is further defined under the Resource Conservation and Recovery Act (RCRA) as substances exhibiting the characteristics of ignitability, reactivity, corrosivity, or

toxicity. Chemical-specific concentrations that are used to define whether a material is a hazardous, designated, or nonhazardous waste include total threshold limit concentrations (TTLCs), soluble threshold limit concentrations (STLCs), and toxic characteristic leaching procedures (TCLPs), as listed in California Code of Regulations (CCR) title 22, chapter 11, article 3, section 66261, and are used as waste acceptance criteria for landfills. Waste materials with chemical concentrations above the listed thresholds for TTLCs, STLCs, and TCLPs must be sent to Class I disposal facilities, may be sent to Class II disposal facilities depending on the waste material, and may not be sent to Class III disposal facilities.1

- Screening levels for hazardous materials in soil, soil gas, or groundwater: The United States (U.S.) Environmental Protection Agency (EPA) regional screening levels (RSLs) and Colorado River Regional Water Quality Control Board (RWQCB) environmental screening levels (ESLs) are guidelines used to evaluate the potential risk associated with chemicals in soil or groundwater where a release of hazardous materials has occurred. Although developed and maintained by the RWQCB, ESLs are used by regulatory agencies throughout the state. Screening levels have been established for both residential and commercial/industrial land uses and for construction workers. Residential screening levels are the most restrictive. Soil with chemical concentrations below these ESLs generally does not require remediation and is suitable for unrestricted uses if disposed off site.

Commercial/industrial screening levels generally are less restrictive than residential screening levels because they are based on potential worker exposure to hazardous materials in the soil (and these are generally less restrictive than residential exposure thresholds). Screening levels for construction workers also are less restrictive than for commercial/industrial workers because construction workers are exposed to a chemical of concern only during the duration of construction while industrial workers are assumed to be exposed over a working lifetime. Chemical concentrations below these screening levels generally do not require remediation and are suitable for unrestricted uses. In addition, other, more specific but similar, screening levels are used for more narrowly focused human health or ecological risk assessment considerations.

Regional Setting

The Project Application Area is located in a region characterized by undeveloped natural land with scattered geothermal and utility-scale power plants. Agricultural land is located an estimated 2.5 miles west of the Project site.

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[1] Class I disposal facilities are specifically for hazardous waste, as defined under title 22 of the CCR. Class II facilities are "designated" waste facilities, and special permitting must be acquired for them to accept designated types of hazardous materials. Class III disposal facilities are strictly for non-hazardous waste (CCR title 23, division 3, chapter 15).

Land Use and Sensitive Receptors
The immediate vicinity of the Project site comprises undeveloped lands, transmission lines, and the All-American Canal. There are no sensitive receptors within 1 mile of the Project site. The nearest residence is approximately 3.3 miles west. The nearest schools are in Holtville, 9.5 miles west of the Project. The nearest hospital, El Centro Regional Medical Center, is approximately 15 miles west.

County Conditions and History
The Union Pacific railway traverses the county, and its cargo at times consists of hazardous liquids. I-8 also traverses the jurisdictions, and the cargo of many semitrucks traveling on I-8 is hazardous. Liquid petroleum products are delivered to and are transported through the county via the 22-inch Santa Fe Pacific Pipeline (SFPP) pipeline. This line is generally located adjacent to the Union Pacific Railroad right-of-way, which tracks the southeast-to-northwest orientation of Imperial Valley and consequently parallels the Imperial Fault. The SFPP pipeline serves the petroleum storage facility (tank farm) in the city of Imperial and passes near the east side of the Salton Sea to connect to the petroleum pumping station at Niland.

The petroleum pumping station and tank farm in Niland and Imperial are vulnerable to earthquakes. The 1979 Imperial Valley Earthquake, at a magnitude of 6.4, resulted in the rupture of one tank and a gasoline leak of 100 gallons per minute at the Imperial storage facility. Natural gas is delivered by the Southern California Gas (SoCal Gas) Company via twin 22-inch lines that generally run north–south through the county. These lines serve Niland, Calipatria, Brawley, Imperial, El Centro, Heber, and Calexico, and branch lines serve Holtville, Westmorland, Seeley, NAF, and Plaster City. The lines were also damaged from the 1979 earthquake (County of Imperial 2021).

Largest Concentration of Hazardous Materials in Imperial County
The following is a list of the largest concentrations of hazardous material in Imperial County, being potential sources of large leaks or spills, as identified in the Multi-jurisdictional Hazard Mitigation Plan (MHMP):

- Santa Fe Pacific Pipelines Tank Farm
- Naval Air Facility (El Centro)
- ST Services
- Brea Agricultural Service
- United Agriculture Products
- Puregro Company
- Rockwood Chemical Company
- Helena Chemical Products
- Wilbur Ellis Company

The Project is not located within 5 miles of any site identified in MHMP as having largest concentrations of hazardous material in Imperial County (County of Imperial 2021).

Wildfire Hazards

The California Department of Forestry and Fire Protection (CAL FIRE) has developed a Fire Hazard Severity Zone (FHSZ) ranking system that predicts the likelihood of an area burning. The ranking system is based on vegetation, topography, weather, crown fire potential, and ember production and movement. As shown in Figure 4.16-1, the Project site is not located in a State Responsibility Area (SRA) and is not located within a Very High Fire Hazard Severity Zone (VHFHSZ) or a FHSZ. A small portion of the County, approximately 45 miles west near the community of Ocotillo, is designated within a SRA. The Project site is located within a Federal Responsibility Area (FRA) (CAL FIRE FRAP 2018). Refer to Section 4.16: Wildfire for more information on wildland fires.

Multi-jurisdictional Hazard Mitigation Plan (MHMP)

The purpose of the Multi-jurisdictional Hazard Mitigation Plan (MHMP) is to reduce deaths, injuries, and other disaster losses caused by natural and human caused hazards in Imperial County. The MHMP describes past and current hazard mitigation activities and outlines goals, strategies, and actions for reducing future disaster losses. The Imperial County MHMP represents the County's commitment to reduce risks from natural and other hazards and serves as a guide for decision makers as they commit resources to reducing the effects of natural and other hazards. The overall intent of the MHMP is to reduce or prevent injury and damage from hazards in the county and participating jurisdictions. It identifies past and present mitigation activities, current policies and programs, and mitigation strategies for the future. The MHMP meets the statutory requirements Title 44 CFR 201.6 – Local Mitigation Plans (County of Imperial 2021). The following are the relevant Imperial County's Hazardous Materials Goals, Objectives, and Policies:

Control Hazardous Materials

Goal 3: Protect the public from exposure to hazardous materials and wastes.

Objective 3.1: Discourage the transporting of hazardous materials/waste near or through residential areas and critical facilities.

Objective 3.2: Minimize the possibility of hazardous materials/waste spills.

Objective 3.3: Discourage incompatible development adjacent to sites and facilities for the production, storage, disposal, and transport of hazardous materials/waste as identified in the County General Plan and other regulations.

Protection of Water Resources from Hazardous Materials

Goal 4: The County will adopt and implement ordinances, policies, and guidelines that assure the safety of County ground and surface waters from toxic or hazardous materials and wastes.

Objective 4.1: The development and implementation of infrastructure and regulatory policies in the Republic of Mexico, which reduce contamination of the New River, Alamo River, and the Salton Sea.

Objective 4.2: The provision of safe and efficient community wastewater treatment facilities which adequately service the present and future needs of residential, commercial, and industrial development within the Imperial Irrigation District service area.

Project Hazardous Material Use

The Project would use hazardous materials during construction and operation (including maintenance) and would comply with applicable laws and regulations for the storage of these materials to minimize the potential for accidental release of hazardous materials. Additionally, the Project would conduct emergency response planning to address public health concerns regarding hazardous materials storage and use. The following sections describe the use of hazardous materials at the Project, followed by tables detailing the hazardous materials used and their characteristics, quantities, locations, and health hazards.

A description of the storage locations for the hazardous materials that would be used during construction and operation and maintenance is provided in Table 4.5-1. Table 4.5-2 provides information about the hazardous materials that would be used during construction and operation, including trade names, chemical names, Chemical Abstract Service (CAS) numbers, maximum quantities on site, *reportable quantities* (RQs), California accidental release program (CalARP) *threshold planning quantities* (TPQs), and status as a Proposition 65 chemical (i.e., chemical known to be carcinogenic or cause reproductive problems in humans). Health hazards, toxicity, flammability, and chemical incompatibility information are summarized for these materials in Table 4.5-3.

4.5 HAZARDOUS MATERIALS HANDLING

Table 4.5-1 Use and Location of Hazardous Materials

Chemical Name	Use/Purpose	Quantity	Storage Location	State	Type of Storage Container	Project Phase
Cleaning chemicals/ detergents	Cleaning	Not available (NA)	O&M Building	Liquid	Cans, buckets	Construction and/or O&M
Paint	Construction and O&M	NA	O&M Building	Liquid	Cans, buckets	Construction and/or O&M
Diesel	O&M	400 gallons	Above ground storage tank (AST) for backup generator(s)	Liquid	AST	O&M
Propane	Construction	1,600 gallons	O&M Building	Gas	Pressurized tank	Construction
Adhesives	Construction and O&M	NA	O&M Building	Liquid, Solid	Bottles	Construction and/or O&M
Sealants	Construction and O&M	NA	O&M Building	Liquid	Bottles	Construction and/or O&M
Hydraulic fluids/GSU	O&M	480,000 gallons	Transformers	Liquid	Cans, ASTs	O&M
Hydraulic fluids/MVT	O&M	575,000	Transformers	Liquid	Cans, ASTs	O&M
Sulfur hexafluoride	O&M	620 gallons	HV breakers	Gas	Cylinders	O&M
Sulfuric acid	O&M	690 gallons	Battery cells	Liquid	In cells	O&M
Ethylene glycol solution	O&M - BESS	NA	BESS	Liquid	NA	O&M
1,1,1,2-tetrafluororethane	O&M - BESS	NA	BESS	Gas	Cylinders	O&M
Gasoline	Fueling equipment	1,800 gallons	Flammables storage locker outside O&M Building	Liquid	Cans	Construction
Coolant	Construction and O&M	50 gallons	NA	Liquid	Cans	Construction and/or O&M
Lithium-ion batteries or lead- acid battery	Construction and O&M	240 cells	Energy storage	Solid	NA	Construction and/or O&M

Table 4.5-2 Chemical Inventory, Description of Hazardous Materials On-site, and Reportable Quantities

Trade name	Chemical name	CAS number	Maximum quantity on site	CERCLA SARA RQ [a]	RQ of material as used on site [b]	HS TPQ [c]	Regulated substance TQ [d]	Prop 65 [e]
Cleaning chemicals/ detergents	Various	Various	Not available (NA)	nil	nil	nil	nil	No
Paint	Various	Various	NA	nil	nil	nil	nil	No
Diesel No. 2	Diesel No. 2	68476-34-6	2,000 gallons	nil	nil	nil	nil	No
Propane	Propane	74-98-6	1,600 gallons	nil	nil	nil	nil	No
Adhesives	Various	Various	NA	nil	nil	nil	nil	No
Sealants	Various	Various	NA	nil	nil	nil	nil	No
Hydraulic fluid (FR3 natural ester fluid)	FR3	None	427,380 gallons	42 gallons [e]	42 gallons [e]	nil	nil	No
Sulfur hexafluoride (SF6)	Sulfur hexafluoride	2551-62-4	620 gallons	nil	nil	nil	nil	No
Electrolyte	Sulfuric acid	7664-93-9	690 gallons	1,000 lbs.	3,333 lbs.	1,000 lbs.	1,000 lbs.	Yes
Ethylene glycol solution	Ethylene glycol solution	107-21-1	NA	nil	nil	nil	nil	Yes
1,1,1,2-tetrafluororethane	1,1,1,2-tetraflurorethane	811-97-2	NA	nil	nil	nil	nil	No
Gasoline	Gasoline	8006-61-9; 86290-85-1	50 gallons	nil	nil	nil	nil	No
Coolant	Various	Various	50 gallons	nil	nil	nil	nil	No
Lubricants	Oil	None	NA	42 gallons [e]	42 gallons [e]	nil	nil	No
Lithium ion batteries or lead-acid battery	Lithium-ion Batteries or Lead-Acid Battery	Various	NA	nil	nil	nil	nil	No

Notes:

nil = No reporting requirements. The chemical has no listed threshold under this requirement.

CAS: Chemical Abstract Service CCR: California Code of Regulations

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act CFR: Code of Federal Regulations

EHS: extremely hazardous substances lbs.

Prop 65: Proposition 65 RQ (reportable quantity)

SARA: Superfund Amendments and Reauthorization Act TPQ (threshold planning quantity)

TQ: threshold quantity

[a] RQs are for a pure chemical, per CERCLA SARA (ref. 40 CFR section 302, Table 302.4). Releases equal to or greater than the RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment and human health or safety must be reported.

[b] RQ for materials as used on site. Since some of the hazardous materials are mixtures that only contain a percentage of an RQ, the RQ of the mixture can be different than for a pure chemical. For example, if a substance only contains 10 percent of a reportable chemical and the RQ is 100 pounds, the RQ for that material will be (100 pounds)/(10%) = 1,000 pounds.

[c] EHS TPQ (ref. 40 CFR part 355, Appendix A). If quantities of EHS materials equal to or greater than the TPQ are handled or stored on site, they must be registered with the local Administering Agency (i.e., Fresno County Environmental Health – CUPA/Hazardous Materials Handling Program).

[d] TQ is from Title 19 CCR section 2770.5 (state) or Title 40 CFR section 68.130 (federal).

[e] State RQ for oil spills that will reach California state waters [CA Water Code section 13272(f)].

Table 4.5-3 Toxicity, Reactivity, and Flammability of Hazardous Substances Stored On site

Hazardous material	Physical description	Health hazard/toxicity	Reactivity and incompatibilities	Flammability [a]
Cleaning chemicals/ detergents	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Paint	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Diesel No. 2	Oily, light liquid	May be carcinogenic	Strong oxidizers, acids	Flammable
Propane	Colorless, odorless gas	Liquid can cause burns similar to frostbite	Strong oxidizers	Flammable

Adhesives	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Sealants	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Hydraulic fluid (FR3 natural ester fluid)	Light green liquid	Minimal irritation or no effect	Strong oxidizers, Strong Alkali	Combustible
Sulfur hexafluoride (SF6)	Colorless, odorless gas	Can displace oxygen and cause rapid suffocation	None	Nonflammable
Sulfuric acid	Colorless liquid	Causes burns by all exposure routes	Strong oxidizers, combustible material, bases, organic materials, reducing agents, finely powdered metals, peroxides	Nonflammable
Ethylene glycol solution	Viscous, colorless liquid	May cause skin, eye, and respiratory tract irritation	Strong oxidizers, strong acids, strong bases, aldehydes	Combustible
1,1,1,2-tetraflurorethane	Colorless gas, faint ethereal odor	Liquid can cause burns similar to frostbite	None	Nonflammable
Gasoline	Transparent to light yellow liquid	Carcinogenic, may cause irritation to skin, nose, throat, and lungs	Strong oxidizers	Flammable
Coolant	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Lubricants	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels

Notes:

[a] In accordance with Caltrans regulations, under 49 CFR Section 173: flammable liquids have a flash point less than or equal to 141°F; combustible liquids have a flash point greater than 141

Source: (National Institute for Occupational Safety and Health [NIOSH] 2007)

Safe Handling of Hazardous Materials

During Project construction and operation, the following hazardous waste transportation requirements and procedures would apply:

- Requirements of haulers: Qualified haulers would be retained to transport hazardous waste from the Project site. The selected haulers would be fully licensed and insured to transport hazardous waste per CA Code Regulations, title 22, Section 66263.11(a). Haulers would follow all applicable requirements in the Code of Federal Regulations with regard to loading, unloading, and general handling, based on transport mode.
- Truck loading operations: Trucks would be loaded at designated staging areas for transportation to the designated receiving facility per CA Code Regulations, title 22, Section 66263.21(b). Stray material on vehicles, tires, or the lip of the container, etc., would be removed manually with a brush. The container of the truck would be covered to prevent release of materials from the truck during transport.
- Transportation: Hazardous waste haulers would have a valid DTSC registration and would satisfy the following requirements per Health & Safety Code, Section 25163:
  - Vehicles would have passed an annual inspection.
  - Vehicle operators would be trained in the safe handling of the material.
  - Haulers would maintain the ability to pay damages caused by their operations through proper insurance coverage.
  - Haulers would have licenses issued by the CHP for transportation of hazardous waste.
  - Haulers would have a California Environmental Protection Agency identification number.
  - Haulers would comply with the Uniform Hazardous Waste Manifest System.
  - Haulers would take certain actions in response to hazardous waste discharges during transport (e.g., covering the load to prevent the discharge of dust/particulates into the atmosphere during hauling).
- Route: In accordance with all applicable laws, hazardous waste transportation routes would be limited to arterial streets and freeways approved for truck traffic to minimize potential impacts in neighborhoods and near sensitive receptors per California Vehicle Code, Section 31303. Transportation, as feasible, would be conducted in accordance with the National Hazardous Material Route Registry – USDOT – Federal Motor Carrier Safety Administration Hazardous Materials designated, preferred, or prescribed routes for transportation of hazardous waste in California. Truck routes would be determined in advance of any hauling activity once a receiving facility is selected, as necessary. If off-hauling is required, an appropriate off-site facility would be identified, and a haul route would be determined such that impacts to sensitive receptors are minimized.
- Traffic control procedures: Hazardous waste to off-site receiving facilities would be transported in trucks from the designated staging areas. Prior to loading, trucks

would be staged in a controlled and orderly manner to avoid impacts on the local streets. Traffic would be coordinated in such a manner that, at any given time, a limited number of trucks would be at the Project to reduce truck traffic on surrounding surface streets. While at the Project, vehicles would be required to maintain slow speeds (i.e., less than 5 miles per hour) for safety purposes.

- Shipping documentation and record keeping: Hazardous waste transportation would comply with all applicable federal, State, and local laws, including, but not limited to the, USDOT regulations, California Vehicle Code, California Highway Patrol (CHP) Regulations, California State Fire Marshall Regulations, and the California Health and Safety Code, to the extent applicable. These requirements include keeping of appropriate records during transportation activities. An authorized representative would be responsible for maintaining a record book of soil management and trucking activities during on-site work. The record book would serve to document observations, on-site personnel, and truck arrival and departure times. The appropriate Uniform Hazardous Waste Manifest would be used to track the movement of hazardous waste, if any, from the point of generation to the receiving facility. Prior to the transport of hazardous waste, if any, off site, an authorized representative would sign each manifest. Copies of each manifest for each truckload would be maintained in each truck during transport to the receiving facility as well as on site.

4.5.2 Impact Analysis

Methodology

Publicly available information reviewed includes the following:

- State Water Resources Control Board (SWRCB) GeoTracker
- California Department of Toxic Substances Control (DTSC) EnviroStor
- List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit
- List of "active" Cease and Desist Orders and Cleanup Abatement Orders
- List of hazardous waste facilities subject to corrective action pursuant to section 25187.5 of the Health and Safety Code, identified by DTSC.

In addition, Panorama reviewed information provided by the Project applicant regarding the types of hazardous materials that would be used during construction and operation of the Project. Hazardous materials generated during decommissioning of the Project are unknown at this time but anticipated to be similar to hazardous materials used for Project construction. Panorama also reviewed the Phase I ESA for the Project.

Impact Evaluation Criteria

Consistent with Appendix G of the CEQA Guidelines, a hazards and hazardous materials impact would be considered significant if the Project would:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment;
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
4. Be located on a site that is included on a list of hazardous materials sites complied pursuant to Government Code section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
5. For a project within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area;
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; and/or
7. Expose people or structures, either directly or indirectly, to the risk of loss, injury, or death involving wildland fires. (Addressed in Section 3.17).

Impact WS-1 and WS-2

Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment (*Less than significant*)

Construction

Project Site

Construction of the Project would involve the use, storage, and disposal of hazardous materials. The following hazardous substances would be used: fuels, oils and lubricants, solvents and cleaners, cements and adhesives, paints and thinners, degreasers, cement and concrete, and asphalt mixtures. Relatively small amounts of the substances listed, which are not considered acutely hazardous, would be transported, used, and disposed of during construction. The routine use or an accidental spill of hazardous materials could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment.

Hazardous materials would be transported solely during delivery and removal from the Project site on an intermittent basis as needed for construction. All transportation of hazardous substances would occur with Department of Transportation (DOT) approved personnel and trucking/transport equipment. The hazardous waste transportation requirements would minimize the potential for an accidental release of hazardous materials to occur, and emergency spill and response procedures would be specified within the Project-specific Contingency Plan.

In accordance with PDF HAZ-1, a Worker Environmental Awareness Program (WEAP) would be prepared prior to construction to include a *personal protective equipment* (PPE) program, an Emergency Action Plan (EAP), and an Injury and Illness Prevention Program (IIPP) to address health and safety issues associated with normal and unusual (emergency) conditions. The

WEAP would be reviewed and approved by the BLM, the BOR, and the CEC prior to construction. Construction-related safety programs and procedures in the WEAP related to hazard materials would include requirements for the disposal of hazardous materials and waste guidance in accordance with local, State, and federal regulations. A Hazardous Materials Management and Oil Spill Response Plan would be developed prior to construction in accordance with PDF HAZ-2. The plan would include a facility diagram that would identify the locations and contents of hazardous materials containers; potential equipment failures; containment and diversionary structures; facility drainage; personnel training and spill prevention procedures; and emergency contact information.

Waste would be stored in a locked container within a fenced and secure temporary staging area. As there would be regulated hazardous materials on site, storage procedures would be dictated by the Hazardous Materials Management and Oil Spill Response Plan (PDF HAZ-2) that would be developed prior to construction. Spill prevention measures and secondary containment would be implemented as part of the Project where warranted; however, strict compliance under 40 CFR 112 or CWA Section 311 would not be required because there would be no discharges to waters of the U.S. A Stormwater Pollution Prevention Plan (SWPPP) would also be prepared and would establish procedures to minimize the effect of accidental releases on water quality. In the unlikely event that an accidental release occurs, no schools or other sensitive receptors are located within 0.5 mile of the Project site.

Trucks and construction vehicles would be serviced by off-site facilities. The use, storage, transport, and disposal of hazardous materials used in construction of the facility would be carried out in accordance with federal, State, and county regulations. No extremely hazardous substances (i.e., those governed pursuant to CFR Title 40, part 355) are anticipated to be produced, used, stored, transported, or legally disposed of as a result of Project construction. A *material safety data sheet* (MSDS) for each applicable material present on site would be made readily available to on-site personnel. Construction would not involve the handling of acutely hazardous materials that would have the potential to generate significant off-site consequences and, accordingly, no protocol for modeling of hazardous materials releases is included and no modelling is proposed.

