Air Force Materiel Command
412 Civil Engineer Group
Environmental Management Division
Edwards Air Force Base, California

ENVIRONMENTAL ASSESSMENT FOR PROPOSED TRANSMISSION LINE EASEMENT AT EDWARDS AIR FORCE BASE, CALIFORNIA

Draft

December 23, 2021

Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 INTRODUCTION

This environmental assessment (EA) evaluates the potential environmental impacts associated with the construction and operation of a proposed electrical transmission line on Edwards Air Force Base (AFB), California. The transmission line would be used for electric transmission from the Aratina Solar Project to the Kramer Substation. The Aratina Solar Project is located on private lands immediately north of Edwards AFB. The analysis provided in this EA is intended to identify potential environmental impacts associated with the development of the proposed transmission line and facilitate decision-making on proposed alternatives. The analysis in this EA is tiered, where appropriate, from the *Environmental Assessment for Proposed Utility Corridors Edwards Air Force Base, California* (Air Force 2016) (Utility Corridor EA). This approach is consistent with the Council on Environmental Quality (CEQ) Regulation 40 Code of Federal Regulations (CFR) Part 1501.11, which encourages use of tiering from the National Environmental Policy Act (NEPA) analyses of broad scope to those of narrower scope, including for EAs, to eliminate repetitive discussions of the same issues.

This EA was prepared in accordance with all applicable federal, state, and local laws and regulations including NEPA, as amended (42 United States Code [USC] 4321 *et seq*.); the CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508); the Environmental Impact Analysis Process (EIAP), as codified in 32 CFR Part 989; and the Interim Policy on Update of CEQ Regulations Implementing the Procedural Provisions of NEPA (Department of the Air Force 2021). This EA utilizes the 2020 CEQ NEPA regulations because it was initiated on or after September 14, 2020.

1.1 PURPOSE AND NEED FOR PROPOSED ACTION

1.1.1 Purpose

The purpose of the Proposed Action is to support the public interest by granting an easement for a portion of Air Force land and BLM withdrawn land to convey energy produced at the Aratina Solar Project to the statewide electrical grid. The Proposed Action would allow construction of a transmission line to connect the Aratina Solar Project to the existing Southern California Edison (SCE) Kramer Substation to the east, located at the southwest corner of State Route (SR) 58 and SR 395. The Air Force is considering the Applicant's (64NB 8me LLC) application for an outgrant that would provide a 100-foot-wide easement to construct, operate, and maintain an approximately 6.5-mile-long transmission line connecting on the west within the proposed Aratina Solar Project and on the east at the Kramer Substation. The transmission line project is proposed to be located within Utility Corridor No. 5 and adjacent to an existing Southern California Edison transmission line. If the Air Force decides to grant an easement to the Applicant for the Proposed Action, the terms of that grant of easement would provide for the Applicant to pay the Air Force fair market value rent for use of the property.

1.1.2 Need

The Air Force need for the Proposed Action is to support the public interest by granting an easement for approximately 6.5 miles of Utility Corridor 5 to the Applicant for conveyance of renewable energy to the Southern California Edison substation at Kramer Junction while also limiting the area such that it will not impact Edwards AFB mission development and execution. 10 USC 2668 supports use of BLM Withdrawn land for easements as long as that use is not against the public interest. On October 17, 2016 the Air Force signed a Finding of No Significant Impact for the *Environmental Assessment for Proposed Utility Corridors at Edwards Air Force Base, California* (Utility Corridor EA). The Utility Corridor EA was written in order to anticipate future requests from the public or from private enterprise to construct utility lines within the boundaries of Edwards AFB to support off-base utilities. The 412th Test Wing had already been approached multiple times by private entities seeking efficient point to point access through Edwards AFB's 308,000 acre installation in order to connect off-base projects. While seeking to support private industry the 412th Test Wing also needed to ensure these requests from private industry never impacted the true Edwards AFB mission to fly, fight, and win in air, space, and cyberspace. The Utility Corridor EA established corridors through Edwards AFB that could be used for private utilities that would also have no impact on Edwards AFB mission activities. The Proposed Action is within one of those corridors. The addition of a second bulk power level interconnection at the Kramer Substation will also enhance the system reliability of the Southern California Energy regional grid, which provides power to Edwards AFB, and could serve as a connection point for future on-base solar power capability. The Applicant seeks an easement term of 50 years.