Construction materials would be sorted on site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they could be transported to a designated recycling facility. Hazardous waste and electronic waste would not be placed in a landfill but, rather, would be transported to a hazardous waste handling facility (e.g., electronic-waste recycling). Battery waste from construction vehicles and equipment would be recycled or disposed of in accordance with regulations. All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste.

In accordance with PDF FIRE-1, a Fire Management and Prevention Plan would be prepared prior to construction in coordination with the BLM fire crews or other emergency response organizations to identify the fire hazards and response scenarios that may be involved with

operating the solar facility. This would include information on response to accidents involving downed power lines or accidents involving damage to solar arrays and facilities. The selected fire protection system would be described in the Fire Management and Prevention Plan. The fire protection system would comply with BLM and ICFD requirements.

The Project would also implement BMPs on a site-specific basis to avoid, minimize, reduce, rectify, or compensate for adverse environmental or social impacts. The Project would implement BMPs 40 through 53 (see Section 3.5.4). Specifically, BMP 46 requires the adoption of good waste management practices for handling, storing, and disposing of wastes generated by a construction project to prevent the release of waste materials into stormwater discharges. Waste management includes the following: spill prevention and control, construction debris and litter management, concrete waste management, and liquid waste management. BMP 47 limits the amounts of hazardous materials on the site to minimum quantities necessary to support continued construction and O&M. BMP 48 requires the implementation of berms and other controls at facilities to prevent off-site migration of any leaked or spilled HTF, TES fluids, or any other chemicals stored or used at the site. The implementation of BMPs would further reduce the risk of upset and accident conditions involving the unlikely release of hazardous materials into the environment.

Compliance with regulations would minimize the risk of hazards associated with accidents and spills during construction. Although these hazards could still occur, the likelihood of occurrence is considered low. Effects would be short-term and localized if a release were to occur because of the small quantities of hazardous materials that would be used, the very limited rainfall in the area, and the flat topography. Because compliance with existing regulations and programs for transport, use, and disposal would be mandatory in accordance with law, and because there are no sensitive receptors within a 0.5-mile radius, Project construction activities are not expected to create a potentially significant hazard to the public. With compliance with federal and State regulations as well implementation of PDFs HAZ-1, HAZ-2, and FIRE-1, impacts during construction would be less than significant.

Breaker-and-a-Half Switchyard

Construction of the BAAH switchyard would involve the use, storage, and disposal of hazardous materials similar to those described for the solar facility, Project substation, and gen-tie. All use, storage, transport, and disposal of hazardous materials would be in strict accordance with all regulations and guidelines. Construction activities would be accounted for in the Hazardous Materials Management and Oil Spill Response Plan (PDF HAZ-2) including measures for potential equipment failures, personnel training and spill prevention procedures, and emergency contact information. Construction for the BAAH switchyard would also be included in the site-specific SWPPP.

Trucks and construction vehicles would be serviced by off-site facilities. The use, storage, transport, and disposal of hazardous materials used in construction of the BAAH would be carried out in accordance with federal, State, and county regulations. No extremely hazardous substances (i.e., those governed pursuant to CFR, title 40, part 355) are anticipated to be

produced, used, stored, transported, or legally disposed of. A MSDS for all applicable materials present on site would be made readily available to on-site personnel.

Compliance with regulations would minimize the risk of hazards associated with accidents and spills during construction. Although these hazards could still occur, the likelihood of occurrence is considered low. Effects would be short-term and localized if a release were to occur because of the small quantities of hazardous materials that would be used, the very limited rainfall in the area, and the flat topography. Because compliance with existing regulations and programs for transport, use, and disposal would be mandatory in accordance with law, construction of the BAAH switchyard are not expected to create a potentially significant hazard to the public. With compliance with federal and State regulations as well implementation of PDFs HAZ-1, HAZ-2, and FIRE-1, impacts would be less than significant.

Loop-in Transmission Lines

Construction of the loop-in transmission would involve the use, storage, and disposal of hazardous materials similar to those described for the solar facility, Project substation, and gen-tie. All use, storage, transport, and disposal of hazardous materials would be in strict accordance with all regulations and guidelines. Construction activities would be accounted for in the Hazardous Materials Management and Oil Spill Response Plan (PDF HAZ-2) including measures for potential equipment failures, personnel training and spill prevention procedures, and emergency contact information. Construction for the loop-in transmission would also be included in the site-specific SWPPP.

Trucks and construction vehicles would be serviced by off-site facilities. The use, storage, transport, and disposal of hazardous materials used in construction of the facility would be carried out in accordance with federal, State, and county regulations. No extremely hazardous substances (i.e., those governed pursuant to CFR, title 40, part 355) are anticipated to be produced, used, stored, transported, or legally disposed of. A MSDS for all applicable materials present on site would be made readily available to on-site personnel.

Compliance with regulations would minimize the risk of hazards associated with accidents and spills during construction. Although these hazards could still occur, the likelihood of occurrence is considered low. Effects would be short-term and localized if a release were to occur because of the small quantities of hazardous materials that would be used, the very limited rainfall in the area, and the flat topography. Because compliance with existing regulations and programs for transport, use, and disposal would be mandatory in accordance with law, construction of the loop-in transmission are not expected to create a potentially significant hazard to the public. With compliance with federal and State regulations as well implementation of PDFs HAZ-1, HAZ-2, and FIRE-1, impacts would be less than significant.

Operation and Maintenance

Project Site

Solvents, cleaners, or other chemicals may be used during Project maintenance for cleaning equipment or to prevent corrosion but would be used in very small quantities. Potentially

hazardous materials would be used, stored, and transported to the Project site during Project operation in compliance with federal, State, and local regulations for transport, storage, use, and disposal of hazardous materials.

Operation and maintenance would require the routine transport, use, and disposal of hazardous materials and wastes, including materials used for maintenance or damaged equipment, such as PV panels. The consequences of a release of hazardous materials used at the solar facility would not cause a threat to the health and safety of the surrounding community due to the limited quantity and toxicity of the substances and the distance to the nearest receptors. Limited use of herbicides or pesticides would occur to control non-native and noxious weeds. Refer to Section 3.2 Biological Resources for more information on herbicides and pesticide uses. Accidental release of pesticides, hazardous materials, or waste could affect public health or the environment.

Some solar panels may use semiconductors containing heavy metals, such as cadmium, selenium, and arsenic. These metals are fully contained within the solar panels and would not be released under normal operating conditions. The Project would have recycling plans for the solar panels should they be damaged, including appropriate methods of handling the potentially hazardous materials.

Battery Energy Storage System

The Project includes a battery energy storage system (BESS) to help store the energy produced by the PV panels so the energy can be released at optimal times. The BESS would be capable of storing 1,150 MW of electricity and housed in electrical enclosures. The BESS would either be located near the BAAH switchyard or on the private land (see layout options 1 and 2 in Figures 1.2-2 and 2.3-3). The type of battery is not yet determined, but the Project could use any commercially available battery technology, including but not limited to lithium-ion, lead acid, sodium sulfur, and sodium or nickel hydride. Lead-acid batteries, commonly used for vehicle, equipment, and backup power source batteries, typically contain battery electrolyte, which is a fluid material that can be hazardous and prone to accidental release. Lithium-ion-based batteries include industry-standard design features to greatly reduce the potential of a spill or leak.

The batteries used for the BESS would be handled and recycled properly to prevent combustion and fire hazards. Numerous regulations ensure the safe transport, use, storage, and disposal of hazardous materials. Pursuant to manufacturer specifications, the BESS units would be fully certified to the most rigorous international safety standards. This includes the following select certifications:

- UL 1642 – Standard for Lithium Batteries (cell level certification)
- UL 1973 – Standard for Batteries for Use in Stationary Applications (module level certification)
- UL 9540 – Standard for Energy Storage Systems and Equipment (system level certification)

- UL 9540A – Standard for Inverters, Controllers, Converters, and Interconnection Equipment for DER
- IEC 62619 – Standard for Battery Safety in Stationary Applications

Thermal runway is one of the potential risks associated with Lithium-ion batteries. Thermal runway occurs when the temperature within a cell goes above the critical level, resulting in a chain reaction as a steep increase in temperature occurs in a very short interval of time (milliseconds), leading to a sudden release of the energy stored in the battery cell. Temperature magnitudes close to 400° C are created, making the battery gaseous and resulting in a fire eruption that is not extinguishable by traditional methods. The fire can propagate to neighboring battery cells and cause an explosion.

The fire detection drawings for the BESS will be developed as detailed engineering continues. The BESS yard will have thermal detection cameras installed external to battery containers, strategically placed to detect fires. These cameras will be remotely monitored 24 x 7.

The BESS equipment selected for the project will be tested to UL 9540A standards, and the project will be designed and built based on UL, National Fire Protection Association (NFPA) 855 standards. The BESS equipment to be used shall be tested and proven to not need built-in-smoke, gas or fire detection or suppression devices.

The BESS equipment will be designed to mitigate an over-pressure event and deflagration through the use of over-pressure vents and a sparker system. These safety features will be tested to demonstrate effectiveness in protecting against deflagrations in a UL9540A large-scale fire testing where no explosion hazards should be observed (flying debris or explosive discharge of gases).

Based on these standards, vegetation around and under the BESS would be cleared to prevent fire propagation in the areas among containers. The proposed BESS would comply with the NFPA 855-2023 and the more stringent local code to mitigate risks of fires or rapid combustion in battery storage units.

Fire mitigation systems vary by manufacturer, but to comply with NFPA 855, the system must include a NFPA 72 compliant central station fire alarming system and deflagration management system that complies with NFPA 68/69. NFPA 855 also limits fire suppression to methods specified in NFPA 12, 15, 750, 2001, and 2019. These methods include the use of dry agents, water mist, high pressure water, and a passive fire containment method. The use of dry agents provides rapid fire suppression but may not address thermal runaway events as they can be ineffective in extinguishing fires fueled by the high heat and chemical reactions involved in battery thermal events. Water-based interventions can extinguish fires but risk creating toxic runoff and require significant volumes of water. A code-compliant passive fire containment method primarily uses field-tested spacing between units, which allows the fire to burn while venting gases and preventing fire propagation, leaving only ash for easier cleanup and reduced environmental impacts. Compliance with NFPA 855 would limit potential impacts associated with thermal runaway.

In accordance with PDF FIRE-1, a Fire Management and Prevention Plan would be prepared in coordination with the BLM fire crews or other emergency response organizations to identify the fire hazards and response scenarios that may be involved with operating the solar facility. This would include information on response to accidents involving downed power lines or accidents involving damage to solar arrays and facilities. The selected fire protection system would be described in the Fire Management and Prevention Plan. The fire protection system would comply with BLM and ICFD requirements. The Project would also comply with BMP 131, which requires the development of a hazardous materials and waste management plan and a fire safety plan, requiring a facility design to include isolation valves to limit HTF releases (where applicable), and providing worker training in reducing fire risks.

During decommissioning, the BESS components, including batteries, would be shipped to a universal waste handler or authorized recycling facility as described in the decommissioning protocol provided by the batteries' original equipment manufacturer. With compliance with federal and state regulations as well implementation of PDFs HAZ-1, HAZ-2, and FIRE-1, impacts during operations would be less than significant.

Breaker-and-a-Half Switchyard

Minimal use of hazardous materials is anticipated during operation and maintenance of the BAAH switchyard. SDG&E would follow the existing protocol for operation and maintenance of the SWPL. The BAAH switchyard would have some hazardous materials stored at the location. Compliance with regulations would minimize the risk of hazards associated with accidents and spills during operations. Although these hazards could still occur, the likelihood of occurrence is considered low. Effects would be short-term and localized if a release were to occur because of the small quantities of hazardous materials that would be used, the very limited rainfall in the area, and the flat topography. Because compliance with existing regulations and programs for transport, use, and disposal would be mandatory in accordance with law, operation of the BAAH switchyard is not expected to create a potentially significant hazard to the public. With compliance with federal and State regulations as well implementation of PDFs HAZ-1, HAZ-2, and FIRE-1, impacts would be less than significant.

Loop-in Transmission Lines

Minimal use of hazardous materials is anticipated during operation and maintenance of the 500 kV loop-in transmission lines. SDG&E would follow the existing protocol for operation and maintenance of the SWPL. Compliance with regulations would minimize the risk of hazards associated with accidents and spills during operations. Although these hazards could still occur, the likelihood of occurrence is considered low. Effects would be short-term and localized if a release were to occur because of the small quantities of hazardous materials that would be used, the very limited rainfall in the area, and the flat topography. Because compliance with existing regulations and programs for transport, use, and disposal would be mandatory in accordance with law, operation of the loop-in transmission is not expected to create a potentially significant hazard to the public. With compliance with federal and State regulations as well implementation of PDFs HAZ-1, HAZ-2, and FIRE-1, impacts would be less than significant.

Impact WS-3

Would the project have the potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school? (*No impact*)

Construction and Operation and Maintenance

Project Site

No schools are within 0.25 mile of the Project site and, thus, the Project would not emit hazardous emissions within 0.25 mile of an existing or proposed school during Project construction or O&M. The nearest school is over 9 miles west of the Project. No impact would occur.

Breaker-and-a-Half Switchyard

No schools are located within 0.25 mile of the of the BAAH switchyard. No impact would occur.

Loop-in Transmission Lines

No schools are located within 0.25 mile of the of the loop-in transmission. No impact would occur.

Impact WS-4

Would the project be located on a site that is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment? (*No impact*)

Construction and Operation and Maintenance

Project Site

California Government Code section 65962.5, also known as the Cortese List, requires the CalEPA to develop an updated list of hazardous material sites. The DTSC and SWRCB are responsible for a portion of the information contained in the Cortese List. There are no known hazardous materials sites located within the Project site or within 2 miles of the Project site (SWRCB, n.d.). No impact from location on a hazardous material site would occur.

Breaker-and-a-Half Switchyard

There are no known hazardous materials sites located within the BAAH switchyard or within 2 miles from the Project site (SWRCB, n.d.). No impact from location on a hazardous material site would occur.

Loop-in Transmission Lines

There are no known hazardous materials sites located within the loop-in transmission line corridor or within 2 miles from the Project site (SWRCB, n.d.). No impact from location on a hazardous material site would occur.

Impact WS-5

For a project within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? (*No impact*)

Construction and Operation and Maintenance

Project Site

The Project site is not located within an airport land use plan or within 2 miles of a public airport or public use airport. The closest airport is the Holtville Airport, located approximately 7 miles northwest of the Project site. No impact from conflict with an airport land use plan would occur.

Breaker-and-a-Half Switchyard

As with the Project solar site, the BAAH switchyard is not located within an airport land use plan or within 2 miles of a public airport or public use airport. No impact from conflict with an airport land use plan would occur.

Loop-in Transmission Lines

The loop-in transmission line is not within an airport land use plan or within 2 miles of a public airport or public use airport. No impact from conflict with an airport land use plan would occur.

Impact WS-6

Would the project have the potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (*Less than significant*)

Construction

Project Site

The Project's roadway system would include a perimeter road, access roads off the driveways, and internal roads. Up to five driveways off SR 98 would be constructed for access to the Project site. The access driveways would be 24 feet wide (20 feet wide with a 2-foot shoulder on either side) and constructed to achieve facility maintenance requirements and Imperial County standards. These roads would be surfaced with gravel, compacted soil, or another commercially available surface, depending upon site conditions and constraints. Ingress/egress locations would be accessed via locked gates. The exact locations of the access points would be determined in coordination with Caltrans and resource survey results. No access would be constructed off I-8.

Roadway closure could impact emergency evacuation if an emergency occurred in the Project area at the time of the roadway closure. Construction of the solar arrays, substation, BESS, and Project gen-tie line would not require any full roadway closures and notification of any roadway closures would be coordinated with emergency providers. Project construction would increase the amount of traffic using local roadways throughout the duration of construction (see Section 3.12: Traffic and Transportation). The on-site workforce is expected to reach a peak of approximately 1,000 individuals with an average construction-related on-site workforce of

700 individuals. In the event of an extreme emergency, an estimated up to approximately 1,000 construction workers may need to evacuate.

None of the Imperial County emergency operations and response plans define evacuation routes. Evacuation routes in the Project area are anticipated to be coordinated by local and federal law enforcement and emergency services. In accordance with PDF HAZ-1, a WEAP would be prepared prior to construction that includes a PPE program, EAP, and IIPP to address health and safety issues associated with normal and unusual (emergency) conditions. The WEAP would be reviewed and approved by the BLM, the BOR, and the CEC prior to construction. Implementation of the Security and Emergency Preparedness Plan would also comply with OSHA (29 CFR § 1910.38(a)) and OSHA guidelines. The Security and Emergency Preparedness Plan would identify the evacuation routes for construction workers and Project personnel during an emergency, communication protocols, and notifications. In addition, with accordance with PDF FIRE-1, a Fire Management and Prevention Plan would be prepared in coordination with the BLM fire crews or other emergency response organizations to identify the fire hazards and response scenarios that may be involved with operating the solar facility. Impact on emergency response and evacuation during construction would be less than significant.

Breaker-and-a-Half Switchyard

The BAAH switchyard would be constructed similarly to the solar facility. Impact on emergency response and evacuation during construction would be less than significant.

Loop-in Transmission Lines

The loop-in transmission lines would be constructed similarly to the solar facility. It is anticipated that stringing of the loop-in transmission line over SR 98 would require temporary closure of the roadway. Any temporary full closures of roads would be coordinated and regulated by Caltrans and would require specific permits and timing. The EPC would adhere to all Caltrans requirements, and full road closures for stringing transmission wire is typically for a very short period of time, less than 30 minutes. Impact on emergency response and evacuation during construction would be less than significant.

Operation and Maintenance

Project Site

Operation and maintenance of the Project would neither cause road closures nor impair access to local roads. Internal access roads in the solar facility would be designed to meet the Imperial County Fire Code. Operation and maintenance activities would not result in any adverse impacts to emergency response activities during operation. Risks to on-site workers would be minimized through compliance with PDFs HAZ-1 and FIRE-1 as well as implementation of a Security and Emergency Preparedness Plan. Impacts would be less than significant.

Breaker-and-a-Half Switchyard

Operation and maintenance of the BAAH switchyard would neither cause road closures nor impair access to local roads as operation and maintenance because it would be entirely within

the fenced portion of the Project. Operation and maintenance activities would not result in any adverse impacts to emergency response activities during operation. Risks to on-site workers would be minimized through compliance with PDFs HAZ-1 and FIRE-1 as well as implementation of a Security and Emergency Preparedness Plan. Impacts would be less than significant.

Loop-in Transmission Lines

Operation and maintenance of the loop-in transmission line would neither cause road closures nor impair access to local roads as operation and maintenance of the loop-in transmission line would be conducted by SDG&E in accordance with their typical maintenance activities. Operation and maintenance activities would not result in any adverse impacts to emergency response activities during operation. Risks to on-site workers would be minimized through compliance with PDFs HAZ-1 and FIRE-1 as well as implementation of a Security and Emergency Preparedness Plan. Impacts would be less than significant.

4.5.3 Cumulative Impacts

The geographic scope for cumulative analysis for hazardous materials is generally within the renewable energy project boundary and the access routes and transmission route. This is where hazardous impacts are generally localized.

The only cumulative project immediately adjacent the Project area that would potentially be under construction at the same time as the Project is the North Gila–Imperial Valley 500 kV Transmission Project. Several other nearby projects, such as the VEGA SES 4 Solar Energy Project and Viking Solar Energy Generation and Battery Storage Project, while 4 miles from the Project, could use similar access routes and potentially result in cumulative impacts due to hazardous materials.

Construction of the Project would result in less than significant impacts associated with the transport, use, and disposal of hazardous materials during construction with implementation of appropriate BMPs. The Project would be expected to adhere to all applicable federal, State, and local laws and regulations to reduce the potential impacts from use of hazardous materials to a less than significant level during construction of the Project. Any cumulative project would be expected to also adhere to applicable federal, State, and local laws and regulations. Therefore, the risk of significant impacts associated with the transport, use, and disposal of hazardous materials during construction occurring from cumulative projects in conjunction with the Project would be low, and there would be no cumulatively significant impacts related to the transport, use, or disposal of hazardous materials.

The Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment with the implementation of appropriate BMPs. Similar to the Project, cumulative projects would adhere to all applicable federal, State, and local laws and regulations to reduce the impacts from accidental release of hazardous materials. Therefore, the

Project facility would not contribute to a cumulative impact from the release of hazardous materials.

There are no schools located within 0.25 mile of the Project; therefore, no cumulative impacts to schools would occur.

The Project site is not located on a site that is included on a list of hazardous materials sites complied pursuant to Government Code section 65962.5 and so would not contribute to a cumulative impact associated with any such site.

There are no airports located within 2 miles of the Project; therefore, no cumulative impacts to airports would occur.

The Project would not create a significant hazard to the public or the environment through impairing implementation of or physically interfering with an adopted emergency response plan or emergency evacuation plan with the implementation of appropriate BMPs. Similar to the Project, cumulative projects would adhere to all applicable federal, State, and local laws and regulations to reduce the impacts to adopted emergency response plans or evacuation plans. Therefore, the Project facility would not contribute to a cumulative impact from the release of hazardous materials.

Breaker-and-a-Half Switchyard
Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to hazardous materials handling.

Loop-in Transmission Lines
Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related hazardous materials handling.

4.5.4 Proposed Best Management Practices, Project Design Features, Conservation Management Actions, and Mitigation Plans

As part of the Project, the Applicant and other entities involved in construction and operation would implement BMPs, PDFs, and CMAs. The Applicant has also prepared mitigation plans as required by the BLM.

Project Site Components

Best Management Practices
The Project would implement the following BMPs related to waste management. See Appendix D.1 for the full language of the BMPs.

- BMP 40 to BMP 54 (Hazardous Materials)

- BMP 131 (Wildfire – Safety)

Project Design Features

The Project would implement the following PDFs related to waste management. See Appendix D.1 for the full language of the PDFs.

- PDF HAZ-1
- PDF HAZ-2
- PDF FIRE-1

Mitigation Measures

None required.

Breaker-and-a-Half Switchyard

The same APMs, measures for conformance with laws, BMPs, and PDFs would apply to the BAAH switchyard. No additional measures are proposed.

Loop-in Transmission Lines

The same APMs, measures for conformance with laws, BMPs, and PDFs would apply to the loop-in transmission lines. No additional measures are proposed.

4.5.5 Laws, Ordinances, Regulations, and Standards Compliance

The federal, State, and local LORS that may apply to the Project related to worker safety are summarized in Table 4.5-4, Table 4.5-5, and Table 4.5-6, respectively.