1.2 BACKGROUND

The Applicant's request for an outgrant is consistent with the *Utility Corridor Area Development Plan* (ADP) that was adopted by the Air Force in 2016, which identifies specific corridors for the use of external utility companies that would minimize negative impacts on Edwards AFB's mission, infrastructure, and environmental resources. The Proposed Action would be located within the previously adopted Utility Corridor 5 (see Figure 1-2). Utility Corridor 5 crosses a combination of Air Force land and BLM land withdrawn for use by the Air Force and under the control of the Air Force in accordance with Executive Order 8450 (1940). In conjunction with adoption of the ADP, the Air Force completed an EA and issued a Finding of No Significant Impact (FONSI) for the ADP. *The Environmental Assessment for Proposed Utility Corridors at Edwards Air Force Base, California* (herein Utility Corridor EA) addressed a total of eight alternatives (including the No Action Alternative), identifying and analyzing, at a programmatic level, nine utility corridors within the base. As described in the Utility Corridor EA (Utility Corridor EA Section 2.7), Utility Corridor 5 begins at the northern boundary of the installation, parallels SR 58, and terminates at Kramer Junction along the north eastern corner. It is approximately 30 miles long and 1,000 feet wide (approximately 3,636 acres). The Applicant proposes to use 6.5 miles of the 30 mile corridor for the Proposed Action.

The Utility Corridor EA assessed air quality and greenhouse gases (GHG), cultural and paleontological resources, geology and soils, hazardous materials and hazardous waste, infrastructure, land use, natural resources, noise, socioeconomics, and water resources. The analysis was qualitative in nature and intended to identify potential environmental impacts associated with developing utilities in the proposed corridor areas and facilitate decision-making on whether these areas were logical alternatives for utility corridors. The Utility Corridor EA acknowledged that specific development in any of the corridors would require further, detailed environmental review and documentation specific to the type and location of utility lines proposed. This EA provides that project-specific analysis for the Proposed Action.

The Aratina Solar Project is a separate project proposed by the Applicant to develop a photovoltaic solar facility and associated infrastructure necessary to generate up to 530 megawatt-alternating current of renewable energy, including up to 600 megawatts of energy storage, on approximately 2,317 acres of privately owned land. This project was approved by the Kern County Board of Supervisors on October 12, 2021, and the County has completed its environmental review under California state law. The Aratina Solar Project does not require any federal agency approvals and will not receive federal funding. The proposed transmission line would connect the Aratina Solar Project to the existing SCE Kramer Substation to the east. Alternatively, the Aratina Solar Project may be connected to the SCE Holgate Substation to the north by a transmission line located on nonfederal land. These two potential alternatives are discussed in Sections 2.3 and 2.4.

1.3 LOCATION OF PROPOSED ACTION

The Proposed Action would occur within the northeastern portion of Edwards AFB. Figure 1-1 depicts Edwards AFB boundaries in a regional context.

The Proposed Action is located within the easternmost extent of Utility Corridor 5. Figure 1-2 depicts the location of the Proposed Action in the context of Utility Corridor 5. Figure 1-2 also depicts the location of Utility Corridor 5 in the context of the installation and the seven other utility corridors within Edwards AFB.

Figure 1-3 provides an overview of the proposed transmission line alignment. As shown, the westward limit of the transmission line begins outside the Edwards AFB boundaries, within private lands that are part of the proposed Aratina Solar Project. The point of connection would be within the substation area of the Aratina Solar Project. The transmission line would then travel east and connect into the existing SCE Kramer Substation. The total length of the transmission line is approximately 6.5 miles and would be located entirely on Edwards AFB.

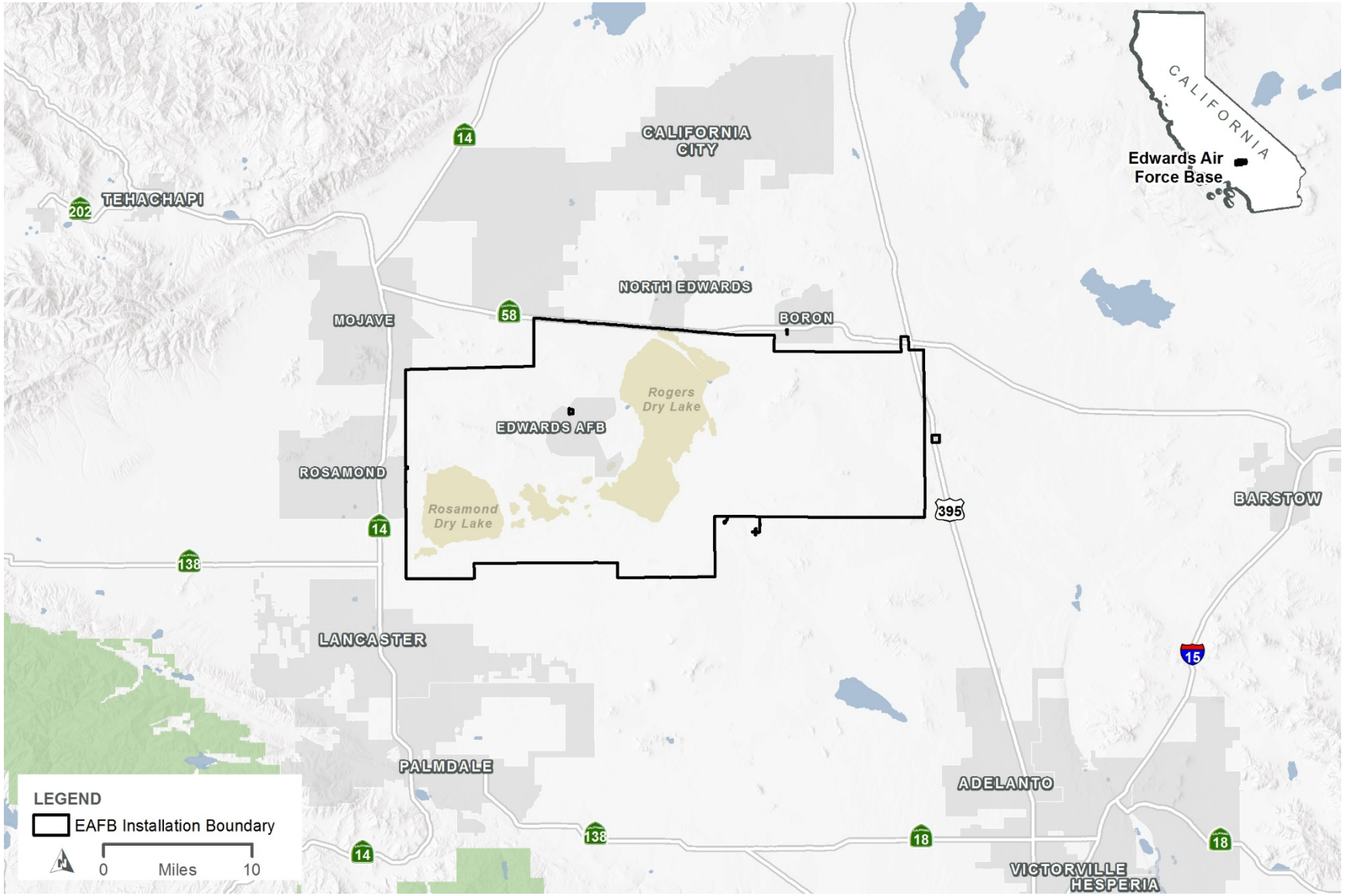


Figure 1-1. Regional Location

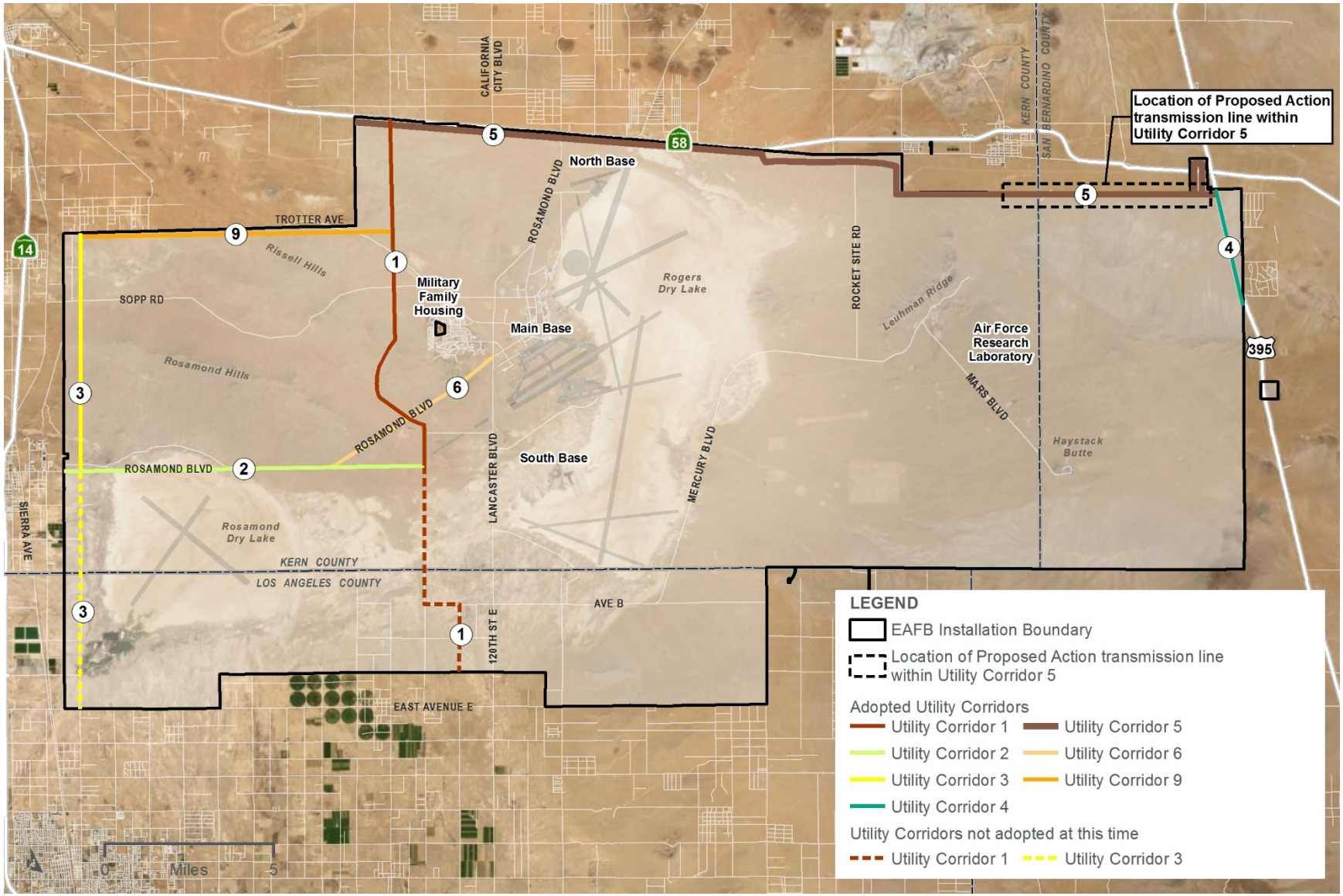


Figure 1-2. Adopted Utility Corridors

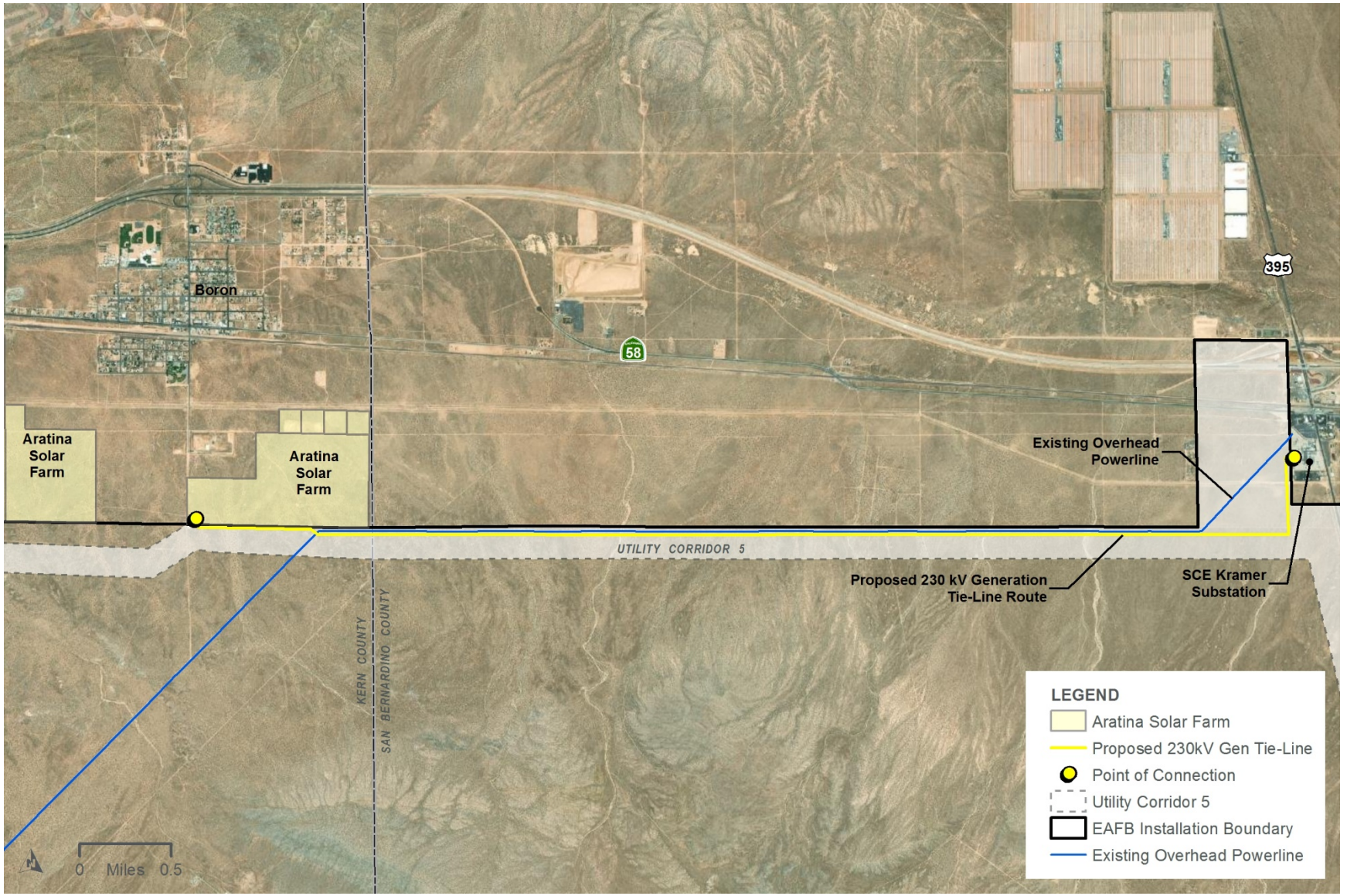


Figure 1-3. Proposed Action Overview

1.4 INTERAGENCY AND INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

Interagency and intergovernmental coordination is an integral part of EA preparation. As part of early coordination and consultations, Edwards AFB notified and consulted with relevant federal and state agencies on the Proposed Action and alternatives to identify potential environmental issues and regulatory requirements associated with implementation of the Proposed Action. The following discussions summarize the agency coordination and consultations. Copies of agency consultation documents are provided in Appendix G.