Table 4.5-4 Federal Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Title 29 Code of Federal Regulations (CFR) part 1910	Contains the minimum occupational safety and health standards for general industry in the United States	The Project would adhere to the occupational health and safety standards outlined in 29 CFR part 1910.
Title 29 CFR part 1926	Contains the minimum occupational safety and health standards for the construction industry in the United States	The Project would adhere to the occupational health and safety standards outlined in 29 CFR part 1926.
National Institute for Occupational Safety and Health (NIOSH)	Conducts research and makes recommendations for prevention of work-related injury and illness	The Project would comply with the health and safety requirements set forth by NIOSH.
29 CFR Part 1910	Outlines procedures for employees in the event of an emergency	The Project would comply with the requirements set forth in 29 CFR part 1910 to prepare an Emergency Action Plan.

Table 4.5-5 State Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
California Occupational Safety and Health Act, 1970	Establishes minimum safety and health standards for construction and general industry operations in California	The Project would adhere to the health and safety guidelines outlined in the Occupational Safety and Health Act.
8 California Code of Regulations § 339	Requires list of hazardous chemicals relating to the Hazardous Substance Information and Training Act	The Project would adhere to the policies outlined in 8 CCR § 339.
8 CCR § 1509	Addresses requirements for construction, accident, and prevention plans	The Project would adhere to the policies outlined in 8 CCR § 1509.
8 CCR §§ 1509 et seq. and 1684, et seq.	Addresses construction hazards, including head, hand, and foot injuries and noise and electrical shock	The Project would adhere to the policies outlined in 8 CCR § 1509, et seq., and 1684, et seq.
8 CCR §§ 1528 et seq. and 3380 et seq.	Requirements for PPE	The Project would adhere to the policies outlined in 8 CCR § 1528 et seq. and 3380 et seq.
8 CCR §§ 1597 et seq. and 1590 et seq.	Requirements addressing the hazards associated with traffic accidents and earth moving	The Project would adhere to the policies set out in 8 CCR § 1597 et seq. and 1590 et seq.
8 CCR §§ 1604 et seq.	Requirements for construction hoist equipment	The Project would adhere to the policies outlined in 8 CCR §§ 1604 et seq.
8 CCR §§ 1620 et seq. and 1723 et seq.	Addresses miscellaneous hazards.	The Project would adhere to the policies set out in 8 CCR §§ 1620 et seq. and 1723 et seq.
8 CCR §§ 1709 et seq.	Requirements for steel reinforcing, concrete pouring, and structural steel erection operations	The Project would adhere to the policies outlined in8 CCR §§ 1709 et seq.
8 CCR §§ 1920 et seq.	Requirements for fire protection systems	The Project would adhere to the policies outlined in 8 CCR §§ 1920 et seq.
8 CCR §§ 2300 et seq. and §§ 2320 et seq.	Requirements for addressing low-voltage electrical hazards.	The Project would adhere to the policies outlined in 8 CCR §§ 2300 et seq. and 2320 et seq.
8 CCR §§ 2395 et seq.	Addresses electrical installation requirements	The Project would adhere to the policies outlined in 8 CCR §§ 2395 et seq.

8 CCR §§ 2700 et seq.	Addresses high-voltage electrical hazards	The Project would adhere to the policies outlined in 8 CCR §§ 2700 et seq.
8 CCR §§ 5139 and 5192	Requirements for control of hazardous substances	The Project would adhere to the policies outlined in 8 CCR §§ 3200 et seq. and 5139 et seq.
8 CCR §§ 3203	Requirements for operational accident prevention programs	The Project would adhere to the policies outlined in 8 CCR § 3203.
8 CCR 3270 §§ et seq. and 3209 et seq.	Requirements for evacuation plans and procedures	The Project will adhere to the policies outlined in 8 CCR § 3270.
8 CCR §§ 3360 et seq.	Addresses requirements for sanitary conditions	The Project would adhere to the policies outlined in 8 CCR §§ 3360 et seq.
8 CCR §§ 3511 et seq. and §§ 3555 et seq.	Requirements for addressing hazards associated with stationary engines, compressors, and portable, pneumatic, and electrically powered tools	The Project would adhere to the policies outlined in 8 CCR §§ 3511 et seq. and 3555 et seq.
8 CCR §§ 3649 et seq. and §§ 3700 et seq.	Requirements for addressing hazards associated with field vehicles	The Project would adhere to the policies outlined in 8 CCR §§ 3649 and 3700 et seq.
8 CCR §§ 3940 et seq.	Requirements for addressing hazards associated with power transmission, compressed air, and gas equipment	The Project will adhere to the policies outlined in 8 CCR §§ 3940 et seq.
8 CCR §§ 5109 et seq.	Requirements for addressing construction accident and prevention programs	The Project would adhere to the policies outlined in 8 CCR§ § 5109 et seq.
8 CCR §§ 5110 et seq.	Requirements for the implementation of an ergonomics program	The Project would adhere to the policies outlined in 8 CCR § 5110 et seq.
8 CCR §§ 5150 et seq.	Requirements for confined-space entry	The Project would adhere to the policies outlined in 8 CCR §§ 5150 et seq.
8 CCR §§ 5155 et seq.	Requirements for use of respirators and for controlling employee exposure to airborne contaminants	The Project would adhere to the policies outlined in 8 CCR §§ 5155 et seq.
8 CCR §§ 5160 et seq.	Requirements for addressing hot, flammable, poisonous, corrosive, and irritant substances	The Project would adhere to the policies outlined in 8 CCR §§ 5160 et seq.
8 CCR §§ 5192 et seq.	Requirements for conducting emergency response operations	The Project will adhere to the policies outlined in 8 CCR § 5192.

8 CCR §§ 5193 et seq.	Requirements for controlling employee exposure to bloodborne pathogens associated with exposure to raw sewage water and body fluids associated with first aid/CPR duties	The Project will adhere to the policies outlined in 8 CCR § 5193 et seq.
8 CCR §§ 6150 et seq., 6151 et seq., 6165 et seq., 6170 et seq., and 6175 et seq.	Fire protection requirements	The Project will adhere to the policies outlined in 8 CCR §§ 6150 et seq., 6151 et seq., 6165 et seq., 6170 et seq., and 6175, et seq.
Title 24, part 3, California Electrical Code	The Cal/OSHA electrical safety regulations incorporate the requirements of the Uniform Electrical Code located in title 24, part 3.	The Project would adhere to the policies outlined in Uniform Electrical Code title 24, part 3.
Health and Safety Code §§ 25531 et seq.	Requires that every new or modified facility that handles, treats, stores, or disposes of more than the threshold quantity of any of the listed regulated materials prepare and maintain a Risk Management Plan (RMP)	The Project would adhere to the policies outlined in Health and Safety Code section 25531.

Table 4.5-6 Local Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Imperial County Codified Zoning Ordinance	The Imperial County Codified Zoning Ordinance contains provisions which act to reduce fire hazards. The Zoning Ordinance is a tool that helps prevent the construction of incompatible or hazardous structures. For example, the ordinance separates industrial, commercial, and residential uses and provides for the isolation of land uses that may create excessive fire exposure to other properties. It also limits the height and bulk of buildings, specifies setbacks and distances between buildings.	The Project would adhere to requirements of the Imperial County Codified Zoning Ordinance.

Imperial County Fire Prevention and Explosives Ordinance	Sections 53101–53300 contain provisions for the purpose of prescribing regulations governing conditions hazardous to life and property from fire or explosion. Such measures in this Ordinance include the following: storage of flammable materials; storage of radioactive materials; permit required for sale and use of fireworks; abatement of weeds and other vegetation.	The Project would adhere to the requirements of the Imperial County Fire Prevention and Explosives Ordinance.
Multi-Jurisdictional Hazard Mitigation Plan (MHMP)	The MHMP describes past and current hazard mitigation activities and outlines goals, strategies, and actions for reducing future disaster losses. The MHMP identifies past and present mitigation activities, current policies and programs, and mitigation strategies for the future. The MHMP meets the statutory requirements Title 44 CFR § 201.6 – Local Mitigation Plans	The Project would adhere to the goals and policies outlined in the MHMP.

4.5.6 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application is provided in Appendix E.1. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2.

4.5.7 References

CAL FIRE Fire and Resource Assessment Program (FRAP). 2018. "Fire Hazard Severity Zones." Map Service. Raster digital data. "Perkins East Mesa Fire Hazard Severity Zones" created by Panorama Environmental, Inc.: Using Arc GIS (01/11/2024). Last updated June 2, 2022. https://gis.data.ca.gov/maps/CALFIRE-Forestry::california-fire-hazard-severity-zones-fhsz/about.

California State Water Resources Control Board (SWRCB). n.d. "GeoTracker." Accessed January 16, 2024. https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=el+centro.

County of Imperial. 2021. *Imperial County Multi-Jurisdictional Hazard Mitigation Plan Update*. https://www.icpds.com/assets/Imperial-County-MHMP-2021-Plan-Update-2021_01_11.pdf.

National Institute for Occupational Safety and Health. 2007. "NIOSH Pocket Guide to Chemical Hazards." Available: https://pubchem.ncbi.nlm.nih.gov/source/11941.

4.6 Land Use

This section discusses the environmental and regulatory setting and includes the analysis of potential land use impacts associated with the Project. For the purposes of this section, the affected environment study area (study area) is defined as those areas within 1 mile of the Project site and BAAH switchyard and within 0.25 mile of the 500 kV loop-in transmission corridors.

Section 4.6.1 discusses the environmental setting. Section 4.6.2 identifies the potential land use impacts that may result from Project construction, operation and maintenance, and decommissioning. Section 4.6.3 discusses measures to address impacts. Section 4.6.4 provides an overview of applicable federal, State, and local laws, ordinances, regulations, and standards (LORS) and the Project's compliance therewith.

4.6.1 Environmental Setting

Regional Setting

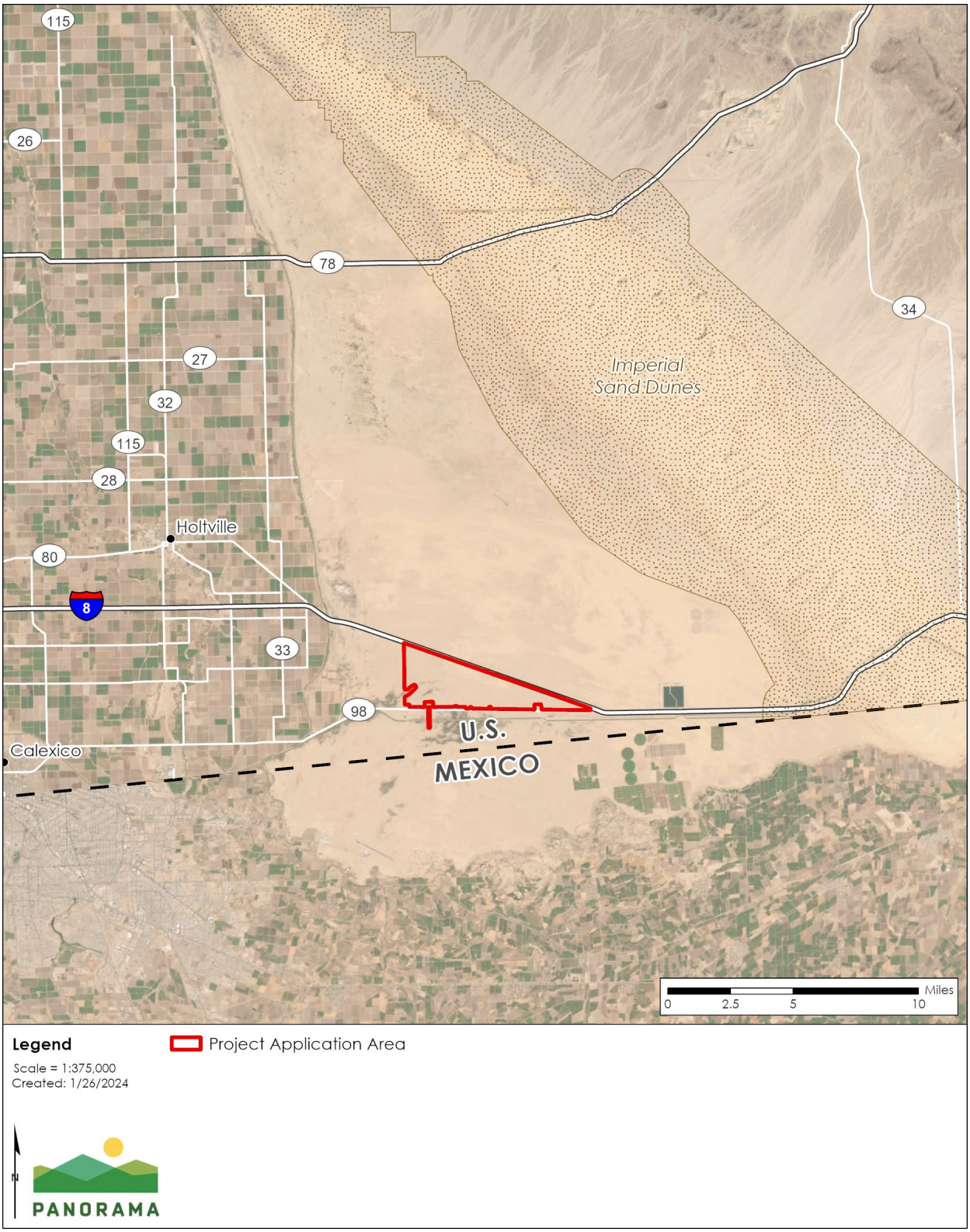
The Project Application Area is located in Imperial Valley, approximately 37 miles southeast of the Salton Sea. The Imperial Valley is located primarily in Imperial County, southern California, in the southwestern portion of the Colorado Desert. Imperial County's most prevalent land use designations per the Imperial County General Plan are recreation/open space, agriculture, and government/special public use (CDOC, n.d.). The Project Application Area is located approximately 1.2 miles north of the U.S.–Mexico border, in a region characterized by undeveloped desert and agricultural uses. The closest census designated place to the Project Application Area is Holtville, approximately 9.6 miles from the Project Application Area to the northwest (U.S. Census Bureau, n.d.). The Imperial Sand Dunes, the largest mass of sand dunes in California, is located over 9 miles to the east of the Project Application Area.

Project Location

The Project Application Area is located in unincorporated Imperial County, San Bernardino Meridian, California, Township 16 South, Ranges 17E and 18E. The legal description, including a map at a scale of 1:24,000 (1" = 2000'), and the identification of the location of the Project Application Area and related facilities by section, township, range, county, and assessor's parcel numbers (APNs), is provided in Appendix A.

The Project site is bounded by Interstate 8 (I-8) to the north and State Route 98 (SR 98) to the south, as shown in Figure 4.6-1, below. The immediate area to the west of the Project Application Area is vacant natural land and, beyond that, contiguous farmland.

Figure 4.6-1 Project Location



Source: (Intersect Power 2023a)

Existing Land Use Designations

The Project site is located on land administered by the BLM and BOR as well as private land. The 500 kV loop-in transmission corridors would be sited to the south of the Project site on land managed by the BOR and BLM. Table 4.6-1, below, indicates the Project Application Area acreage by land manager and the corresponding plan designation.

Table 4.6-1 Project Application Area Acreage by Land Manager

Land manager	Acres (Project site)	Acres (BAAH Switchyard)	Acres (loop-in transmission corridors)	Plan designation
BLM	4,708	40	15	Development Focus Area, as designated by California Desert Conservation Area Plan, as amended by the Desert Renewable Energy Conservation Plan
BOR	828	0	20	None
Private	515	0	0	Recreation/Open Space

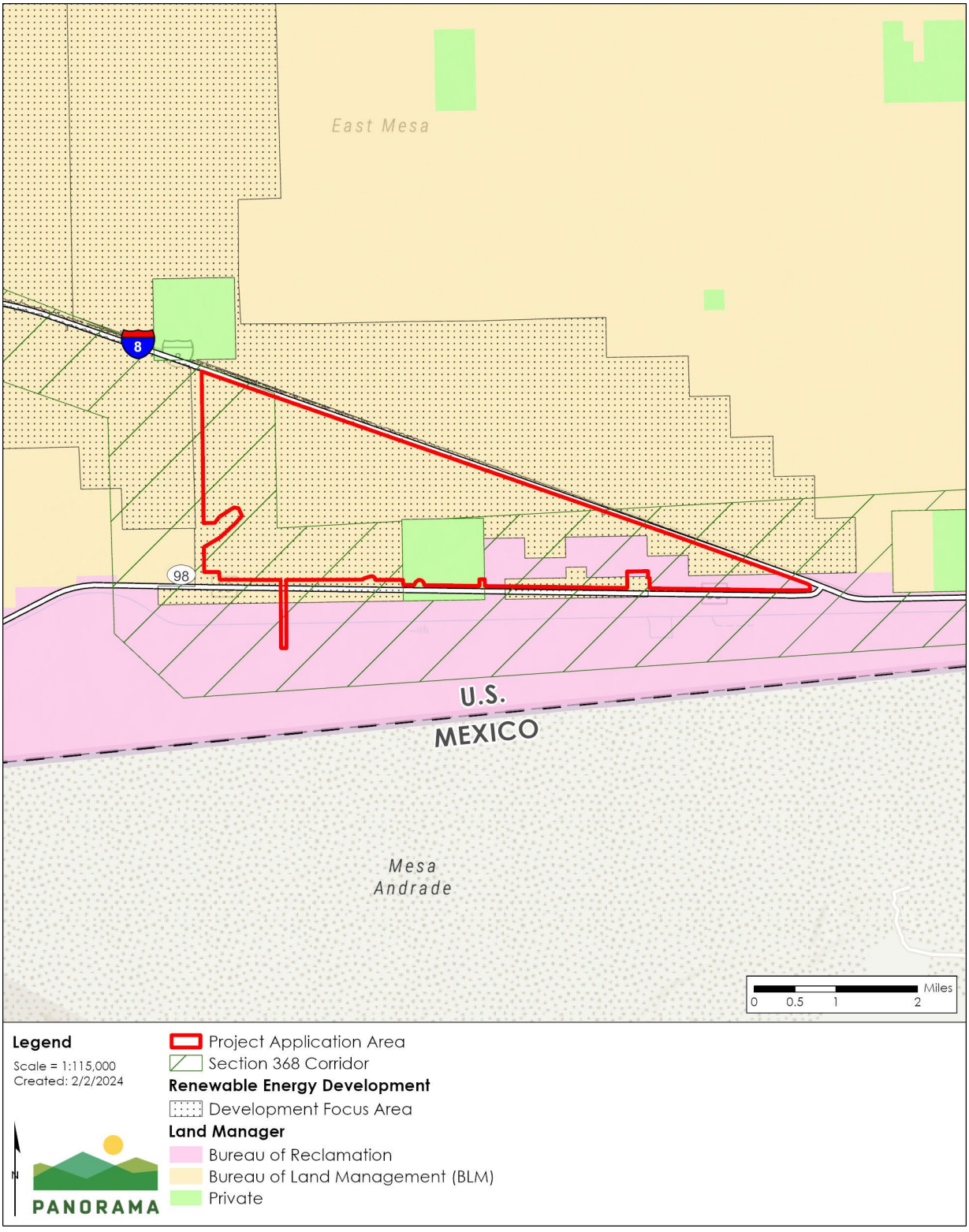
Bureau of Land Management

The Project Application Area is within the California Desert Conservation Area (CDCA) Plan as amended by the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA), which includes plan decisions necessary to adopt a conservation strategy and a streamlined process for the permitting of renewable energy and transmission development on BLM-managed lands (BLM 2016). The entirety of the Project Application Area on BLM-managed lands is designated Development Focus Area (DFA) under the DRECP and its associated Record of Decision (ROD). DFAs are areas identified as suitable for renewable energy development and where siting and permitting renewable energy may be streamlined. The DRECP succeeded BLM's 2012 Western Solar Plan under which the Project Application Area had been designated as a Solar Energy Zone (SEZ) in BLM's 2012 Solar Programmatic Environmental Impact Statement (PEIS) Record of Decision (ROD).

Lands designated as Areas of Critical Environmental Concern (ACEC) and California Desert National Conservation Land (CDNCL) are north of I-8 and lands allocated as ACEC and DFA are west of the Project Application Area. The BLM-administered land is undeveloped except for existing open trails. Figure 4.6-2 shows the DRECP land use designations of the Project Application Area.

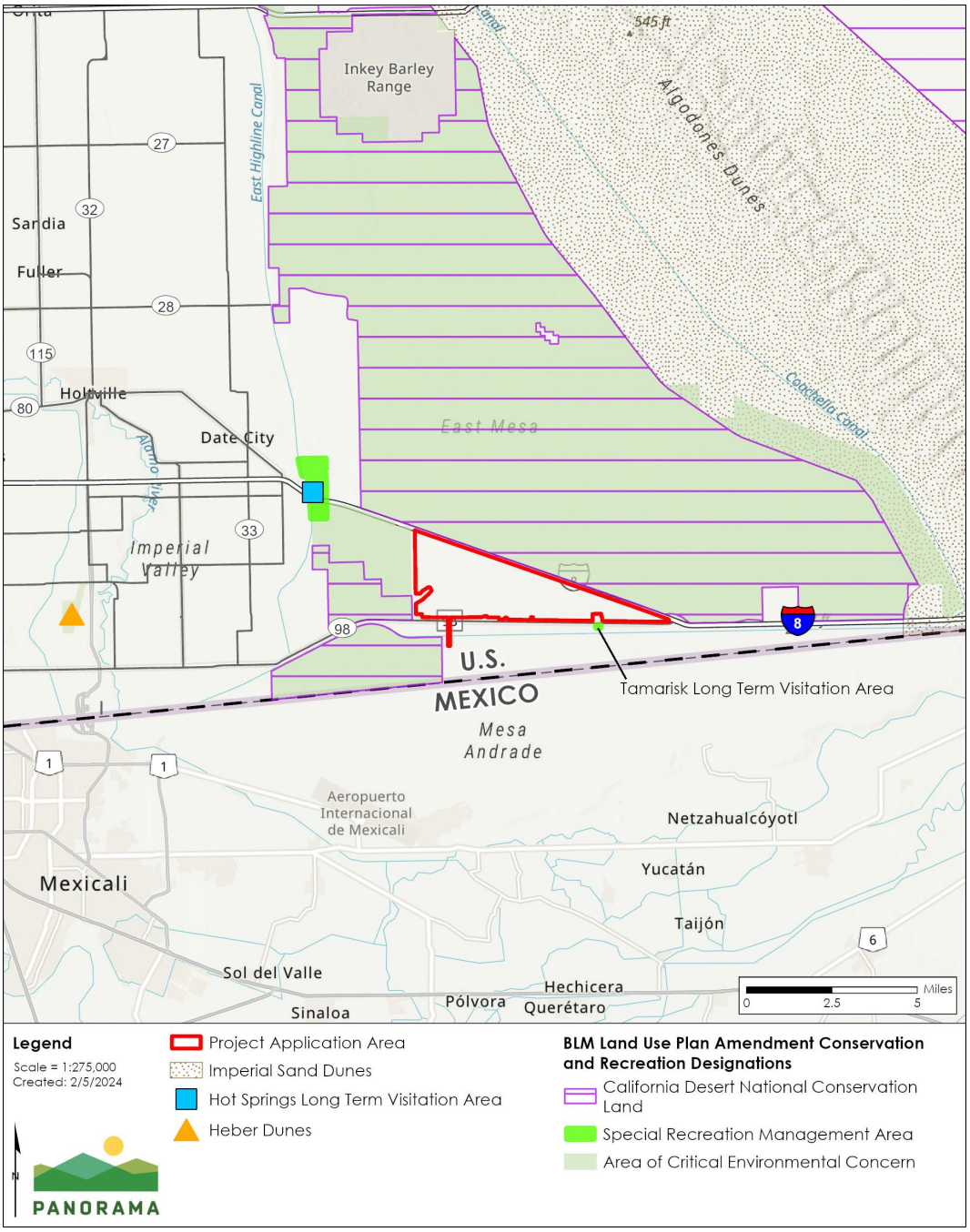
A BLM/368 energy utility corridor traverses partially through the Project site as well as south and west of the Project Application Area. In 2009, the BLM designated approximately 5,000 miles of Section 368 corridors (known as the West-Wide Energy Corridors or WWECs) on

Figure 4.6-2 DRECP Energy Land Use Designations and BLM Energy Corridors



Source: (Bureau of Land Management (BLM) 2022) (Bureau of Land Management 2016a) (Intersect Power 2023a)

Figure 4.6-3 BLM DRECP Conservation and Recreation Designations



Source: (Intersect Power 2023a), (Bureau of Land Management 2016d), (Bureau of Land Management 2016b), (Bureau of Land Management 2016c), (Bureau of Land Management (BLM) 2012), (Bureau of Land Management 2024b), (Bureau of Land Management 2024a)

public lands in a Record of Decision (ROD) that amended 92 BLM land use plans in 11 contiguous western states, including the CDCA Plan, As Amended. The Project Application Area is located, in part, within the energy corridor Number 115-238, designated within the 2009 ROD (BLM 2009). This area overlaps with a utility corridor designated previously by the BLM in the CDCA Plan, as Amended, called Utility Corridor K (BLM 1980). BLM has approved a preserved, but reduced, utility corridor within the Project Application Area (see Section 4.6.2 for further details).

Bureau of Reclamation

The Project site on BOR lands is managed by the Lower Colorado Basin Region Yuma Area Office. The Project Application Area is located on lands designated by the BOR as withdrawn lands. *Withdrawn lands* are acquired, whether through donation or purchase, by the BOR, and set aside to determine whether they are needed for future project purposes pursuant to section 204 of the Federal Land Policy and Management Act (BOR 1993). If not needed for project purposes, withdrawn lands can be returned to the public domain for administration by the BLM (BOR 1993). BOR has a Memorandum of Understanding (MOU) with the BLM for land use authorizations. Through the MOU, BLM can issue ROW grants and authorizations for land use on behalf of the BOR. BOR would issue its own authorization for the Project's 500 kV loop-in transmission lines to cross the All-American canal.

Imperial County

Land use provisions included in every California city and county general plan reflect the goals and policies that guide physical development of land within their jurisdiction (California State Planning Law, Government Code §§ 65302 et seq.). Approximately 515 acres of the Project site is located on private land normally under the jurisdiction of unincorporated Imperial County. The Imperial County General Plan designates the private lands within the Project site as Recreation/Open Space (Imperial County 2007). The goal of this designation is to recognize areas that reflect the unique open space and recreational character of Imperial County (County of Imperial, n.d.).

General Plan land use designations are more generalized in nature whereas zoning codes and zoning districts provide specific standards on land use or the density or intensity of development. The Project Application Area is located in the Open Space/Preservation Zone (S-2) of the Imperial County Land Use Ordinance (refer to Figure 4.6-4) (County of Imperial, n.d.). Renewable energy activities are allowed in the S-2 zone with a Conditional Use Permit (CUP) from Imperial County (County of Imperial, n.d.). If the CEC certifies the Project under its opt-in authority, this would be in-lieu of a CUP from Imperial County. Under the opt-in program, the CEC's authority supersedes local land use jurisdiction.

In the County General Plan's Renewable Energy and Transmission Element and the County's Land Use Ordinance, Division 17, the County has also established a Renewable Energy Overlay Zone that directs the location of new renewable energy facilities to areas in Imperial County.

The Project Application Area is not located within the Renewable Energy Overlay Zone [1]. The Applicant is requesting that the CEC certify the Project despite the fact that it is not located within the Overlay Zone because the site is suitable for renewable energy development even though it is not located in the Overlay Zone (refer to Table 4.6-2).

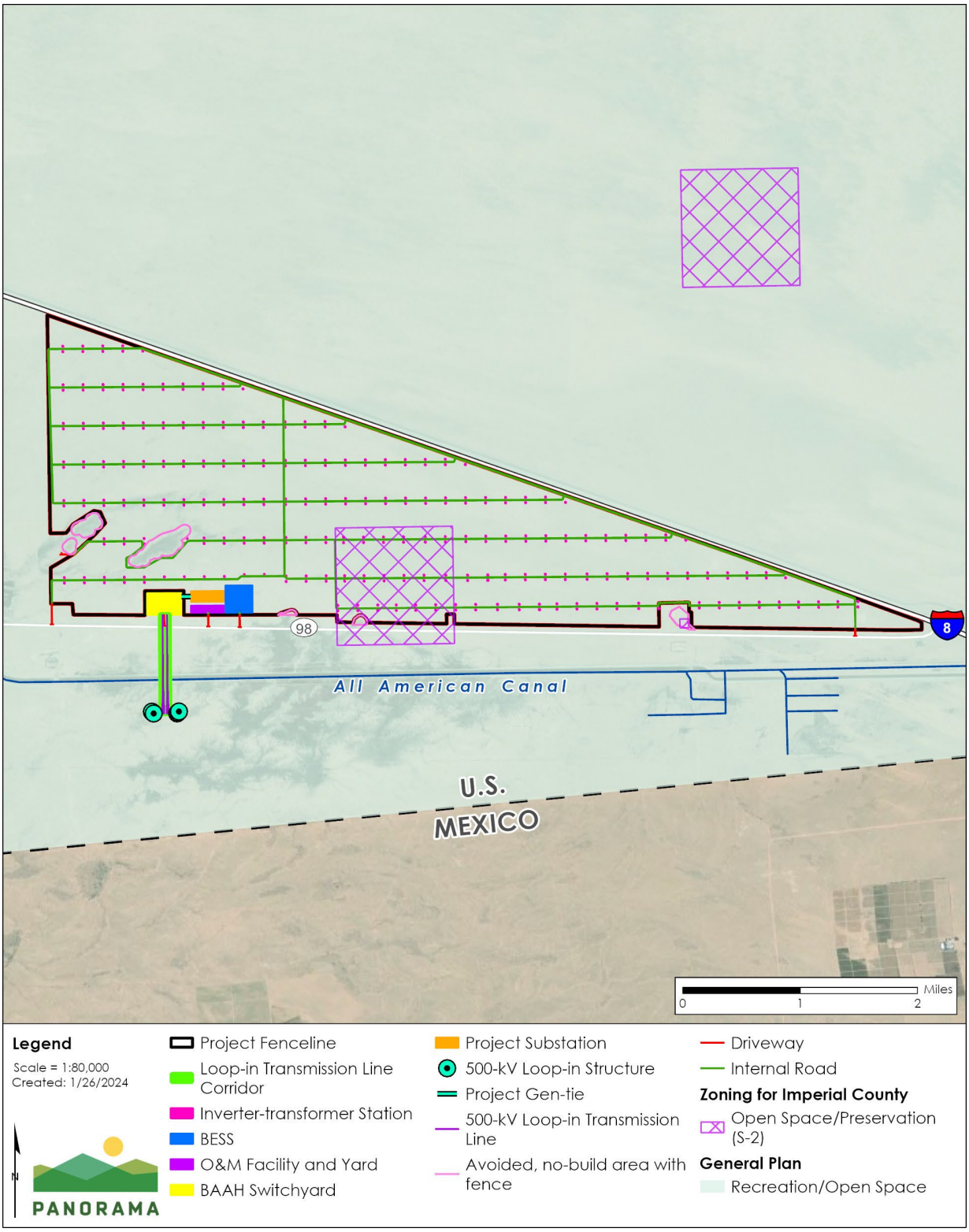
The private land included in the Project footprint was identified by the CEC land use screens as a non-exclusion area for solar in Imperial County. It is shown as one of the few available areas in Imperial County that is not on farmland, and therefore not considered a solar exclusion area. Similarly, under the findings of the DRECP Draft EIR/EIS, the Project private land was included in the Preferred Alternative as a preferred area for solar.

Farmland Mapping and Monitoring Program

The Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP) prepares, updates, and maintains Important Farmland Series Maps as defined in subdivision (f) of section 65560 of the Government Code and prepares and maintains an automated map and database system to record and report changes in the use of agricultural lands every two years on even-numbered calendar years. Agricultural land is rated according to soil quality and irrigation status (DOC 2023a). The land within the Project Application Area is designated "other land," or land not included in any other mapping category (i.e., Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Grazing Land) by the FMMP and is not considered an important farmland designation, see Figure 4.6-5 (DOC 2023b).

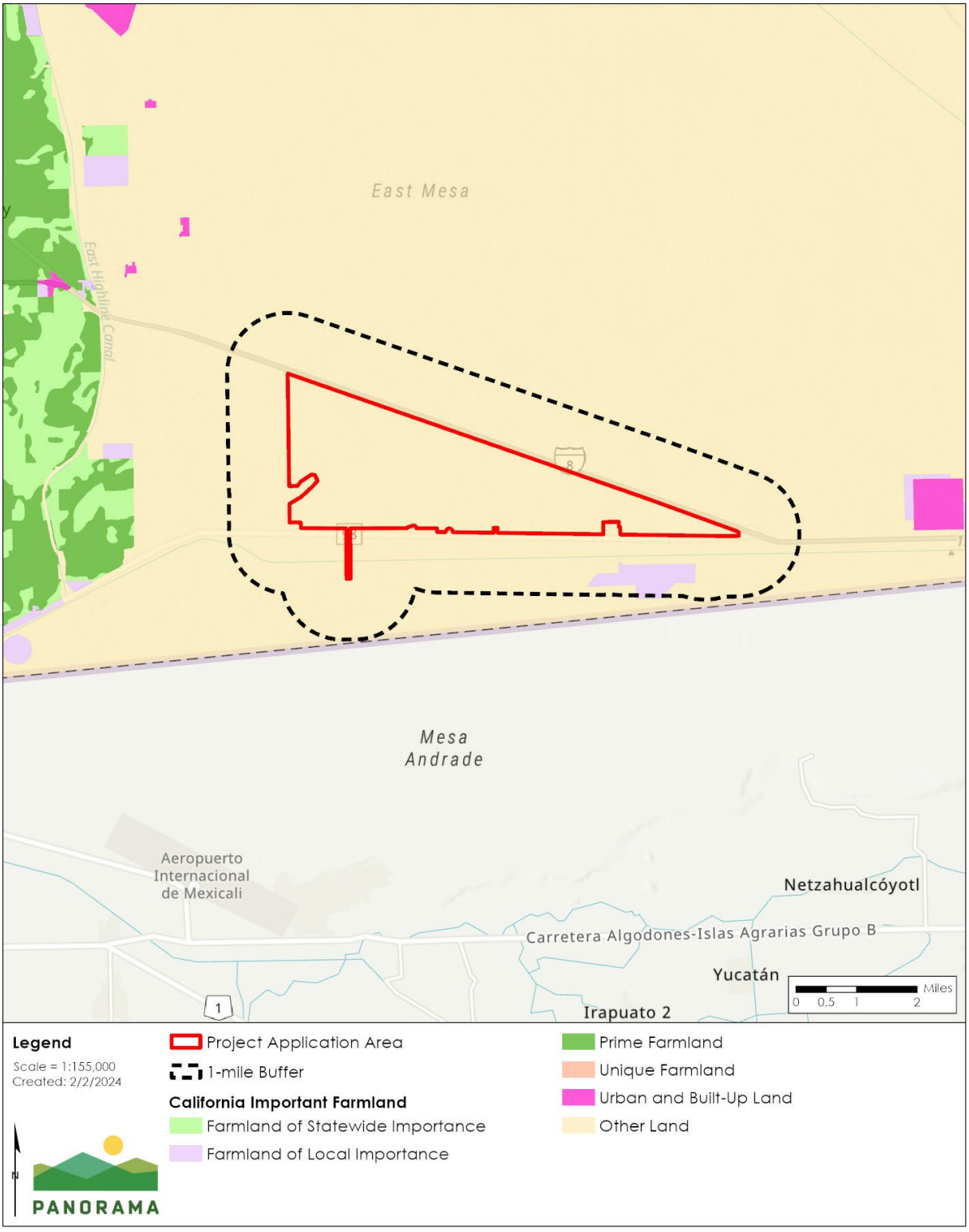
[1] For informational purposes, Imperial County allows for amendments to the Renewable Energy Overlay Zone if one of the following two conditions are satisfied: (1) Adjacent to the Existing Renewable Energy Overlay Zone: An amendment may be made to allow for development of a future renewable energy project located adjacent to the existing Renewable Energy Overlay Zone if the project is not located in a sensitive area and would not result in any significant environmental impacts; or (2) Island Overlay: An amendment may be made to allow for development of a future renewable energy project that is not located adjacent to the existing Renewable Energy Overlay Z one if the project is located adjacent (sharing a common boundary) to an existing transmission source, consists of the expansion of an existing renewable energy operation, and would not result in any significant environmental impacts.

Figure 4.6-4 Imperial County Land Use Designations



Source: (Intersect Power 2023a) (Imperial County Planning and Development Services 2023) (Imperial County Planning and Development Services 2018)

Figure 4.6-5 Farmland Designations



Source: (Intersect Power 2023a) (California Department of Conservation, Division of Land Resource Protection, and Farmland Mapping and Monitoring Program 2016)

Forest Resources
Section 12220(g) of the California Public Resources Code (PRC) defines forest land as "land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation and other public benefits." There are no forestry lands within the study area.

Existing Physical Land Uses

Residential
No occupied residential development exists within 1 mile of the Project Application Area. A residential development associated with the All-American Canal is located 0.25 mile south of the Project site but is no longer occupied. The next closest residence is 3.3 miles to the west on agricultural land.

Industrial
The Bureau of Reclamation's All-American Canal is 0.3 mile from the Project site and connects the Colorado River to the Imperial Valley (IID, n.d.-a). Approximately 3.1 million acre-feet of Colorado River water is delivered annually through the All-American Canal to nine cities and 500,000 acres of agricultural lands throughout the Imperial Valley (IID, n.d.-a).

Agriculture
The land 2.5 miles west of the Project site is designated for agricultural use according to the Imperial County General Plan. (Imperial County Planning and Development Services 2018). The agricultural land is zoned by Imperial County as General Agriculture (A-2) and Heavy Agriculture (A-3). This farmland is classified as Farmland of Local Importance, Farmland of Statewide Importance, and Prime Farmland by the DOC FMMP (CDOC, n.d.-a). The closest land under a Williamson Act Contract is located over 55 miles to the northeast.

Recreation/Open Space
The Project is abutted to the north and east by Recreation/Open Space land use designations (Imperial County Planning and Development Services 2018). The majority of the land designated as Recreation/Open Space is federal land managed by the BLM and BOR and contains designated open routes for recreational purposes. The Imperial Sand Dunes, the largest mass of sand dunes in California, is located over 9 miles to the east of the Project Application Area. The dune system extends for more than 40 miles in a band averaging 5 miles wide (BLM, n.d.). More than one million people per year visit the Imperial Sand Dunes for activities such as off-highway vehicle (OHV) use (Franco 2017).

Located approximately 9.5 miles west of the Project Application Area, the Heber Dunes State Vehicular Recreation Area is a 343 acre area popular with ATV riders (California State Parks, n.d.). The park is for day use only.

The Tamarisk Long Term Visitation Area is a Special Recreation Management Area (SRMA) approximately 700 feet south of the Project Application Area. During the "season," which runs

from September 15 to April 15, visitors are permitted to stay 14 days with a short-term permit, with a long-term permit for the entire season (BLM, n.d.). The Tamarisk LTVA does not have any developed campsites or restrooms, or a water hookup or pump station. Use data for the Tamarisk Long Term Visitation Area was not found on the BLM website or provided in the BLM DRECP Land Use Plan Amendment Special Recreation Management Area Unit Management Plan. Panorama visited the LTVA during peak use season (December 2023) and did not meet any person nor was there any sign of a camp host or any regular use. The BLM communicated to the Applicant on January 22, 2024, that the LTVA has been unofficially closed due to lack of use.

As shown above in Figure , directly north of the Project Application Area is the 88,840-acre East Mesa ACEC (BLM California Office 2016). The purpose of the East Mesa ACEC is to protect the unique wildlife and cultural values within those portions of the East Mesa and to provide for implementation of the Flat-tailed Horned Lizard Range-wide Management Conservation Strategy (BLM California Office 2016).

The Lake Cahuilla ACEC is split into portions near the Project site to the north and west. The purpose of the Lake Cahuilla ACEC is to protect and enhance cultural and paleontological values, while complying with existing legislation and BLM policies (BLM California Office 2016).

While these ACECs surround the Project Application Area, no Project components or activities would intrude into their boundaries.

Aviation

The Imperial County Airport is approximately 21 miles northwest of the Project Application Area. The Brawley Municipal Airport is 24 miles northwest of the Project. The Calexico International Airport is approximately 17 miles west of the Project. The Holtville airport is 6.5 miles northwest of the Project. The Project site is not within the boundaries of an Airport Land Use Compatibility Plan.

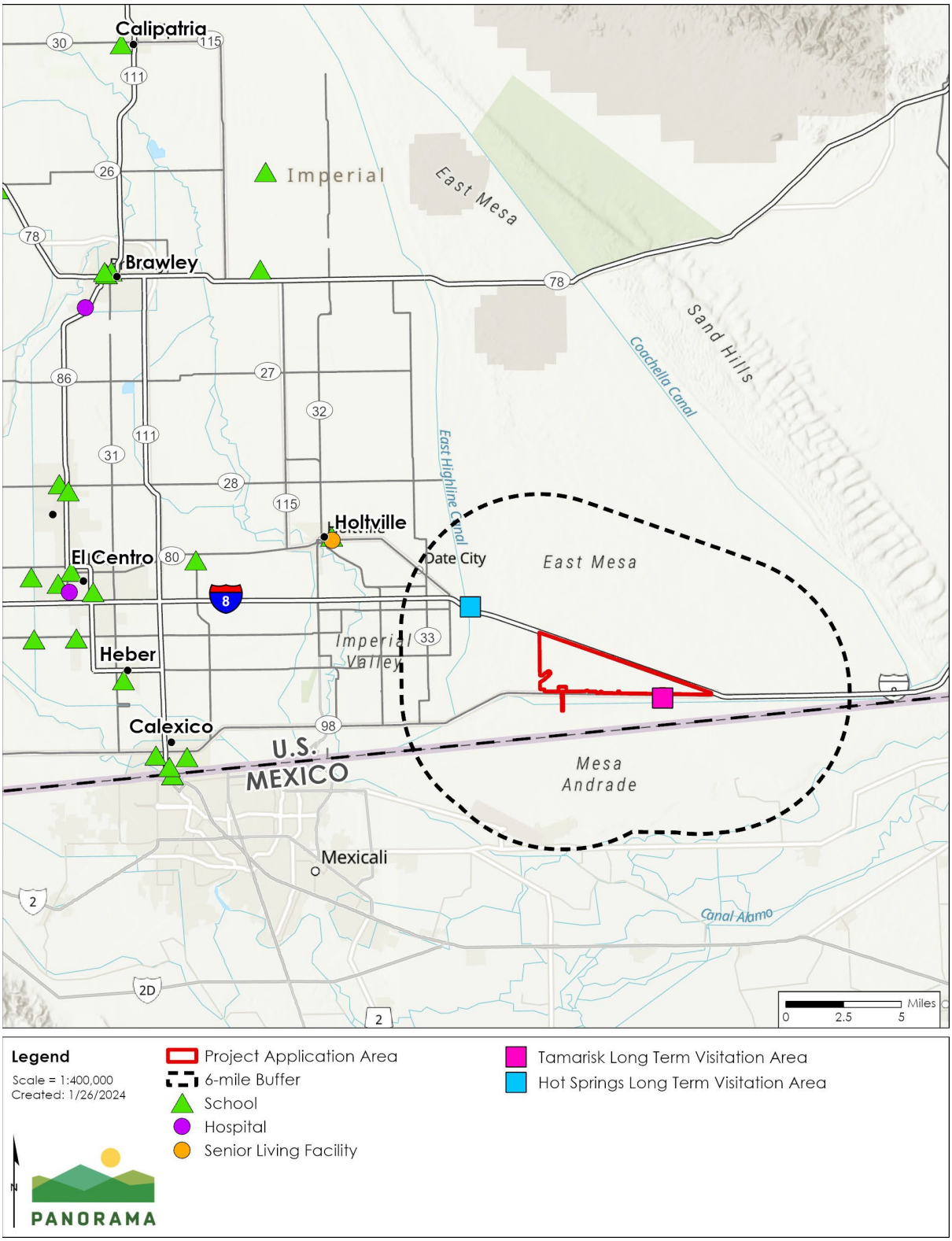
Natural Resource Extraction

A non-producing geothermal operation exists approximately 5.4 miles northwest of the Project site. No geothermal operations exist within the study area.

Sensitive Land Uses

No sensitive land uses (such as senior living facilities, schools, or residential areas) are located within 1 mile of the Project site or BAAH switchyard, or within 0.25 mile of the 500 kV loop-in transmission lines. The Project would be located approximately 6.2 miles east of the Verde school (Verde Elementary). The Verde school opened in 1980 and closed operations in 1989 (California Department of Education, n.d.). Three schools are located in Holtville, approximately 9.5 miles from the Project Application Area. The Blossom Valley Inn, a senior living facility, is located approximately 9.7 miles northwest of the Project Application Area, as shown on Figure 4.66.

Figure 4.6-6 Sensitive Receptors



Source: (Bureau of Land Management 2024a) (Bureau of Land Management 2024b) (California Department of Education 2021) (Homeland Infrastructure Foundation-Level Data (HIFLD) 2017) (Homeland Infrastructure Foundation-Level Data (HIFLD) 2023)

Cultural, Historic, and Religious Resources
The Lake Cahuilla ACEC is located within 1 mile of the Project site to the north and the west. The purpose of the Lake Cahuilla ACEC is to protect and enhance cultural and paleontological values while complying with existing legislation and BLM policies (BLM California Office 2016). No other areas are marked culturally, historically, or religiously significant within 1 mile of the Project site or BAAH switchyard, or within or 0.25 mile of the 500 kV loop-in transmission corridors.