1.4.1 United States Fish and Wildlife Services Consultation Under Section 7 of the Endangered Species Act

The *Biological Opinion for Operations and Activities at Edwards Air Force Base, California (8-8-14-F-14)* (USFWS 2014) covers potential impacts on desert tortoise and desert tortoise critical habitat associated with utility construction and maintenance activities within Edwards AFB. Pursuant to the biological opinion, the Air Force has determined the Proposed Action is not likely to adversely affect the desert tortoise or its critical habitat. The Air Force maintains an appropriate record supporting this determination. Eight-five percent of the Proposed Action area would be located in desert tortoise critical habitat but such habitat is degraded and disturbed because it has been affected by previous activities, including the construction, operation, and maintenance of the existing Southern California Edison transmission line that the Proposed Action would be built alongside. The Proposed Action project area is mostly within an established utility corridor. Roads along and above utility corridors are occasionally used for maintenance. The Air Force participates in ongoing re-vegetation efforts which aide in reducing impacts from the establishment of utility corridors. Minimization measures for these areas state: "Lands above underground utilities will be re-vegetated unless a road needs to be constructed and maintained for access and maintenance activities" and "Roads needed for utility maintenance will be concentrated in previously established corridors when possible." No desert tortoise signs were detected during the field survey for the Proposed Action, as described in Append F, Wildlife Survey Technical Report. The primary constituent elements of desert tortoise critical habitat would not be affected by the Proposed Action, in accordance with the biological opinion.

Additionally, the project Applicant has corresponded with the United States Fish and Wildlife Service (USFWS), Palm Springs Fish and Wildlife Office, on September 10, 2020, regarding the Proposed Action. In its response (October 9, 2020), USFWS acknowledged that "The U.S. Air Force has consulted with the Service, pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended, regarding the management of its lands. If it intends to authorize use of its right-of-way for the generator tie-in line, the Air Force could include it as an activity under its existing biological opinion." Further, USFWS concluded that because the potential route of the generator tie-in line through Edwards AFB would not be the only way to facilitate the construction and operation of the solar facility, the Air Force consultation would not include the solar facility itself. "The development and

operation of the Aratina Solar Project is not reasonably certain to cause the take of desert tortoises. Section 3 of the Endangered Species Act defines take as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. For this reason, the Service does not recommend that 8minute Solar Energy apply for an incidental take permit for the Aratina Solar Project."

1.4.2 Consultations with the California State Historic Preservation Officer

In accordance with Section 106 of the National Historic Preservation Act (NHPA), consultations with the California State Historic Preservation Officer (SHPO), are currently ongoing and led by Edwards AFB. On December 1, 2021, Edwards AFB initiated consultation with the California SHPO on the Area of Potential Effect (APE) and determinations of National Register of Historic Places (NRHP) eligibility of historic and archaeological resources. Edwards AFB made a determination (pursuant to 36 C.F.R. 800.4(d)(1)) of no effect to historic properties associated with the Proposed Action. Edwards AFB is consulting with the SHPO and is seeking concurrence with this determination.

SHPO consultation correspondence is provided in Appendix G.

1.4.3 Consultations with Native American Tribes

Edwards AFB has conducted and will continue to conduct government-to-government consultation with federally recognized Native American Tribes in accordance with Section 106 of the NHPA and implementing regulations at 36 CFR Part 800 and comply with Native American Graves Protection and Repatriation Act (NAGPRA) with regard to the Proposed Action. In accordance with Air Force Manual (AFMAN) 32-7003, consultations have been initiated and are being conducted by the respective installation commanders with support from the installation tribal liaison officer and cultural resource manager.

Edwards AFB has formally initiated consultation on November 22, 2021 with the following:

- Chemehuevi Indian Tribe
- Colorado River Indian Tribes
- Morongo Band of Mission Indians
- San Manuel Band of Mission Indians
- Tejon Indian Tribe

Consultation letters are provided in Appendix G.

1.5 PUBLIC NOTIFICATION PROCESS

Relevant federal and state resource agencies and Native American tribes were sent notifications on the development of the proposed transmission line.

This EA was made available for a 30-day public review period beginning X (day) XX (month) 2021 through X (day) XX (month) 2021, during which the Air Force [accepted comments/no comments were received].