4.6.2 Environmental Consequences

Methodology
This impact analysis is based on a review of existing land use designations as well as policies within land use plans including the Imperial County General Plan and the DRECP. In addition, FMMP maps and existing Williamson Act contract locations were reviewed.

Impact Evaluation Criteria
The following threshold criteria, as defined by the CEQA Guidelines Environmental Checklist (Appendix G of the CEQA Guidelines), were used to evaluate potential impacts on land use. Based on these criteria, the Project would have a significant impact on land use if it would:

- Physically divide an established community;
- Cause a significant environmental impact due to a conflict with a land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect?
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan;
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use, excepting those lands that would be expected to be converted or retired even without the project due to insufficient water resources for continued commercial agriculture, land subsidence due to historic groundwater over-pumping, soil contamination due to inadequate drainage, or the local weather effects of climate change;
- Conflict with existing zoning for agricultural use, or a Williamson Act Contract; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use, excepting those Farmlands that would be expected to be converted or retired even without the project due to insufficient water resources for continued commercial agriculture, land subsidence due to historic groundwater over-pumping, soil contamination due to inadequate drainage, or the local weather effects of climate change.

LU-1:

Would the Project physically divide an established community? (*No Impact*)

Project Site

The Project site would be located within an undeveloped rural area and is not within the boundary of an established community. Surrounding land use designations include agricultural and open space as designated by the Imperial County General Plan. The closest census designated place to the Project Application Area is Holtville, approximately 9.6 miles from the Project Application Area (U.S. Census Bureau, n.d.).

During construction and decommissioning, activities would be temporary and short-term in nature. Lane or road closures would not be required during construction or decommissioning of the Project. Construction and decommissioning of the Project components would not physically divide an established community. Access to businesses and other land uses in the Project vicinity would be maintained during construction and decommissioning of the Project site.

Routine operation and maintenance activities would remain within the Project site, which thereby would not prohibit access to communities. Maintenance activities would be short-term in nature and would not have a permanent impact on access to surrounding communities. Lane or road closures would not be required during operation and maintenance activities of the Project. Construction, operation and maintenance, and decommissioning of the Project would not physically divide or inhibit land uses in the Project vicinity. No impacts would occur.

Breaker-and-a-half Switchyard

The impacts associated with the BAAH switchyard would be the same as those above for the Project Site. No impacts would occur.

Loop-in Transmission Corridors

The 500 kV loop-in transmission corridors would be located on BLM and BOR land designated recreation/open space by the Imperial County General Plan and is generally undeveloped except for the All-American Canal. The nearest census designated place is located over 9 miles from the Project site.

Construction and decommissioning of the 500 kV loop-in transmission lines would require the temporary closure of SR 98 for the stringing or removing of the transmission lines over SR 98. Stringing or removing transmission lines over SR 98 would occur for a short period of time, less than 30 minutes. Any full road closures would be coordinated with Caltrans, and the appropriate permits would be acquired. Access to SR 98 would be restored following the stringing/removing of the loop-in transmission lines over SR 98.

Routine operation and maintenance would occur along the 500 kV loop-in transmission corridors and would not prohibit access to communities. Maintenance activities would be short-term in nature and would not have a permanent impact on access to surrounding communities. Lane or road closures would not be required during operation and maintenance activities of the 500 kV loop-in transmission corridors. No impact would occur.

Impact LU-2

Would the Project cause a significant environmental impact due to conflict with a land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect? (*Less than Significant*)

Project Site

As part of the Opt-In Application process, the CEC will review the Project for consistency with local land use plans, policies, and regulations. AB 205 (Chapter 61, § 2022) expands CEC's authority under the Warren-Alquist Act to establish a new certification program for eligible non-fossil-fueled power plants and related facilities to optionally seek certification from the CEC.

A portion of the Project site is located on private lands that, but for the CEC's superseding jurisdiction, would be subject to Imperial County's land use plans and policies. The Project site is designated as Recreation/Open Space by the Imperial County General Plan and is within the S-2 zone. The Recreation/Open Space General Plan designation permits the use of the land for renewable energy purposes, provided such facilities are approved subsequent to coordinated review by IID for electrical matters (County of Imperial, n.d.). Renewable energy activities are also allowed within the S-2 zone with a CUP. The Project Application Area is not located within the Renewable Energy Overlay Zone as delineated by the County General Plan's Renewable Energy and Transmission Element and the County's Land Use Ordinance, Division 17.

In the absence of the CEC's jurisdiction under AB 205, a CUP, following coordinated review by IID, and an amendment to the County's Renewable Energy Overlay Zone would otherwise be required to be issued by Imperial County in order for the Project to comply with Imperial County's zoning. As part of the Opt-In Application process, the CEC will coordinate with Imperial County and the Imperial Irrigation District on land use consistency and electrical matters. It may be desirable to merge the 6 private parcels that would be a part of the Project. Imperial County allows lot mergers under Title 9 of the Land Use Code, Division 8 – Subdivisions, Chapter 8 – Lot Mergers Initiated by Property Owner. Chapter 8 outlines the requirements for completing lot mergers. Table 4.62, below, provides a Project consistency analysis with the Imperial County General Plan.

Table 4.6-2 Project Consistency with the Imperial County General Plan

Policy	Consistency
Agricultural Element, Goal 1 – All Important Farmland, including the categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, as defined by Federal and State agencies, should be reserved for agricultural uses.	**Consistent.** The Project would not convert any land designated as Important Farmland to non-agricultural uses.
Agricultural Element, Goal 3: Limit the introduction of conflicting uses into farming areas, including residential development of existing parcels which may create the potential for conflict with continued agricultural use of adjacent property.	**Consistent.** The Project would not develop areas designated for farming. The Project's intended use would be complimentary to surrounding land use.

Policy	Consistency
Land Use Element, Goal 1: Preserve commercial agriculture as a prime economic force.	**Consistent.** The Project would not convert agricultural land or interfere with agricultural use during any phase.
Land Use Element, Goal 2: Diversify employment and economic opportunities in the County while preserving agricultural activity.	**Consistent.** The project would provide employment opportunities in Imperial County. The Project would not infringe on existing agricultural activity in the county.
Land Use Element, Goal 3: Achieve balanced economic and residential growth while preserving the unique natural, scenic, and agricultural resources of Imperial County.	**Consistent.** The Project would provide increased diversity for Imperial County's economy. Mitigation measures would be in place to preserve natural, scenic, and agricultural resources within the county.
Land Use Element, Goal 8: Coordinate local land use planning activities among all local jurisdictions and state and federal agencies among all local jurisdictions and state and federal agencies.	**Consistent.** The Project would work with the CEC, BLM, BOR, and relevant local agencies to ensure that coordination efforts are made.
Open Space and Conservation Element, Goal 1: Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value.	**Consistent.** The Project would be located in an area designated specifically for renewable energy development. Increasing renewable energy generation would have a net positive affect on energy allocation in Imperial County. Environmental impacts would be mitigated through the PDFs, CMAs, and mitigation measures.
Open Space and Conservation Element, Goal 8: Open space shall be maintained to protect the aesthetic character of the region, protect natural resources, provide recreational opportunities, and minimize hazards to human activity.	**Consistent.** The Project would be focused within regions compatible with renewable energy generation facilities and would not significantly inhibit natural, aesthetic, or recreation resources.
Renewable Energy and Transmission Element, Renewable Energy Overlay Zone	**Inconsistent:** The private land portion of the Project is outside the renewable energy overlay zone. The County's land use regulations require renewable energy projects to be sited on lands within the overlay zone. However, this private land was identified as a non-exclusion area for solar in the CEC land use screens and was included as a preferred area for solar in the Preferred Alternative of the DRECP Draft EIR/EIS, which included private lands. The private lands are also surrounded by BLM/BOR lands and there are no other private lands contiguous to the BLM/BOR portions where development of the project would be more prudent or feasible.

The Project site is within the jurisdiction of the BLM and BOR. BLM regulations require that all actions and authorizations conform to the approved resource management plans, (43 CFR 1610.5-3(a)), in the case of the Project, the CDCA Plan, as amended by the DRECP. The Project site is within a DFA as designated by the DRECP. DFAs explicitly allow renewable energy development. The DRECP LUPA also includes Conservation Management Actions (CMAs) and

a project must be consistent with all CMAs to avoid a land use plan amendment. As part of the BLM application review process, the Applicant has reviewed all the applicable CMAs required under the DRECP, and ensured the Project complies with each applicable CMA, see Appendix D.2.

Part of the Project Application Area is located within an existing utility corridor. As part of the BLM application review process, BLM required a Utility Corridor Conflict Analysis to resolve the conflict between Applicant's original BLM SF-299 filing and Utility Corridor K. The corridor conflict analysis assessed the feasibility of corridor modifications or project design changes that could ensure the long-term viability of the corridor, while also allowing for solar development. Working with the BLM, the Applicant modified the development boundaries originally defined in the SF-299 application submitted to the BLM to allow installation and operation of Project facilities within portions of Corridor K while also retaining corridor space for future utility development. The result of this coordination was a preserved, but reduced, utility corridor, which retained nearly 1,000 acres of the DFA for energy corridor use and brought the Project into conformance with the utility corridor plans.

While the private land portion of the Project would be inconsistent with the Renewable Energy and Transmission Element, Renewable Energy Overlay Zone of Imperial County's General Plan, the private land was identified as a non-exclusion area for solar in the CEC land use screens and was included as a preferred area for solar the Preferred Alternative in the DRECP Draft EIR/EIS. The private land is also surrounded on three sides (north, west, and east) by federal land designated as a solar development focus area under the DRECP and, to the south, by land designated as a utility corridor and a state highway. There are no other private lands contiguous to the public land portions of the project that are within the County's overlay zone. Impacts would be less than significant.

Breaker-and-a-Half Switchyard

The impacts associated with the BAAH switchyard would be the same as those above for the Project Site. No impacts would occur.

Loop-In Transmission Corridors

The loop-in transmission corridors would be located on land under the jurisdiction of the BLM and BOR. The loop-in transmission lines are within a DFA as designated by the DRECP and within a designated utility corridor. DFAs explicitly allow renewable energy development and utility corridors allow transmission lines. The Project would additionally comply with applicable CMAs per the DRECP, as indicated above. The 500 kV loop-in transmission corridors would not conflict with any land use plans or policies, and no impacts would occur.

LU-3

Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (*No Impact*)

Project Site

There are currently no Natural Community Conservation Plans in Imperial County (CDFW 2023). Additionally, there are currently no Habitat Conservation Plans in Imperial County (CDFW 2023). The Imperial Irrigation District is currently working on a Natural Community Conservation Plan and Habitat Conservation Plan in consultation with the California Department of Fish and Wildlife and the United Sates Fish and Wildlife Service (USFWS) to cover selected species and protect terrestrial and aquatic resources (IID, n.d.-b); however, the plan has not been adopted. Therefore, construction, operation and maintenance, and decommissioning of Project components would not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plans.

Breaker-and-a-Half Switchyard

The impacts associated with the BAAH switchyard would be the same as those above for the Project Site. No impacts would occur.

Loop-In Transmission Corridors

The loop-in transmission lines are not located within any local, regional, or state Habitat Conservation Plan or Natural Community Conservation Plan area. The loop-in transmission line would, therefore, not conflict with an HCP or NCCP. No impact would occur.

LU-4

Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use, excepting those lands that would be expected to be converted or retired even without the project due to insufficient water resources for continued commercial agriculture, land subsidence due to historic groundwater over-pumping, soil contamination due to inadequate drainage, or the local weather effects of climate change? (*No Impact*)

Project Site

The development of the Project does not require the conversion of farmland. The Farmland Mapping & Monitoring Program (FMMP) designates the Project as "other lands," which is not an important farmland category. The Project site would be located on primarily BLM-designated land and is consistent with its intended use as indicated in the DRECP. The portion of the Project located on private land is not designated for agricultural use. There are no active agricultural operations taking place in the Project Application Area (CDOC, n.d.-a). There would be no conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. No impact would occur.

Breaker-and-a-Half Switchyard

The impacts associated with the BAAH switchyard would be the same as those above for the Project Site. No impacts would occur.

Loop-In Transmission Lines
The development of the loop-in transmission lines corridors would not require the conversion of farmland. The loop-on transmission lines would be located on BLM and BOR land, consistent with its intended use. There are no active agricultural operations taking place in the Project Application Area. There would be no conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. No impact would occur.

LU-5

Would the Project conflict with existing zoning for agricultural use, or a Williamson Act Contract? (*No Impact*)

Project Site
Only the private land within the Project Application Area is subject to Imperial County zoning. The private land would be located within the Open Space/Preservation zone (S-2) as designated by Imperial County. The Project would not intrude into land designated for agricultural use. Imperial County does not participate in the California Williamson Act, and the closest Williamson Act Contract to the Project site is over 55 miles northeast; therefore, the Project would not conflict with a Williamson Act Contract (CDOC 2023). No impact would occur.

Breaker-and-a-Half Switchyard
The impacts associated with the BAAH switchyard would be the same as those above for the Project Site. No impacts would occur.

Loop-In Corridors
The 500 kV loop-in corridors would not be located within land designated by Imperial County zoning. The 500 kV loop-in corridors would be located on BLM and BOR land, consistent with its intended use. Additionally, the closest Williamson Act Contact to the Project Application Area is over 55 miles northeast; therefore, the Project would not conflict with a Williamson Act Contract. No impact would occur.

LU-6

Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use, excepting those Farmlands that would be expected to be converted or retired even without the project due to insufficient water resources for continued commercial agriculture, land subsidence due to historic groundwater over-pumping, soil contamination due to inadequate drainage, or the local weather effects of climate change? (*No Impact*)

Project Site
The Project site would be located approximately 2.5 miles east from the nearest active agricultural operation, and no direct impacts to agricultural land would occur. The Project would not indirectly cause the conversion of agricultural land due to incompatibility with surrounding land use. Solar energy production and agricultural use types are generally considered compatible uses as the Project does not involve the placement of a school, church, day care, or other use that would involve concentration of people at certain intervals that could cause a land use conflict with the active agricultural operations. The Project would not require the conversion of Farmland to non-agricultural use. The Project Site is also not located near any

forest lands and would therefore not require the direct or indirect conversion of forest land to a non-forest use. No impact would occur.

Breaker-and-a-Half Switchyard
The impacts associated with the BAAH switchyard would be the same as those above for the Project Site. No impacts would occur.

Loop-In Transmission Lines
The loop-in transmission lines would be approximately 2.3 miles from active agricultural land to the south, and no direct impacts to agricultural land would occur. The loop-in transmission corridors would not indirectly cause the conversion of agricultural land due to incompatibility with surrounding land use. Solar energy production and agricultural use types are generally considered compatible uses as the Project does not involve the siting of a school, church, day care, or other use that would involve concentration of people at certain intervals that could cause a land use conflict. The Project would not require the conversion of Farmland to non-agricultural use. The Project Application Area is also not located near any forest lands and would therefore not require the direct or indirect conversion of forest land to a non-forest use. No impact would occur.

4.6.3 Cumulative Impacts

Impacts of the Project would be considered cumulatively considerable if they would have the potential to combine with other past, present, or reasonably foreseeable future projects to become significant. A list of closely related past, present, and reasonably foreseeable future projects are provided in Chapter 4.0 Environmental Analysis.

Project Site

As described above, the Project would result in no impacts related to the division of an established community or conflicts with a Habitat Conservation Plan or Natural Community Conservation Plan and no significant environmental impacts arise out of the identified conflict with the County's overlay zoning (refer to Table 4.6-2). As such, land use plan inconsistencies would be less than significant. Therefore, the Project would not result in an impact that could cause or contribute to cumulative impacts to these issue areas.

Cumulative agricultural impacts would occur if cumulative development would convert Farmland to non-agricultural uses. Within 6 miles of the Project Application Area, there are 14 projects ranging from renewable energy to communication facilities. There are renewable energy projects located on agricultural land that may contribute to cumulative environmental impacts. The Project would not be located on agricultural land; therefore, it would not contribute to any cumulative effect.

Breaker-and-a-Half Switchyard

Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the

BAAH switchyard would have a less than considerable contribution to cumulative impacts related to land use.

Loop-in Transmission Lines

Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to land use.

4.6.4 Proposed Best Management Practices, Project Design Features, and Conservation Management Actions

As part of the Project, the Applicant and other entities involved in construction and operation would implement BMPs, PDFs, and CMAs. The Applicant has also prepared mitigation plans as required by the BLM.

Project Site Components

Best Management Practices

The Project would implement the following BMPs (Appendix D.1) related to Land Use:

- BMP 58: Overhead lines.
- BMP 59: Monitoring.
- BMP 60: Monitoring
- BMP 61: Signing.
- BMP 62: Decommissioning.

Conservation Management Actions

The Project would implement all applicable DRECP CMAs as identified in Appendix D.2.

Breaker-and-a-Half Switchyard

The same BMPs, PDFs, CMAs, and mitigation plans would apply to the BAAH switchyard.

Loop-in Transmission Corridors

The same BMPs, PDFs, CMAs, and mitigation plans would apply to the 500 kV loop-in transmission lines.

4.6.4 Laws, Ordinances, Regulations, and Standards Compliance

Table 4.6-3 Federal Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Federal Aviation Administration Title 14 Code of Regulations part 77.9	Requires that all structures exceeding Title 14 Code of Federal Regulations [CFR] part 77.9 notice criteria be submitted to the FAA so that an aeronautical study can be conducted	The Project would comply with Federal Aviation Administration Title 14 Code of Regulations part 77.9.

Desert Renewable Energy Conservation Plan, Land Use Plan Amendment to the California Desert Conservation Area Plan	The purpose of the DRECP is to conserve and manage plant and wildlife communities in the desert regions of California while facilitating the timely permitting of compatible renewable energy projects.	The Project would comply with the DRECP Land Use Plan Amendments.

Table 4.6-4 State Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Warren-Alquist Act	The AFC process is a certified regulatory process pursuant to the Warren-Alquist Act and, therefore, fulfills the requirements of CEQA. CEQA is codified in the California PRC, sections 21000-21178.1.	The Project would adhere to the requirements of the Warren-Alquist Act.

Table 4.6-5 Local Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Imperial County General Plan: Agricultural Element, Goal 1 – All Important Farmland, including the categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, as defined by Federal and State agencies, should be reserved for agricultural uses. – Objective 1.1 – Objective 1.3 Agricultural Element, Goal 3: Limit the introduction of conflicting uses into farming areas, including residential development of existing parcels which may create the potential for conflict with continued agricultural use of adjacent property. – Objective 3.1 – Objective 3.4 – Objective 3.6 – Objective 3.7 – Objective 3.8 Land Use Element, Goal 1: Preserve commercial agriculture as a prime economic force. – Objective 1.2 – Objective 1.3	A comprehensive guide for land use and development within Imperial County	The Project would conform with the Imperial County General Plan by implementing laws, BMPs, and CMAs, see Table 4.6-2 for details on zoning.

Land Use Element, Goal 2: Diversify employment and economic opportunities in the County while preserving agricultural activity. – Objective 2.1 – Objective 2.4 Land Use Element, Goal 3: Achieve balanced economic and residential growth while preserving the unique natural, scenic, and agricultural resources of Imperial County. – Objective 3.2 – Objective 3.6 – Objective 3.8 – Objective 3.11 – Objective 3.15 Land Use Element, Goal 6: Promote orderly industrial development with suitable and adequately distributed industrial land. – Objective 6.1 Land Use Element, Goal 8: Coordinate local land use planning activities among all local jurisdictions and state and federal agencies among all local jurisdictions and state and federal agencies. – Objective 8.1 – Objective 8.8 – Objective 8.9 Open Space and Conservation Element, Goal 1: Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value. – Objective 1.1 Open Space and Conservation Element, Goal 8: Open space shall be maintained to protect the aesthetic character of the region, protect natural resources, provide recreational opportunities, and minimize hazards to human activity. – Objective 8.2 – Objective 8.9		
Imperial County Code of Ordinances, Title 9 Land Use Code, Division 5 – Zoning Areas Established, Chapter 19 – S-2 (Open Space/Preservation) – 90519.02 – Uses permitted with a conditional use permit: Major facilities – 90519.04 – Minimum lot size: 20 acres (net) – 90519.06 – Yard and setbacks	Designates land use zones and their intended use and development requirements within Imperial County	– Project facilities would be setback at a minimum of 100 feet from all property lines. – Tallest component would be the 500 kV loop-in transmission lines up to a maximum

– Front yard setback: 30 feet minimum from property line or 80 feet from center line of adjacent road – Side yard setback: 20 feet minimum from property line – Rear yard setback: 20 feet minimum from property line – 90519.07 – Height limit: 40 feet maximum – 90519.09 – Parking: off-street parking per Sections 90402.00 through 90402.15		height of 199 feet which could require a variance but for the CEC's jurisdiction under AB 205. – Off-street parking has been incorporated into the design and would meet parking requirements.
Imperial County Code of Ordinances, Title 9 Land Use Code, Division 8 – Subdivisions, Chapter 8 – Lot Mergers Initiated by Property Owner	Allows for lot mergers by owners and describes process for completing lot mergers	Applicant would potentially merge the 6 private lots in conformance with the Subdivision Map Act requirements.

4.6.5 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application is provided in Appendix E.1. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2.

Pursuant to Assembly Bill 205 subsection 25545.1, the CEC retains exclusive permitting authority over matters that would normally rest with the County. Pursuant to Public Resources Code section 25545.5, the Applicant and CEC would collaborate with the County on review of this Opt-in Application to ensure compliance with laws related to use of the private land.

4.6.6 References

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4.7 Noise

This section describes existing noise environmental conditions and anticipated impacts that would result from construction, operation and maintenance (O&M), and decommissioning of the Project. This section addresses noise concepts, existing noise levels, potential Project impacts, and mitigation measures that would be required to reduce or avoid substantial effects, if applicable.

Section 4.7.3 discusses the environmental setting. Section 4.7.4 identifies the potential noise impacts that may result from Project construction, operation and maintenance, and decommissioning. Section 4.7.5 evaluates potential cumulative impacts. Section 4.7.6 discusses measures to address Project impacts. Section 4.7.7 provides an overview of applicable federal, State, and LORS and the Project's compliance therewith.

4.7.1 Noise Concepts

Noise is generally defined as undesirable sound that is a byproduct of human activities. Sound becomes undesirable when it interferes with normal day-to-day activities including sleep, verbal communication, recreation, and tasks requiring concentration or coordination, or when it causes actual physical harm or has adverse effects on the health of the environment.

Metrics of Noise

The sound pressure level is used to characterize the loudness of an ambient sound, and the decibel (dB) scale is used to quantify sound intensity. Because sound can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale is used to reflect this wide range. Because the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human perception is expressed in the A-weighted decibel (dBA), which refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. The A-weighted sound level is used in the criteria for most noise evaluations. Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A–weighted sound level over a given time period (Leq)[1]; average day–night 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied for nighttime (Ldn)[2]; and community noise equivalent level (CNEL)[3], also a 24-hour average that

[1] The *equivalent sound level* (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

[2] Nighttime is defined as between 10:00 p.m. and 7:00 a.m.

[3] CNEL is calculated with the addition of a 5-decibel penalty in the evening, defined as 7:00 to 10:00 p.m., and a 10-decibel penalty for nighttime, defined as between 10:00 p.m. and 7:00 a.m.

includes both an evening and a nighttime sensitivity weighting. All references to *decibels* in this analysis should be assumed to be A-weighted (i.e., dBA) unless noted otherwise. Table 4.7-1 below, identifies dBA levels for common sounds experienced in the human environment.

On the dBA scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA. Except in carefully controlled laboratory experiments, a change of 1 dBA in sound level cannot be perceived. Outside of the laboratory, a 3 dBA change is considered a perceptible difference while a 5 dBA change is readily noticeable. A 10 dBA increase in the level of a continuous noise represents a perceived doubling of loudness (Caltrans 2013).

Noise Attenuation

Noise from a *point source*, a source that is localized and stationary (e.g., construction equipment), attenuates (reduces) at a rate of 6 dBA to 7.5 dBA per doubling of distance from the source, depending on ground absorption. Noise at *soft sites*, meaning those that consist of an absorptive ground surface such as soft dirt, grass, or scattered bushes, attenuates at 7.5 dB per doubling. Nose at *hard sites*, meaning those that consist of reflective surfaces (e.g., parking lots, still bodies of water), attenuates at a lower rate (6 dBA per doubling). For example, when the attenuation is 6 dBA per doubling, a 60 dBA noise level measured at 50 feet from a point source would be approximately 54 dBA at 100 feet from the source and 48 dBA at 200 feet from the source. Noise from a *line source* , such as a street or roadway with moving vehicles, typically attenuates at a lower rate, approximately 3 dBA to 4.5 dBA each time the distance doubles from the source, with the rate also depending on ground absorption (Caltrans 1998). Physical barriers, such as berms or sound walls, located between a noise source and the noise receptor increase the attenuation that occurs by distance alone. Noise from large construction sites has characteristics of noise from both point and line sources, so attenuation would be expected to range between 4.5 dBA and 7.5 dBA per doubling of distance.

4.7.2 Groundborne Vibration Concepts

Vibration is the physical manifestation of energy carried through the earth and structures. *Groundborne vibration*, consisting of rapidly fluctuating motions or waves, has the potential to disturb people perceiving it and to damage buildings. Low-level vibrations may cause secondary vibrations in the form of slight rattling of windows, doors, stacked dishes, and the like, a potentially irritating disturbance that, while posing little risk of actual structural damage, can be cause for vibration complaints.

Construction activities can produce varying degrees of groundborne vibration, depending on the equipment and methods employed. Groundborne vibrations from construction activities very rarely reach levels high enough to cause damage to structures; however, special consideration must be given when fragile historical buildings are in proximity to a construction site.

Table 4.7-1 Typical Noise Levels in the Environment

Noise level (dBA)	Common outdoor examples	Common indoor examples
Over 110		Rock band
110–100	Jet flyover at 1,000 feet	
100–90	Gas lawnmower at 3 feet	
90–80	Diesel truck at 50 feet at 50 mph	Food blender at 3 feet or a Garbage disposal at 3 feet
80–70	Noisy urban area, daytime, or a gas lawnmower at 100 feet	Vacuum cleaner at 10 feet
70–60	Commercial area or Heavy traffic at 300 feet	Normal speech at 3 feet
60–50	Quiet urban daytime	Large business office or Dishwasher in next room
40–30	Quiet urban nighttime or quiet suburban nighttime	Theater, large conference room (background), or library
30–20	Quiet rural nighttime	Bedroom at night, concert hall (background)
Below 20		Broadcast/recording studio (background)

Source: (Caltrans 2013)

Groundborne Vibration Metrics

The most common measure used to quantify construction vibration amplitude is the *peak particle velocity* (PPV), defined as the maximum instantaneous peak velocity of the vibratory motion in inches per second.

4.7.3 Environmental Setting

Local Land Uses and Noise Sources

Current land use at and surrounding the Project Application Area is recreational open space in unincorporated Imperial County and the All-American Canal located south of the Project site. Agricultural land uses are located approximately 2.5 miles west of the Project site. The nearest incorporated city is Holtville, located approximately 10 miles northwest of the Project.

Noise sensitive receptors identified in the Imperial County General Plan's Noise Element include but are not limited to, residences, schools, hospitals, parks, and office buildings (County of Imperial 2015). The BLM Tamarisk Long Term Visitation Area is located approximately 700 feet south of the Project area. During the "season" (September 15 to April 15), visitors to BLM long-term visitation areas (LTVAs) with a short-term permit are permitted to stay up to14 consecutive days within a 28-day period or, with a long-term permit, for any length of time.

Camping from April 16 to September 14 is free, but the standard 14-day limit applies (BLM, n.d.). The LTVA would not be considered a permanent noise sensitive receptor because it is not permanent residential housing, and campsites would be used for a limited duration. A cluster of abandoned residential dwelling units for the All-American Canal Hydroelectric Plant is located approximately 0.5 mile south of the Project site. Abandoned residential dwellings are not considered sensitive receptors because there are no humans occupying the dwelling units to perceive noise. No permanent noise sensitive receptors are located in proximity to the Project.

There are no airports within 2 miles of the Project site.

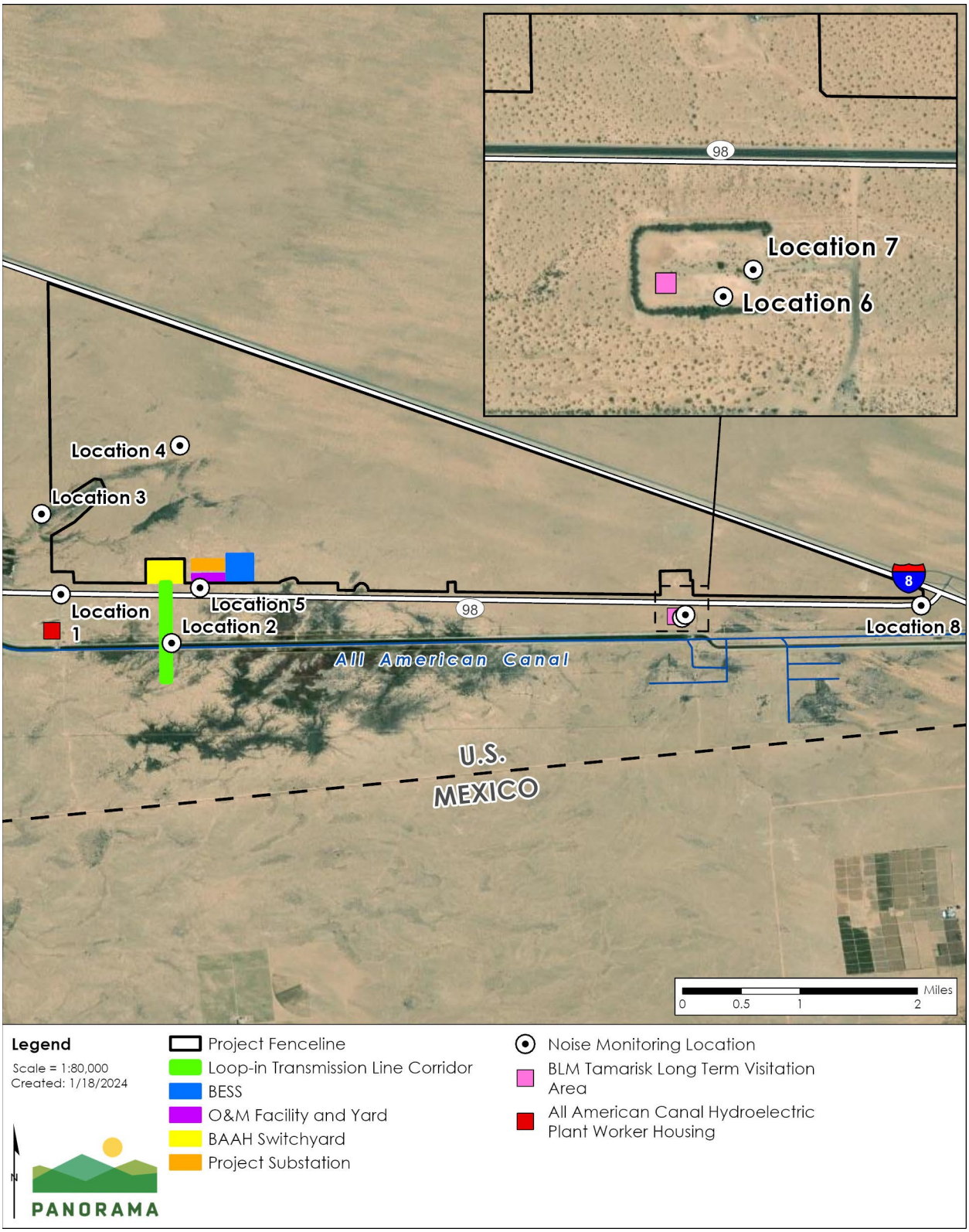
Ambient noise levels within the vicinity of the Project are influenced by roadway and highway noise from Interstate 8 and Highway 98, both of which are adjacent to the Project site. According to the U.S. Environmental Protection Agency (EPA), outdoor noise levels are generally near 35 dBA Ldn in wilderness areas and near 40 dBA Ldn in rural residential areas (EPA, United States Office of Noise Abatement Control 1974). Heavy traffic at a distance of 300 feet generates noise near 60 dBA (Caltrans 1998).

Where subtransmission lines exist, the noise from corona discharge and similar associated electrical phenomena can occasionally be heard as a crackling or hissing sound. Substations also generate audible noise in the immediate vicinity. Transformers are generally the major sources of audible noise within a substation. Transformer noise sources are core (e.g., non-load) noise, load noise (i.e., when electrical load is connected to a secondary winding in a transformer), cooling pump noise, and fan noise. The predominant noise from a transformer is a hum that emanates from the core of the transformer that is perceptible by the human ear.

Ambient Noise Survey

Panorama Environmental, Inc., conducted baseline sound level surveys in December 2023 (Panorama Environmental, Inc. 2023). Monitoring was conducted at eight locations, as shown in Figure 4.7-1. Table 4.7-2 provides the noise survey locations, sample times, and measured minimum and maximum A-weight sound levels at each location.

Figure 4.7-1 Sound Monitoring Locations



Source: (Panorama Environmental, Inc. 2023)

Table 4.7-2 Summary of Measured Sound Measurements

Location	Description	Sample times	Lmin (dBA)	Lmax (dBA)
Location 1 32.711978°N 115.218204°W	Off site, on Highway 98	12:17:30–12:18:03 p.m.	39.7	64.3
Location 2 32.70574° N, 115.20214° W	Off site, south of High 98 and adjacent to the All American Canal	12:30:15 – 12:30:46 p.m.	34.2	56.5
Location 3 32°43'19.5"N 115°13'15.7"W	On site, along the western edge of the Project site	13:23:10–13:23:32 p.m.	47.2	69.1
Location 4 32°43'48.4"N 115°12'01.6"W	On site, in the middle of the Project site	13:38:38–13:40:09 p.m.	44.6	60.2
Location 5 32°42' 45.0"N 115°11'52.3"W	On site, along the central southern edge of the Project site	13:41:45–13:42:51 p.m.	44.4	61.3
Location 6 32°42'27.95"N 115°07'39.03"W	Off site, at the BLM LTVA	13:53:09–13:55:47 p.m.	52.9	69.4
Location 7 32°42'29.27"N 115°07'37.23"W	Off site, at the BLM LTVA	13:57:48 –13:58:24 p.m.	54	63.4
Location 8 32°42'31.52"N, 115°05'33.61"W	Off site, at the Caltrans Midway Yard on Highway 98	13:59:15–13:59:49 p.m.	49.6	70.2

Source: (Panorama Environmental, Inc. 2023)

4.7.4 Impact Analysis

Methodology

Noise impacts from construction, operation and maintenance, and decommissioning activities are assessed in this subsection. The assessment of noise impacts reflects the ambient noise levels in the Project Application Area and noise levels that would be generated during construction, operation and maintenance, and decommissioning of the Project.

Impact Evaluation Criteria

Following the CEQA guidelines (California Code of Regulations [CCR], title 14, Appendix G, section XI), the Project would cause a significant impact if it would result in any of the following:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies
- Generation of excessive groundborne vibration or groundborne noise levels
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels

Impact NOI-1

Would the Project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (*Less than Significant*)

Construction and Decommissioning Noise

Solar Arrays, BESS, and Project Substation

Construction of the Project would involve the use of noise-generating equipment, including transport of personnel and materials to the site, heavy machinery used in grading and clearing the site, and pneumatic post drivers to install foundation supports for PV panels as well as equipment used during construction of the substation and BESS. Construction activities would occur for approximately 24 months.

Construction equipment would typically operate during daylight hours, between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, for a maximum of 8 hours per day per piece of equipment, daily. Given daytime heat conditions, a portion of PV panel installation could occur at night during the summer, extending construction up to 24 hours per day. Night work can improve working conditions for construction personnel by reducing exposure to extreme heat and is a common practice in Imperial County. Weekend construction work is not expected to be required but may occur on occasion, depending on scheduling considerations. The majority of the Project site and surroundings are located on federal land administered by the BLM and BOR. Federal land is not subject to the local general plan or noise ordinance. A portion of the Project site is located on private land within Imperial County and is zoned Open Space (S-2). In addition, Open Space (S-2) is located directly north of Interstate 8 and north of the Project site. Imperial County sets sound level limits by zoning district in the Imperial County Code of Ordinances Division 7, chapter 1, section 90702.00 (Imperial County, n.d.). No Imperial County sound level limits apply to open space zones. Imperial County does not have a construction noise ordinance, and the zoning code does not set any specific noise limits on construction noise.

There are no noise sensitive receptors adjacent the Project site. The area in the vicinity of the Project site would experience a temporary increase in ambient noise levels during construction and decommissioning of the Project due to the use of heavy construction equipment during both construction and decommissioning activities.

Table 4.7-3 identifies the noise levels associated with typical heavy construction equipment at a reference distance of 50 feet from the source. Construction equipment noise levels at a distance of 50 feet from the individual equipment can range from about 74 to 85 dBA, depending on the types of equipment in operation at any given time and phase of construction.

Table 4.7-3 Typical Construction Equipment Noise Levels

Equipment	Acoustical usage factor (%) [a]	Measured L_{eq} (dBA at 50 feet)
Augur Drill Rig	20	84
Backhoe	40	78
Compactor (ground)	20	83
Concrete Mixer Truck	40	85
Crane	16	85
Dozer	40	82
Dump Truck	40	76
Excavator	40	81
Flat Bed Truck	40	74
Front End Loader	40	79
Generator	50	81
Grader	40	83
Pickup Truck	40	75
Pneumatic Tools	50	85
Roller	20	80
Scraper	40	84
Warning Horn	5	83
Welder/Torch	40	74

Note:

[a] The average fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Source: (FHWA 2006)

The closest potential noise receptor to the Project site would be the BLM Tamarisk LTVA, which is located 700 feet away and on the other side of Highway 98. Because the LTVA is not a sensitive land use, would have temporary visitors who would be subject to noise for limited durations, and the area is on federal land, which is not subject to local noise ordinances, the construction and decommissioning noise would not result in adverse impacts related to any local general plan, ordinance, or standards. In addition, due to attenuation of noise levels with distance, noise levels at the LTVA would not increase substantially during construction and operation[4]. Therefore, noise impacts from construction of the solar facility, BESS, and substation would be less than significant.

Breaker-and-a-Half Switchyard

The impacts associated with the BAAH switchyard would be the same as those above for the Project Site. Impacts would be less than significant.

Loop-in Transmission Lines

Construction and decommissioning of the loop-in transmission line and breaker and a half would involve use of loaders, cranes, and welders. Helicopters could also be used during construction. Construction of the loop-in transmission line would last approximately 30 days, and construction of the breaker and a half would last up to 6 months. The noise levels generated by the equipment used in construction and decommissioning is provided in Table 4.7-3. Noise levels from helicopters would be approximately 90 dBA to 97 dBA at 50 feet. The loop-in-transmission line and breaker and a half are located on federal land, where no local noise ordinance or standards apply. The loop-in transmission line is approximately 4.3 miles from the BLM LTVA. Due to the distance between the loop-in transmission line and the visitation area, the loop-in transmission and breaker and a half construction would not cause a noticeable increase in noise levels at the visitation area, and the impact on noise levels would be less than significant.

Worker Exposure to Construction and Decommissioning Noise

Worker exposure levels to construction and decommissioning noise would vary depending on the phase of the Project and the proximity of the workers to the noise generating-equipment. OSHA regulations limit worker noise exposure to 90 dBA over an 8-hour work period. Workers would not be exposed to noise levels in excess of OSHA limits. The Project would develop a Hearing Protection Plan, which complies with California Division of Occupational Safety and Health Administration (Cal/OSHA) requirements. This Hearing Protection Plan would be incorporated into the Project's construction Health and Safety Plan. The plan would require

[4] The highest noise levels at 50 feet would be 85 dBA which would attenuate to approximately 62 dBA at 700 feet (Szyk, B. *Distance Attenuation Calcuator.* Available at https://www.omnicalculator.com/physics/distance-attenuation. Accessed: 15 January 2024). Noise would typically be lower than this as the majority of the site is further than 700 feet from the LTVA and construction would not occur at the same location during the entirety of the Project.

appropriate hearing protection for workers and visitors throughout the duration of the construction period. Therefore, noise impacts on construction workers would be less than significant.

Operation

All Project Components

Operational noise sources from the Project would include a humming noise generated by electrical equipment such as transformers and inverters within the solar arrays, BESS, and substation and potential corona noise generated by the gen-tie line and loop-in transmission line. There are no noise sensitive receptors within the Project vicinity. The BLM Tamarisk LTVA is located 2.5 and 4 miles from the BESS and substation location options. Given the distance between the operational noise sources and any noise sensitive receptors, the Project would not create a substantial increase in ambient noise, and the impact would be less than significant.

Breaker-and-a-Half Switchyard

The impacts associated with the BAAH switchyard would be the same as those above for all project components. Impacts would be less than significant.

Loop-in Transmission Lines

The impacts associated with the loop-in transmission lines would be the same as those above for all project components. Impacts would be less than significant.

Worker Exposure to Operational Noise

Operational noise sources from the Project would not be substantial and would not be generated in areas that are commonly occupied by occupational workers, such as the O&M office buildings. The Project would also comply with applicable Cal/OSHA requirements for hearing protection. Therefore, the impacts on workers associated with the operational noise of the Project would be less than significant.

Impact NOI-2

Would the Project generate excessive groundborne vibration or groundborne noise levels? (*No Impact*)

Construction Vibration Impacts – All Project Components

Construction activities may result in temporary groundborne vibration from the use of heavy construction equipment on site and certain activities such as post driving. It is conservatively assumed that an impact pile driver, as discussed in *FTA's Transit Noise and Vibration Impact Assessment Manual*, would be used for the Project. However, an impact pile driver as considered by FTA is larger than the type of equipment that would be used for this Project. Other construction activities are less intensive than pile driving and would have lower PPV than pile driving. Therefore, vibration levels from pile driving are considered a conservative scenario for construction at the solar facility and BESS.

In most cases, vibration induced by typical construction equipment does not result in adverse effects on people or structures, as vibrations attenuate very rapidly with distance (Caltrans 2020). At the highest levels of vibration, damage to structures is primarily architectural (e.g.,

loosening and cracking of plaster or stucco coatings) and rarely results in structural damage. Caltrans states that 0.3 PPV is the threshold for vibration impacts on older residential structures and 0.5 PPV for newer residential structures, and commercial and industrial buildings. A threshold under 0.5 PPV is rarely used for impact analysis unless the proposed construction is occurring near old residential areas or historic buildings. For effects on people, the most severe human responses occur at a threshold of 2.0 PPV from transient sources and 0.4 PPV from continuous/frequent intermittent sources. For example, at a distance of at 120 feet from the source, pile driving in dense and compacted sand would produce groundborne vibration of 0.43 PPV, below the threshold for newer residential structures (Caltrans 2020). The nearest older residential structures are 2,400 feet from the Project fenceline and would not be impacted by vibrations from pile driving.

There are no structures or noise sensitive receptors within the Project vicinity. The closest potential receptors to the Project would be the BLM Tamarisk LTVA, which is located 700 feet south from the Project site, and the abandoned residential structures associated with the All-American Canal 0.5 mile south of the Project site. Given the distance between Project site and the temporary nature of Project construction, vibration impacts from the Project would not generate excessive groundborne vibration that would affect any sensitive receptor or structure. Therefore, there would be no impacts from groundborne vibration associated with construction of the Project.

Breaker-and-a-Half Switchyard
The impacts associated with the BAAH switchyard would be the same as those above for all project components. No impacts would occur.

Loop-in Transmission Lines
The impacts associated with the loop-in transmission lines would be the same as those above for all project components. No impacts would occur.

Operational Vibration Impacts
Once constructed, the Project would not generate groundborne vibration. Thus, operation and maintenance of the Project, including loop-in transmission line and breaker and a half, would not result in any operational vibration, and no impact would occur.

Breaker-and-a-Half Switchyard
The impacts associated with the BAAH switchyard would be the same as those above for all project components. No impacts would occur.

Loop-in Transmission Lines
The impacts associated with the loop-in transmission lines would be the same as those above for all project components. No impacts would occur.

Impact NOI-3

For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? (*No Impact*)

The Project Application Area, including the BAAH switchyard and loop-in transmission line, is not located within the vicinity of a private airstrip, within an airport land use plan, or within 2 miles of a public airport. Therefore, no impacts from noise generated from a location within the vicinity of a private airstrip or public airport would occur.

Breaker-and-a-Half Switchyard

The impacts associated with the BAAH switchyard would be the same as those above for all project components. No impacts would occur.

Loop-in Transmission Lines

The impacts associated with the loop-in transmission lines would be the same as those above for all project components. No impacts would occur.

4.7.5 Cumulative Impacts

Impacts of the Project would be considered cumulatively considerable if they would have the potential to combine with other past, present, or reasonably foreseeable future projects to become significant. A list of closely related past, present, and reasonably foreseeable future projects is provided in Table 4-1 and shown in Figure 4-1 in Chapter 4: Environmental Analysis.