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This section describes the Proposed Action and the No Action Alternative. The potential environmental impacts for each alternative are summarized in table form at the end of this section.

2.1 CRITERIA FOR SELECTION OF A REASONABLE RANGE OF ALTERNATIVES

The criteria discussed in this section set the minimum requirements that must be met for an alternative to be considered viable. Those alternatives not meeting one or more of the selection criteria have been eliminated from further discussion. Explanation of eliminated alternatives is provided in Section 2.2.

Consistent with the Utility Corridor EA, selection criteria have been separated into two categories: operational criteria that address Air Force operational and mission considerations and technical criteria that address utility purveyor requirements.

2.1.1 Operational Criteria

Operational criteria include the following:

- Locate the Proposed Action within an adopted utility corridor (Corridor 5) on Edwards AFB, which would limit intrusion into the base and within a corridor that has been determined by the Air Force as to not interfere with Air Force operations
- Minimize the number of transmission poles located within the base to not conflict with Air Force operational and mission considerations
- Connect to a 230 kV substation that has capacity and offers additional redundancy to distribute energy produced by the Aratina Solar Project

2.1.2 Technical Criteria

Technical criteria include the following:

- Minimize the length of the transmission line route through a direct route from the Aratina Solar Project to the closest 230 kV substation
- Confine the Proposed Action to an existing utility corridor that is intended to accommodate various infrastructure
- Minimize the number of transmission towers, reducing ancillary support components (wires, access roads, etc.) associated with the transmission line, which means increased reliability/less risk of problems

that would impact energy resiliency benefits to Edwards AFB and the surrounding communities including Boron

- Minimize development and timing costs to increase the potential to offer lower rates to energy users
- Maximize use of existing access/maintenance roads associated with already existing infrastructure and minimize the additional potential impacts associated with a new transmission line

2.2 ALTERNATIVES CONSIDERED BUT DISMISSED FROM FURTHER CONSIDERATION

As described below, other corridors evaluated were not considered reasonable and/or feasible.

2.2.1 Alternative Locations on Edwards Air Force Base

The Proposed Action is located to minimize the distance (and corresponding ground disturbance) between the western and eastern points of connection while being confined to an existing utility corridor intended to accommodate various infrastructure, such as the Proposed Action. Alternative utility corridors were assessed in the Utility Corridor EA (FONSI signed October 17, 2016) but were dismissed from consideration of the Proposed Action for the following reasons:

- **ADP Corridors 1, 2, 3, 4, and 6:** ADP Corridors 1, 2, 3, 4, and 6 would not provide a direct route between the Aratina Solar Project and Kramer Substation. Construction of the Proposed Action within any of these corridors would result in significantly longer, circuitous, and intrusive (into AFB property) transmission lines and a greater area of disturbance than would result with the Proposed Action. Further, development of the Proposed Action within any of these corridors would not avoid or minimize adverse impacts associated with the Proposed Action.
- **Proposed Action within Utility Corridor 5**: Because Utility Corridor 5 provides the most direct route for the Proposed Action, and has previously been designated for utilities, the Proposed Action is proposed to be located within this corridor.

2.2.2 Alternative Locations Outside of Edwards Air Force Base

The Proposed Action would connect to the existing SCE Kramer substation across Edwards Air Force base. As currently configured, the Kramer substation is larger than the Holgate substation, and has additional available capacity. Routes across private land to the Kramer substation were also considered but dismissed from further consideration.

Routing to the Kramer Substation would require a transmission line of approximately 8 to 10 miles through a private lands route and within a county road franchise right-of-way. A private land connection to the Kramer Substation would also require crossing SR 58 two times (as opposed to only one time needed for the Holgate

substation). Further, connection to the Kramer Substation would cross multiple private parcels. Unlike public utilities, the project Applicant does not have the power of eminent domain; therefore, it would not be possible to cross multiple land ownerships if permission is not granted. A transmission line connection to the Kramer Substation outside of Edwards AFB across private land would not provide the shortest route, would not be feasible, and would not meet the purpose and need for the Proposed Action. Routing to the Holgate substation (approximately 1 mile from the proposed solar project), which is located entirely off Edwards AFB and within county road franchise right-of-way, is currently being evaluated by Kern County under the California Environmental Quality Act (CEQA). Therefore, the No Action Alternative evaluates the potential transmission line connection to the Holgate Substation.