Cumulative construction operational and decommissioning noise and vibration impacts would occur if cumulative projects could potentially impact the same sensitive receptors. Since there are no sensitive receptors in proximity to the Project Application Area, the Project would not create a cumulatively significant noise impact on any sensitive receptor.

Breaker-and-a-Half Switchyard

Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to noise.

Loop-in Transmission Lines

Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to noise.

4.7.6 Proposed Best Management Practices, Project Design Features, and Conservation Management Actions

As part of the Project, the Applicant and other entities involved in construction and operation would implement BMPs, PDFs, and CMAs.

Project Site Components

Best Management Practices and Project Design Features

The Project would implement the following BMPs and PDFs related to noise. See Appendix D.1 for the full language of the BMPs.

- BMP 65 through BMP 78 (Noise)

Conservation Management Actions

The Project would implement the following DRECP CMAs relevant to noise. See Appendix D.2 for the full language of the CMAs.

- LUPA-BIO-12

Mitigation Plans

The Project would implement the following mitigation plans relevant to noise. See Appendix I for the plans.

- Health, Safety and Noise Plan

Breaker-and-a-Half Switchyard

The same BMPs, PDFs, CMAs, and mitigation plans would apply to the BAAH switchyard.

Loop-in Transmission Corridors

The same BMPs, PDFs, CMAs, and mitigation plans would apply to the 500 kV loop-in transmission lines.

4.7.7 Laws, Ordinances, Regulations, and Standards Compliance

Table 4.7-4 Federal Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Compliance
Occupational Safety and Health Act of 1970	Exposure of workers over 8-hour shift limited to 90 dBA	The Project would adhere to applicable OSHA regulations that control worker noise exposure. Refer to Section 4.7.4.

Table 4.7-5 State Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Compliance
Cal/OSHA, 8 CCR Article 105 §§ 095 et seq.	Exposure of workers over 8-hour shift limited to 90 Dba	The Project would adhere to applicable OSHA regulations that control worker noise exposure. Refer to Section 4.7.4, Impact NOI-1.

California Vehicle Code §§ 23130 and 23130.5	Regulates vehicle noise limits on California highways.	The Project would not include construction of a highway and would not operate vehicles on highways that generate noise levels in excess of California standards.

No noise local laws, ordinances, regulations, or standards for noise are applicable to the Project, as discussed in Section 4.7.4, Impact NOI-1.

4.7.8 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application is provided in Appendix E.1. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2.

4.7.9 References

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4.8 Paleontological Resources

This section discusses the potential effects of the Project on paleontological resources that could result from construction, operation, and decommissioning of the Project. The information provided in the following sections has been adapted from a report compiled by Chronicle Heritage entitled Paleontological Resource Assessment Report for the Perkins Renewable Energy Project, Imperial County, California (Clifford and Scherzer, 2023). The report is provided in Appendix Q. This section is consistent with state regulatory requirements for paleontological resources pursuant to CEQA.

Paleontological resources are the evidence of once-living organisms as preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (trackways, imprints, burrows, etc.). In general, fossils are considered to be greater than 5,000 years old (older than Middle Holocene) and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks formed under certain conditions (Society of Vertebrate Paleontology [SVP], 2010).

The study scope was developed according to the CEC's paleontological resources guidelines (CEC, 2023) that require review of relevant scientific literature and geologic mapping to determine the geology and stratigraphy of the area and characterization of the paleontological sensitivity geologic units. In addition, to determine whether or not fossil localities have been previously discovered within the Project area or a particular rock unit, a search of pertinent local and regional museum repositories for paleontological localities was conducted at the Los Angeles County Museum of Natural History (NHMLAC), the San Bernardino County Museum (SBCM), the San Diego Natural History Museum (SDNHM), and the Western Science Center (WSC). Published geologic and paleontological literature of the Project area were also reviewed. Finally, measures were proposed for mitigation of impacts to paleontological resources.

Section 4.8.1 discusses the environmental setting for paleontological resources. Section 4.8.2 identifies potential impacts that may result from Project construction, operation (including maintenance), and decommissioning ground-disturbing activities including grading of access roads, augering and trenching in preparation of array and electrical installation, and excavation for ancillary facility construction. Section 4.8.3 evaluates potential cumulative impacts to paleontological resources. Section 4.8.4 discusses best management practices, project design features, and mitigation measures to address impacts to paleontological resources. Section 4.8.5 provides an overview of applicable federal, state, and local laws, ordinances, regulations, and standards of compliance for paleontological resources under the Project.

4.8.1 Environmental Setting

The Project area is within the Colorado Desert geologic province of California, part of the larger Sonoran Desert, one of the hottest and most arid environments in North America. The Colorado Desert extends from the Mojave Desert to the north, the Colorado River on the east, the

Peninsular Ranges on the west, and south into Mexico. Dominant features within the Colorado Desert include the Colorado River, Chocolate Mountains, Chuckwalla Mountains, Chuckwalla Valley, Algodones Dunes, Salton Trough, and the Salton Sea (Norris and Webb, 1990).

Regional Geologic Setting

The Project area is at the southern end of the East Mesa in the southeastern part of the Imperial Valley. The Imperial Valley is bordered by the Chocolate Mountains on the east, the Peninsular Range on the west, and the Salton Sea to the north (Norris and Webb, 1990). The East Mesa is an elevated alluvial (and possibly lacustrine) surface that slopes westward from approximately 150 feet above mean sea level (amsl) to 50 feet amsl toward the lower-lying central Imperial Valley. The East Mesa is covered, in part, by eolian (wind-blown) sand dunes up to 20 feet thick (Loeltz et al., 1975). The eastern high-water mark of ancient Lake Cahuilla, at approximately 45 feet amsl, is immediately west of East Mesa (Alles, 2011; Deméré, 2002).

The basement rock of the Imperial Valley and the surrounding mountains are composed of diverse plutonic igneous lithologies from a Mesozoic batholith that intruded into Precambrian to Paleozoic metamorphic basement rock. The Imperial Valley is filled with up to 20,000 feet of Cenozoic sedimentary rock and moderately consolidated to unconsolidated Quaternary sedimentary deposits. The thickest sediment accumulation is in the south-central portion of the Imperial Valley (Loeltz et al., 1975). The Quaternary deposits were derived, in part, from local sources in the igneous and metamorphic bedrock of the nearby mountains. The locally derived sediment is composed of coarse angular sand and gravel. Much of the finer-grained sand, silt, and clay in the Quaternary deposits were transported into the valley by the Colorado River (Loeltz et al., 1975).

Stratigraphic Units in the Project Area and Vicinity

The geology of the Project area is mapped at a scale of 1:250,000 by Strand (1962) and is underlain by Quaternary alluvium (Qal) and active Holocene eolian sand (Qs).

Quaternary Alluvium (Qal)

Quaternary alluvial deposits of Imperial Valley's East Mesa are mapped as Qal by Strand (1962). This unit includes Holocene (11,700 years ago to present) to latest Pleistocene (2.6 million years ago to 11,700 years ago) river channel, valley fill, and delta sand and gravel deposits. Alluvial fan deposits are typically laterally and vertically variable with respect to lithology, grain size, and depositional environment. Similar alluvial deposits in the Colorado Desert, north of the Project area in Riverside County, yielded multiple Quaternary vertebrate localities from valley alluvium including specimens of large mammal, rodent, reptile, and bird (Aspen Environmental, Inc. [Aspen], 2020; Clifford and DeBusk, 2023).

Holocene Dune Sand (Qs)

Holocene dune sand (Qs) is mapped in the northern Project area (Strand, 1962). The area mapped as Qs includes surficial deposits of recent fine-grained eolian sand. Similar eolian dune deposits in the Colorado Desert, north of the Project area in Riverside County (Aspen 2020), yielded multiple Quaternary vertebrate localities from mapped and unmapped Recent dune

sand (Qs) (Aspen 2020). The localities yielded collected specimens of rodent, lizard, snake, rabbit, gopher tortoise, quail, and artiodactyl. Specimens were particularly abundant in interdune areas and blowouts where older sediment and bedrock are exposed.

Museum Records Search Results

The NHMLAC, SBCM, SDNHM, and WSC do not have previously recorded vertebrate localities within the Project boundary or vicinity (Bell, 2023; Kottkamp 2023; Mueller, 2023; Stoneburg, 2023). However, the NHMLAC identifies several nearby invertebrate localities from within Quaternary sedimentary deposits that yielded unspecified vertebrates near Holtville, approximately 10 miles from the Project area. These invertebrate fossils near Holtville may be associated with the ancient lake Cahuilla deposits, which do not extend into the Project area. There is a lack of evidence for previously documented fossil resources in the Project area and no indication of previous paleontological investigations in the vicinity of the Project Area. Thus, the absence of records for previous fossil localities from the NHMLAC, SBCM, SDNHM, and WSC "should be interpreted as absence of data rather than absence of fossils" (Kottkamp, 2023).

Paleontological Field Survey Results

Seven nonsignificant fossils of tortoise carapace permineralized fragments were documented during the paleontological survey for geotechnical investigation locations on private land parcels in the Project area. These fossils were documented as float in areas mapped as Quaternary alluvium and were not collected.

These results are preliminary. The results of the full Project survey will be provided later after the completion of fieldwork.

4.8.2 Impact Analysis

On nonfederal lands, and in the absence of specific agency guidelines, most professional paleontologists in California adhere to SVP (2010) guidelines. These guidelines establish detailed protocols for the assessment of the paleontological resource potential (i.e., sensitivity) of a project area and outline measures to follow to mitigate adverse impacts to known or unknown significant fossil resources during project development.

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes or that could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well-represented lineages can be equally important for studying evolutionary patterns and processes, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiometric dating is possible. As such, common fossils (especially vertebrates) may be scientifically important and therefore considered significant.

This definition is used for all projects that are subject to CEQA since CEQA does not define "a unique paleontological resource or site."

Methodology

Using baseline information gathered during a paleontological resource assessment described in Section 4.8.1, the paleontological resource potential of the geologic units, or members thereof, underlying a project area can be assigned to one of four categories defined by SVP (2010). These categories include high, undetermined, low, and no potential.

High Potential (Sensitivity)

Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered have a high potential for containing significant nonrenewable fossiliferous resources. These units include but are not limited to sedimentary formations and some volcanic formations that contain significant nonrenewable paleontological resources anywhere within their geographical extent and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils—large or small, vertebrate, invertebrate, or botanical—and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas that contain potentially datable organic remains older than the Holocene Epoch—including deposits associated with nests or middens—and areas that may contain new vertebrate deposits, traces, or trackways are also classified as significant.

Low Potential (Sensitivity)

Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or that contain common and widespread invertebrate fossils of well-documented and understood taphonomic, phylogenetic species, and habitat ecology are considered to have a low potential for containing significant nonrenewable fossiliferous resources. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow a determination that some areas or units have a low potential for yielding significant fossils before the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction is underway, it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from low to high potential and thus require monitoring and mitigation if the resources are found to be significant.

Undetermined Potential (Sensitivity)

Specific areas underlain by sedimentary rock units for which little information is available have undetermined potential for containing fossiliferous resources. Field surveys by a qualified vertebrate paleontologist to determine the rock units' potential are required before programs of impact mitigation for such areas can be developed.

No Potential
Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

Impact Evaluation Criteria

The paleontological resource potential for Quaternary alluvium (Qal) mapped in the Project area would typically be recommended as low potential because of the young age of the surficial deposits and lack of previously recorded significant vertebrate localities (Bell, 2023; Mueller, 2023; Kottkamp, 2023; and Stoneburg, 2023). However, fieldwork results from paleontological mitigation conducted at other regional solar energy developments in the Colorado Desert have shown Qal to have a moderate-to-high fossil potential (Aspen 2020; Clifford and DeBusk, 2023). Therefore, a high paleontological resource potential is recommended for Qal. In addition, seven nonsignificant fossils of tortoise carapace were documented during the paleontological survey for geotechnical investigation locations on private land parcels in the Project area. These fossils were documented as float in areas mapped as Quaternary alluvium. These findings are preliminary, but they do provide evidence for high paleontological resource potential in the Project area, pending the results of the full Project survey.

Similarly, the Holocene dune sand (Qs) mapped in the Project area would typically receive a recommendation for low paleontological sensitivity because of the young age and expectation of limited fossil preservation potential. However, multiple vertebrate localities were identified in interdune areas and blowouts in very similar types of eolian dune deposits at other regional solar energy developments in the Colorado Desert (Aspen 2020). The paleontological survey for geotechnical investigations did not occur in Project areas mapped as underlain by Holocene dune sand; as such, there are no findings for paleontological resources in this unit. A high paleontological potential for Qs is recommended. Figure 4.8-1 depicts the paleontological sensitivity in the Project area

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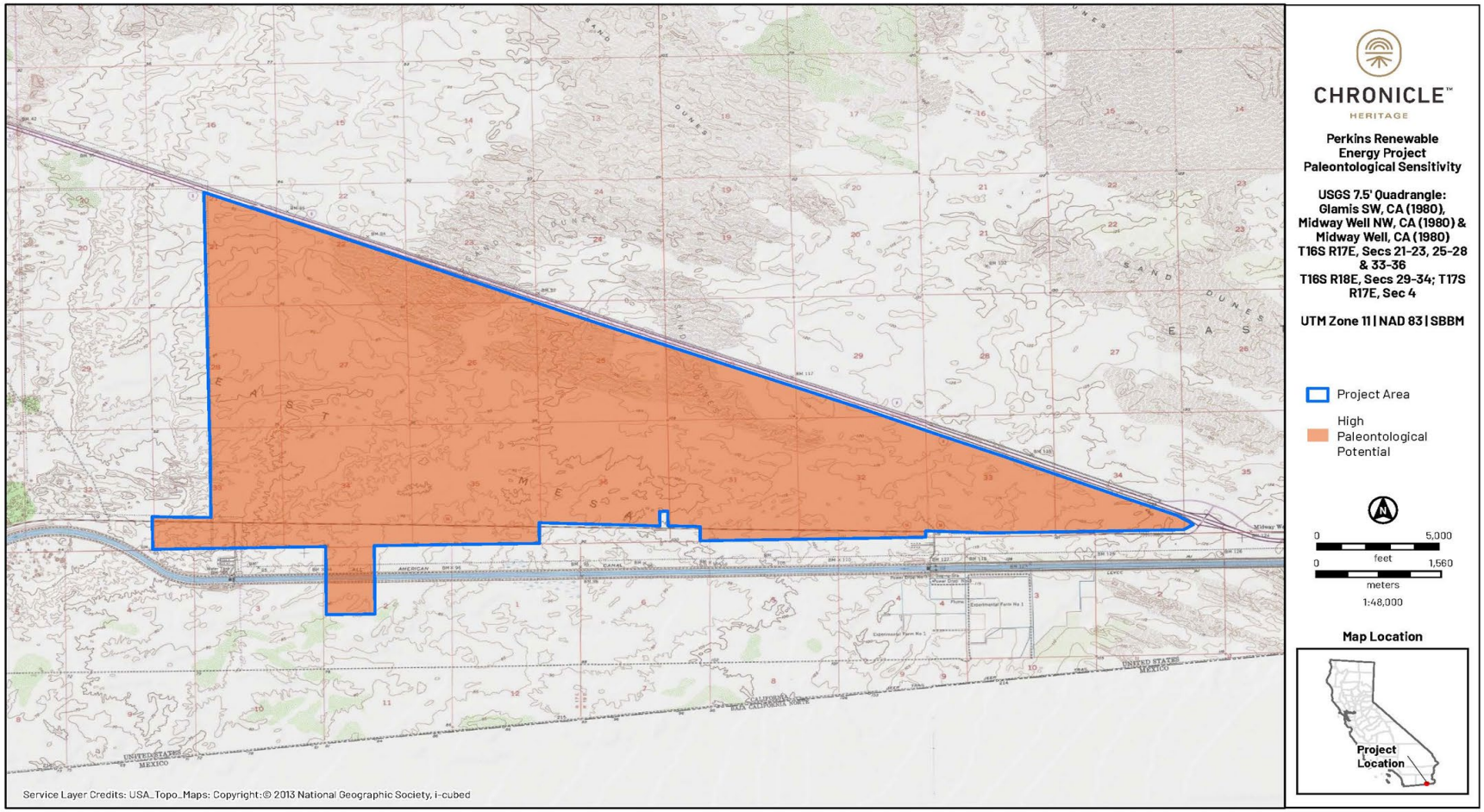
Figure 4.8-1 Paleontological Sensitivity in the Project Application Area



Impact PAL-1

Ground disturbing activities could destroy or disturb unique paleontological resources in the Project area. (*Less than significant*)

Construction

Project Site

The potential for a given project to result in adverse impacts to paleontological resources is directly proportional to the amount of ground disturbance associated with the project. As this Project involves installation of a solar power plant, surface disturbance throughout the Project area is anticipated via grading, excavation, trenching, augering, and other earth-moving operations related to Project development. The Project area is underlain by Quaternary alluvium (Qal) and Holocene Dune Sand (Qs), which have a recommended high paleontological sensitivity. Paleontological resources have been identified within similar Quaternary alluvium and dune deposits at several other solar projects in the Colorado Desert (Aspen, 2020; Bell, 2023; Kottkamp, 2023; Mueller, 2023; Stoneburg, 2023), but there is a lack of evidence for previously documented fossil resources in the Project area and no indication of previous paleontological investigations in the vicinity. The absence of records for previous fossil localities should be interpreted as lack of data rather than evidence for low fossil potential (Kottkamp, 2023). The presence of high-sensitivity units at the surface suggests that ground disturbance may result in significant impacts under CEQA to paleontological resources including destruction, damage, or loss of scientifically important paleontological resources. Impacts to paleontological resources would be reduced to less than significant with application of MM PAL-1, PDF PR-1, PDF PR-2, PDF PR-3, and PDF PR-4.

With implementation of MM PAL-1, PDF PR-1, PDF PR-2, PDF PR-3, and PDF PR-4, fossils encountered in the Project area, including their contextual geological data, would be documented. To prevent destruction or disturbance of fossils or loss of paleontological data, they would be properly salvaged, collected, and curated, as necessary, rendering them permanently available for future scientific research.

BAAH Switchyard

Construction of the BAAH switchyard would involve surface disturbance from grading, excavation, trenching, and augering, similar to those described for the solar facility, Project substation, and gen-tie. The BAAH is underlain by high-sensitivity geologic units, and ground disturbance may result in significant impacts under CEQA. The impacts to paleontological resources could include destruction, damage, or loss of scientifically important paleontological resources. Impacts to significant paleontological resources would be reduced to less than significant with application of MM PAL-1, PDF PR-1, PDF PR-2, PDF PR-3, and PDF PR-4.

Loop-in Transmission Line

Construction of the loop-in transmission would involve surface disturbance from grading, excavation, trenching, and augering, similar to those described for the solar facility, Project substation, and gen-tie. The loop-in transmission is underlain by high-sensitivity geologic units, and ground disturbance may result in significant impacts under CEQA. The impacts to

paleontological resources could include destruction, damage, or loss of scientifically important paleontological resources. Impacts to significant paleontological resources would be reduced to less than significant with application of MM PAL-1, PDF PR-1, PDF PR-2, PDF PR-3, and PDF PR-4.

Operations

Project Site

Project-related operational impacts to paleontological resources related to the operation and maintenance of the solar facility would not involve extensive ground disturbance and would not substantially increase erosion that could unearth buried fossils. Therefore, paleontological resources would not be disturbed, and there would be no adverse impact on significant nonrenewable fossil resources as a result of operation or maintenance of any proposed future Project activities.

BAAH Switchyard

Operational impacts to paleontological resources related to the operation and maintenance of the BAAH Switchyard would be similar to those described for the solar facility. They would not involve extensive ground disturbance and would not substantially increase erosion that could unearth buried fossils. Therefore, paleontological resources would not be disturbed, and there would be no adverse impact on significant nonrenewable fossil resources as a result of operation or maintenance of any proposed future BAAH Switchyard activities.

Loop-in Transmission Line

Operational impacts to paleontological resources related to the operation and maintenance of the Loop-in Transmission Line would be similar to those described for the solar facility. They would not involve extensive ground disturbance and would not substantially increase erosion that could unearth buried fossils. Therefore, paleontological resources would not be disturbed, and there would be no adverse impact on significant nonrenewable fossil resources as a result of operation or maintenance of any proposed future Loop-in Transmission Line activities.

4.8.3 Cumulative Impacts

Cumulative impacts to paleontological resources can result from the gradual negative effects of past, present, and future actions over a certain period of time. Those negative effects can include the permanent loss of nonrenewable paleontological resources and associated pertinent scientific data as a result of ground-disturbing activities within paleontologically sensitive geologic units. In most cases, mitigation, such as construction monitoring, can be implemented to reduce these effects to a negligible level.

A cumulative impact to paleontological resources would result if the Project impacts, when combined with other past, present, and future projects, would exceed the significance criteria presented in Section 4.8.2; however, adverse impacts to paleontological resources as the result of the Project would be less than significant with the application of MM PAL-1 as described in Section 4.8.4, and PDF PR-1, PDF PR-2, PDF PR-3, and PDF PR-4 as described in Section 4.8.5. Therefore, the Project has a negligible contribution to cumulative impacts to paleontological

resources and the cumulative impacts of the Project on paleontological resources would be *less than significant*.

BAAH Switchyard
Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to paleontological resources.

Loop-in Transmission Lines
Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to paleontological resources.

4.8.4 Proposed Best Management Practices, Project Design Features, Conservation Management Actions, and Mitigation Plans

As part of the Project, the Applicant, and other entities involved in construction and operation, would implement BMPs, PDFs, and CMAs. The Applicant has also prepared mitigation plans as required by the BLM.

Project Site Components

Best Management Practices and Project Design Features
The Project would implement the following BMPs and PDFs (Appendix D.1) related to paleontological resources:

- PDF PR-1 through PDF PR-4 (Paleontological resources)

CMAs
The Desert Renewable Energy Conservation Plan (DRECP) requires Conservation Management Actions (CMAs) for renewable energy projects. The following CMAs (Appendix D.2) apply to paleontological resources:

- LUPA-PALEO-3

Mitigation Plans

The Project would implement the following mitigation measure relevant to paleontological resources developed in accordance with SVP (2010) guidelines:

> **MM PAL 1—Develop and Implement a Paleontological Resource Mitigation Plan.** Prior to the commencement of ground-disturbing activities, a qualified paleontologist should be retained to prepare and implement a Paleontological Resource Mitigation Plan (PRMP) for the Project. The qualified paleontologist should meet the minimum qualifications per standards set forth by the SVP (2010) guidelines. The PRMP should describe the monitoring required during ground-disturbing activities. Monitoring should entail the visual inspection of

excavated or graded areas and trench sidewalls. If the project paleontologist determines full-time monitoring is no longer warranted, based on the geologic conditions at depth, they may recommend that monitoring be reduced or ceased entirely. The PRMP should include a provision for all field personnel to receive a worker's environmental awareness training on paleontological resources. If a paleontological resource is discovered, the monitor will have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and, if appropriate, collected. If the resource is determined to be of scientific significance, the project paleontologist shall salvage the fossil and prepare it in a properly equipped laboratory to a point ready for curation. The fossil specimens must be delivered to a regional, accredited museum or repository at the end of the Project. The cost of curation will be assessed by the repository and will be the responsibility of the client. Upon completion of ground-disturbing activity and curation of fossils, if necessary, the qualified paleontologist should prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The final report should be submitted to the CEC.

Breaker-and-a-Half Switchyard

The same PDFs, CMAs, and mitigation that apply to the Project site components would apply to the BAAH switchyard.

Loop-in Transmission Corridors

The same PDFs, CMAs, and mitigation that apply to the Project site components would apply to the 500 kV loop-in transmission lines.

4.8.5 Laws, Ordinances, Regulations, and Standards (LORS) Compliance

Table 4.8-1 Federal Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Omnibus Public Land Management Act of 2009 (H.R. 146), Title 6, Subtitle D	Applies to fossil resources on federally owned or controlled land, or to projects receiving federal funding, or if a federal entitlement or other permit is required.	The Project will adhere to the Omnibus Public Land Management Act [Section 4.8.4].

LORS	Applicability	Compliance
Paleontological Resources Preservation Act of 2009	Requires the Secretary of the Interior to manage and protect paleontological resources on federal land using scientific principles and expertise and requires the BLM to develop appropriate plans for inventorying and monitoring, and the scientific and educational use of, paleontological resources, in accordance with applicable agency laws, regulations, and policies. Where possible, these plans should emphasize interagency coordination and collaborative efforts with nonfederal partners, the scientific community, and the general public.	The Project will adhere to the policies of the Paleontological Resources Preservation Act of 2009 [Section 4.8.4].
Antiquities Act of 1906	Requires federal agencies that manage public lands to preserve the scientific, commemorative, and cultural values of such sites.	The Project will adhere to the Antiquities Act and its policies [Section 4.8.4].
Federal Land Policy and Management Act (FLPMA) of 1976	Requires the Secretary of the Interior to retain and maintain public lands in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric water resource, archeological and other values. FLPMA also requires the BLM to develop regulations and plans for the protection of public land areas of critical environmental concern, "which include important historic, cultural or scenic values," and to protect life and safety from natural hazards.	The Project is not within an Area of Environmental Concern but will adhere to the protection of cultural resources [Section 4.8.4].
California Desert Conservation Area Plan (CDCA)	The CDCA Plan aims to (1) ensure that paleontological resources are given full consideration in land use planning and management decisions, (2) preserve and protect a representative sample of the full array of the CDCA's paleontological resources, and (3) ensure proper data recovery of significant paleontological resources where adverse impacts cannot be avoided or otherwise mitigated.	The Project will comply with paleontological resource regulations presented in the CDCA [Section 4.8.4].

LORS	Applicability	Compliance
BLM National Instruction Memorandum (IM) 2009-011, Permanent Instruction Memorandum (PIM) 2022-009	PIM 2022-009 formalizes the use of a classification system for identifying fossil potential on public lands. The Potential Fossil Yield Classification (PFYC) system is based on the potential for the occurrence of significant paleontological resources in a geologic unit, and the associated risk for impacts to the resource based on federal management actions As defined in IM 2009-011, Assessment and Mitigation of Potential Impacts to Paleontological Resources, Appendix A, a significant paleontological resource is any resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils.	The Project will adhere to the policies in IM 2009-011 and PIM 2022-009 [Section 4.8.4].

Table 4.8-2 State Laws, Ordinances, Regulations, and Standards

LORS	Applicability	Compliance
Public Resources Code Sections 5097.5/5097.9	Applies to paleontological resources on land owned by, or in the jurisdiction of, the state of California; or any city, county, district, authority, or public corporation; or any agency thereof. Section 5097.5 specifies that any unauthorized removal of paleontological remains is a misdemeanor.	The Project will implement these regulations for potential paleontological resources found on the site [Section 4.8.4].
California Penal Code Section 622.5	Sets the penalties for damage or removal of paleontological resources.	The Project will adhere to the California Penal Code 622.5 [Section 4.8.4].

No local laws, ordinances, regulations, or standards for paleontological resources are applicable to the Project.

4.8.6 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application is provided in Appendix E.1. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2.

4.8.7 References

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4.9 Public Health

This section describes existing public health conditions in the Project area and the anticipated impacts that would result from the Project on public health. This section describes the baseline information related to public health and safety, including valley fever, air quality hotspots, and *electric and magnetic fields*, also known as EMFs.

Air quality and potential air pollution from the Project construction and operation are discussed in Section 3.1 Air Quality, which relies on information from the Air Quality Technical Report prepared for the Project (Baseline Environmental Consulting 2024) (see Appendix H). *Toxic air contaminants* (TACs) are a diverse group of airborne substances that may cause or contribute to an increase in deaths or serious illness or that may pose a present or potential hazard to human health. One of the main sources of TACs in California is diesel engine exhaust that contains solid material known as *diesel particulate matter* (DPM). TAC impacts are described by carcinogenic risk and by chronic (i.e., long duration) and acute (i.e., severe but of short duration) adverse effects on human health. A Health Risk Assessment for an analysis associated with all TACs was not conducted for this Project as no sensitive receptors are within 500 feet of the Project site and no permanent sensitive receptors are within 1,000 feet of the Project site.[1]

Section 4.9.1 discusses the environmental setting. Section 4.9.2 identifies the potential public impacts that may result from Project construction, operation and maintenance, and decommissioning. Section 4.9.3 evaluates potential cumulative impacts. Section 4.9.44.9-6 discusses measures to address impacts. Section 4.9.5 provides an overview of applicable federal, State, and local laws, ordinances, regulations, and standards, and the Project's compliance therewith.

4.9.1 Environmental Setting

The Project is located in Imperial County, approximately 36 miles southeast of the Salton Sea, approximately 1.2 miles north of the U.S.–Mexico border. The Project is in a region characterized by agricultural land and undeveloped land with scattered geothermal and utility scale solar power plants.

[1] The Imperial County Air Pollution Control District does not specify a buffer to determine sensitive receptors within the vicinity of projects, but some air quality districts use a 1,000-foot buffer. The California Air Resources Board's Air Quality and Land Use Handbook: A Community Health Perspective (2005) recommends distances that should be incorporated when siting new sources or sensitive receptors near a source of TACs which generally ranges from 500 to 1,000 feet depending on the source category.

Receptors

Some receptors are considered more sensitive than others to air pollutants. The reasons for greater than average sensitivity include preexisting health problems, proximity to emissions sources, or duration of exposure to air pollutants. California Code of Regulations, title 20, section 1704, Appendix B defines *sensitive receptors* as infants and children, the elderly, and the chronically ill as well as any other member of the general population who is more susceptible to the effects of the exposure than the population at large. Schools, hospitals, and convalescent homes are considered relatively sensitive to poor air quality because children, elderly people, and the infirmed are more susceptible to respiratory distress and other air-quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods, with greater associated exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system. Ambient air quality standards were established to represent the levels of air quality considered sufficient, with a margin of safety, to protect public health and welfare. Standards are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases.

There are no permanent sensitive receptors located within 1,000 feet of the Project. There is a cluster of abandoned residential dwelling units for the All-American Canal Hydroelectric Plant approximately 0.5-mile south of the Project site. The abandoned residential dwellings are not considered sensitive receptors because there is no one occupying the dwelling units.

The Tamarisk Long Term Visitation Area (LTVA) is located on BLM land approximately 700 feet from the nearest portion of Project site. From the bulk of the Project, the LTVA is beyond 1,000 feet. The LTVA would not be considered a sensitive land use because it is not permanent residential housing and has no permanent infrastructure, i.e. water source or sewage, limiting the duration people can reasonably stay. During the "season," which runs from September 15 to April 15, visitors are permitted to stay 14 days with a short-term permit, with a long-term permit for the entire season (BLM, n.d.). Use data for the Tamarisk Long Term Visitation Area was not found on the BLM website or provided in the BLM DRECP Land Use Plan Amendment Special Recreation Management Area Unit Management Plan. Panorama visited the LTVA during peak use season (December 2023) and did not meet any person nor was there any sign of a camp host or any regular use. BLM communicated to Applicant on January 22, 2024 that the LTVA has been unofficially closed due to lack of use.

Public Health

The main public health concerns in Imperial County, according to the California Department of Public Health, include asthma, cardiovascular disease, and high poverty rate. In 2015, Imperial County had 12,000 children diagnosed with asthma, and more than double the state's general rate of asthma-related emergency room visits and hospitalizations for children. Imperial County ranks in the 90th percentile in California for incidence of cardiovascular disease. The main

factor for these public health concerns is due to air pollution which can cause the development of asthma and cardiovascular disease. In addition, Imperial County is an area of California with a high poverty rate and a high percentage of linguistically isolated residents (CalEPA 2018).

Federal law requires major sources of air pollution to obtain operating permits that can be enforced by U.S. EPA. In Imperial County, both U.S. EPA and Imperial County Air Pollution Control District (ICAPCD) can enforce federal permitting regulations (CalEPA 2018). The Project site would not be a major source of air pollution during operation; however, it would have a temporary impact on air quality during construction due to construction equipment emissions and fugitive dust.

Toxic Air Contaminants

TACs are a diverse group of airborne substances that may cause or contribute to an increase in deaths or serious illness, or that may pose a present or potential hazard to human health. TAC impacts are described by carcinogenic risk and by chronic (long duration) and acute (severe but of short duration) adverse effects on human health. Construction emissions would occur over a relatively short period of time, and construction would cease following completion of the project. Because there are no sensitive receptors within 1,000 feet of the Project site, there would be no potential to expose sensitive receptors to substantial TAC and, therefore, a HRA was not conducted for this Project. For more detailed information on TAC and HRA, see Section 4.1 Air Quality.

Hotspots

The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly), enacted in 1987, requires stationary sources to report the types and quantities of certain substances routinely released into the air. A “hot spot” is an area where air toxics levels are higher than in the overall region. This may be caused by emissions from a local facility. The closest facility to the Project site registered as a “hot spot”, Ormat Nevada, Inc./ GEM 2 & 3 – Geothermal, is approximately three miles northwest from the Project site.

Valley Fever

Valley fever, or coccidioidomycosis, is caused locally by the microscopic fungus *Coccidioides immitis* (*C. immitis*). The *Coccidioides* fungus resides in the soil in southwestern United States, northern Mexico, and parts of Central and South America (Kirkland and Fierer 1996).

Valley fever is a reportable disease in California requiring healthcare providers and laboratories that diagnose a case of Valley fever to report it to their local health department. The California Department of Public Health (CDPH) uses data on Valley fever cases to track trends and better understand who is affected by Valley fever. Infections occur when the spores of the fungus become airborne and are inhaled. The fungal spores become airborne when contaminated soil is disturbed by construction and agricultural activities or by natural events such as windstorms, dust storms, and earthquakes. Common symptoms include fatigue, cough, chest pain, fever, rashes on upper body or legs, headaches, muscle aches, night sweats, and unexplained weight loss (CDPH 2021). Both humans and animals can become infected with Valley fever, but the

infection is not contagious and cannot spread from one person or animal to another (CDPH 2021). Most cases of Valley fever in California (over 65%) are reported in people who live in the Central Valley and Central Coast regions (CDPH 2021).

In 2021, there was 1 case of Valley fever reported in Imperial County, and in 2020, there were 5 cases reported. Imperial County has had a less than 5 percent infection rate of Valley Fever since 2020 (CDPH 2023).

Electric and Magnetic Fields

Sources of EMF include aboveground and underground power lines. EMFs occur independently of one another as electric and magnetic fields at the 60-hertz (Hz) frequency used in gen-tie lines, and both are created by electric charges. Electric fields exist when these charges are not moving. Magnetic fields are created when the electric charges are moving. Numerous years of studies on the health effects from EMFs have generated evidence that is inconclusive. EMFs also decrease substantially with increasing distance from source. The Project region includes numerous high-voltage electric transmission lines in established energy corridors that emit EMF. See Section 3.0, Engineering, for more information regarding EMF.

4.9.2 Impact Analysis

The following subsections discuss the potential direct and indirect impacts related to public health from construction and operation (including maintenance) of the Project.

Methodology

The public health impacts were evaluated qualitatively based on potential health impacts the Project potential would contribute to in the area.

Impact Evaluation Criteria

The potential for impacts to public health and their uses were evaluated using the criteria described in the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines). For the purposes of this public health analysis, a significant impact would occur if:

- the Project would substantially worsen existing public health concerns.

Impact PH-1

Would the Project substantially worsen existing public health concerns? (*Less than significant*)

Construction Impacts

Project Site

Public Health. As discussed above, the main public health concern in Imperial County is the air pollution that can cause the development of asthma and cardiovascular disease. During construction, there would be activities that would temporarily impact the air quality due to dust and emissions from construction equipment. Further details, potential impacts, and mitigation measures are discussed in Section 4.1: Air Quality.

Valley Fever. Construction activities that include ground disturbance can result in fugitive dust, which can cause the *Coccidioides* fungal spores that causes Valley fever to become airborne

if they are present in the soil. Workers who disturb soil during construction activities, whether by excavation or grading, operating earthmoving equipment, driving vehicles, or by working in dusty, wind-blown areas, are more likely to breathe in spores and become infected. The Project site is located in eastern Imperial County where the risk of Valley fever is low compared to other parts of California, as noted in Section 4.9-4.

Construction activities associated with the Project would include ground-disturbing activities that could result in potential for exposure of nearby residents and on-site workers to airborne to the airborne *Coccidioides* fungal spores, if they are present. Compliance with dust control measures contained in the Fugitive Dust Control Plan (Appendix I.1) during construction would minimize personnel and public exposure to Valley Fever and reduce the potential risk of nearby receptors and on-site worker exposure to Valley Fever to less than significant.

Electric and Magnetic Fields. EMF is discussed in detail in Section 3.3.5, including calculations regarding EMF values due to the Project. The Project components would need to be energized to produce EMF. Therefore, EMF is discussed under operations rather than construction.

Breaker-and-a-Half Switchyard

The construction of the BAAH switchyard would be similar in nature to that of the Project solar facility but limited in nature to 40 acres of ground disturbance. Ground disturbance associated with the construction of BAAH switchyard could potentially result in dust and risk of valley fever as detailed above. The Fugitive Dust Control Plan would be implemented during construction of the infrastructure, reducing the impacts to less than significant.

Loop-in Transmission Corridors

The construction of the 500 kV loop-in transmission lines would be similar in nature to that of the Project solar facility but limited in nature to limited areas for the spur roads and towers within a 35 acre area. Ground disturbance associated with the construction of the 500 kV loop-in transmission lines could potentially result in dust and risk of valley fever as detailed above. The Fugitive Dust Control Plan would be implemented during construction of the infrastructure, reducing the impacts to less than significant.

Operational and Maintenance

Project Site

Public Health. During operation and maintenance of the Project, there would be no ground disturbance or equipment emissions that would significantly impact the air quality because no ground disturbance would be required during operation of the Project, and a minimal number of vehicles would be used on site for operational and maintenance purposes. The impacts from operation and maintenance would be less than significant.

Valley Fever. Operation and maintenance activities would not include any ground disturbance that could result in fugitive dust that could therefore cause fungus spores to become airborne if they are present in the soil. The operation and maintenance activities are not expected to cause maintenance workers or nearby receptors to be exposed to Valley Fever.

Electric and Magnetic Fields. As noted in Section 3.3.5, the magnitude of both electric and magnetic fields falls off rapidly as the distance from the source increases. No residences or other sensitive land uses would be subject to EMF exposure from operations of the gen-tie line and Project substation because the distance of any residences or other sensitive receptors from the gen-tie and Project substation is approximately 3.3 miles beyond where impacts could occur. The Tamarisk Long Term Visitation Area is approximately 3.85 miles east of the Option 1 location for the gen-tie and Project substation and 2.7 miles east of the Option 2 location for the gen-tie and Project substation, also beyond the range for EMF impacts to any temporary visitors. Impacts from EMF exposure during operation and maintenance are not anticipated.

Breaker-and-a-Half Switchyard

The BAAH switchyard would not have operational public health impacts due to the limited nature of the operations and management activities required for the infrastructure. The BAAH switchyard is also 3.3 miles from the nearest sensitive receptor as well as 4 miles from the Tamarisk Long Term Visitation Area. Impacts from EMF exposure during operation and maintenance are not anticipated. Impacts would be less than significant

Loop-in Transmission Corridors

The 500 kV loop-in transmission lines would not have operational public health impacts due to the limited nature of the operations and management activities required for the infrastructure. The loop-in transmission lines are also 3.3 miles from the nearest sensitive receptor as well as 4 miles from the Tamarisk Long Term Visitation Area. Impacts from EMF exposure during operation and maintenance are not anticipated. Impacts would be less than significant.

4.9.3 Cumulative Impacts

Given the distance from the Project, including the loop-in transmission line and BAAH switchyard, cumulative effects would not occur except for the potential for dust and dust related illnesses. Cumulative effects regarding dust emissions are addressed in Section 4.1.3.

Breaker-and-a-Half Switchyard

Construction and operation of the BAAH switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the BAAH switchyard would have a less than considerable contribution to cumulative impacts related to public health.

Loop-in Transmission Lines

Construction and operation of the loop-in transmission lines is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the loop-in transmission lines would have a less than considerable contribution to cumulative impacts related to public health.

4.9.4 Proposed Best Management Practices, Project Design Features, Conservation Management Actions, and Mitigation Plans

As part of the Project, the Applicant, and other entities involved in construction and operation, would implement BMPs, PDFs, and CMAs. The Applicant has also prepared mitigation plans as required by the BLM.

Project Site Components

Best Management Practices and Project Design Features

The Project would implement BMPs and PDFs related to air quality, and dust in particular, as detailed in Section 4.1.4.

Conservation Management Actions

The Project would implement the following DRECP CMAs relevant to air quality. See Appendix D.2 for the full language of the CMAs.

- LUPA-AIR-1
- LUPA-AIR-2
- LUPA-AIR-3
- LUPA-AIR-4
- LUPA-AIR-5

Mitigation Plans

The Project would implement the following mitigation plans relevant to Public Health:

- Fugitive Dust Control Plan
- Hazardous Materials Business Plan

Breaker-and-a-Half Switchyard

The same BMPs, PDFs, CMAs, and mitigation plans would apply to the BAAH switchyard.

Loop-in Transmission Corridors

The same BMPs, PDFs, CMAs, and mitigation plans would apply to the 500 kV loop-in transmission lines.

4.9.5 Laws, Ordinances, Regulations, and Standards Compliance

Table 4.9-1 Federal Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
Toxic Substances Control Act	Established a program administered by the U.S. Environmental Protection Agency (EPA) for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste	The Project would adhere to the policies of the Toxic Substances Control Act.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	Provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified	The Project would adhere to CERCLA guidelines.

Table 4.9-2 State Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
California Health and Safety (CHSC) sections 25500–25510	Establishes requirements for developing business and area plans relating to the handling and release of hazardous materials	A Hazardous Material Business Plan, including a materials inventory and emergency response plan, would be prepared for distribution to affected agencies, as required. Additionally, releases of hazardous materials will be immediately reported to affected agencies as required.
California Health and Safety Code sections 44300–44384 (Air Toxics "Hot Spots" Information and Assessment Act—Assembly Bill 2588)	Assembly Bill (AB) 2588 requires the development of a statewide inventory of Toxic Air Contaminants (TAC) emissions from stationary sources. The program requires affected facilities to: (1) prepare an emissions inventory plan that identifies relevant TACs and sources of TAC emissions; (2) prepare an emissions inventory report quantifying TAC emissions; and (3) prepare an HRA, if necessary, to quantify the health risks to the exposed public. Facilities with significant health risks must notify the exposed population and, in some instances, must implement RMPs to reduce the associated health risks.	The Project would not be a stationary source and so would not be required to comply with this requirement.

40 CFR part 63 and ICAPCD Regulation X	Establishes National Emission Standards for Hazardous Air Pollutants (NESHAP)	The Project would comply with applicable NESHAP.
California Hazardous Waste Control Law (HWCL)	The HWCL lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation; and identifies some wastes that cannot be disposed of in landfills.	The Project would adhere to the provisions of the HWCL for any hazardous waste

Table 4.9-3 Local Laws, Ordinances, Regulations and Standards

LORS	Applicability	Compliance
ICAPCD Regulation II – Permits.	Establishes the basic framework for acquiring permits to construct and operate from the air district. A separate ATC application will be submitted to the ICAPCD. The ATC application will be the basis for the District's Determination of Compliance.	The Project would apply for all the required District permit application forms.
ICAPCD Regulation VIII – Fugitive Dust Rules	Regulation VIII implements multiple fugitive dust requirements to limit particulate emissions.	The Project would comply with all required fugitive dust rules and requirements through implementation of the Fugitive Dust Control Plan, BMPs, PDFs, and CMAs.

4.9.6 Agencies Contacted and Permits

A list of agencies that were contacted during preparation of this application is provided in Appendix E.1. Permits required to construct, operate, and maintain the project, including the BAAH, and loop-in transmission line, are summarized in Table E.2. Pursuant to Assembly Bill 205 subsection 25545.1(b)(1), the CEC retains exclusive authority over permitting and supersedes any applicable statute, ordinance, or regulation of a local air quality management district. The Applicant and CEC would collaborate with the ICAPCD on review of this Opt-in Application to ensure compliance with ICAPCD rules and regulations.

4.9.7 References

Bay Area Air Quality Management District (BAAQMD). 2022. "Appendix E: Appendix E: Recommended Methods For Screening and Modeling Local Risks and Hazards." In *California Environmental Quality Act Air Quality Guidelines*.

Bureau of Land Management (BLM). n.d. "Long-Term Camping on Your Public Lands." BLM/AZ/GI-13/008. Accessed January 11, 2024. Available: https://www.blm.gov/documents/arizona-colorado-river-do-california-california-desert-do/public-room-frequently-requested.

California Department of Public Health (CDPH). 2021. "Valley Fever Fact Sheet." https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/ValleyFeverFactSheet.pdf.

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California Environmental Protection Agency (CalEPA). 2018. *Imperial County Initiative Report*. Environmental Justice Task force. Available: https://www.icpds.com/planning/land-use-documents/general-plan/environmental-justice-element.

Kirkland, Theo N., and Joshua Fierer. 1996. "Coccidioidomycosis: A Reemerging Infectious Disease." *Emerging Infectious Diseases* 3 (2). https://doi.org/10.3201/eid0203.960305.