2.3 PROPOSED ACTION

The Proposed Action involves the construction and operation of a 230-kilovolt (kV) electrical transmission line. The 230-kV line may be constructed as either a double-circuit or single-circuit line. The following provides the specifications of each structure type under the Proposed Action.

Power generated by the Aratina Solar Project would be delivered from the Aratina Solar Project substation to the existing SCE Kramer Substation via an up to 6.5-mile-long 230-kV electrical transmission line. Within the Edwards AFB boundaries, the proposed 230-kV line would be located entirely within the existing Utility Corridor 5. Figure 1-2 depicts the Proposed Action within the context of Utility Corridor 5. Figure 1-3 provides an overview of the Proposed Action alignment and characteristics. As shown on Figure 1-3, the proposed 230-kV line would be located immediately south of the existing SCE overhead power line and access road that spans east to west along this corridor. This allows for maximum use of existing dirt roads, therefore minimizing new ground disturbance.

Because this solar energy facility will move forward whether the Air Force permits the transmission line to cross Edwards AFB property, the analysis is limited to the impacts associated with construction and operation of the transmission line.

2.3.1 Double-Circuit Transmission Line

Table 2-1 provides a summary of the double-circuit transmission line component of the Proposed Action specifications. Table 2-2 provides a summary of the Proposed Action double-circuit feature specifications. Table 2-3 provides the Proposed Action double-circuit disturbance type (temporary and permanent) specifications. The detailed Proposed Action preliminary plan and profile exhibits for the double-circuit configuration are provided in Appendix A.

Table 2-1.
Double-Circuit Transmission Line Specifications

Electrical Specifications for Double-Circuit 230-kV Line	Description
Nominal voltage	230-kV alternating current
Circuit configuration	Vertical
Ground clearance of conductor	30 feet minimum
Type of pole	• Double-circuit steel mono-pole tangent structure (TU-3-230) • Double-circuit steel mono-pole dead end/angle structure (TD-2-230) • Steel six-pole crossing structure (TH-2-230)
Pole height	• Double-circuit steel mono-pole tangent structure (TU-3-230): up to 125 feet above ground surface • Double-circuit steel mono-pole dead end/angle structure (TD-2-230): up to 115 feet above ground surface • Steel six-pole crossing structure (TH-2-230): up to 60 feet above ground surface
Assumed pole diameter at base	8 feet (7 feet average diameter)
Easement width	100 feet typical
Span length	Typically 500 feet to 700 feet (maximum)

Notes:
kV=kilovolt

Table 2-2.
Double-Circuit Feature Specifications

Proposed Action Feature	Description	Within Edwards AFB Utility Corridor 5
Length of lines	Total length of line including final spans into the Proposed Action and interconnecting substations	6.50 miles
Number of poles	Double-circuit steel mono-pole tangent structure (TU-3-230)	46
	Double-circuit steel mono-pole dead end/angle Structure (TD-2-230)	5
	Steel six-pole crossing structure (th-2-230)	2
	Total	53
Structure erection sites	Typically 150 feet by 50 feet at each structure location	53[a]
Wire pulling and tensioning sites	100 feet wide by 400 feet long, generally extends past each dead-end or angle structure; necessary for conductor stringing equipment and placement of wire reels	6[a]
New construction/maintenance access road (graded for construction and would be used for on-going maintenance during operation)	Typically graded 12 feet wide only where necessary and not maintained after construction is complete; disturbance is assumed permanent to account for future access requirements	1.35 mile
Spur roads from existing access roads (graded for construction and would be used for on-going maintenance during operation)	Typically graded 12 feet wide only where necessary and not maintained after construction is complete; disturbance is assumed permanent to account for future access requirements	0.45 mile

Notes:

[a] In five pole locations, pole construction would occur partially within the area of disturbance associated with the wire pulling and tensioning site (occurs at pole locations 1, 7, 8, 50, and 53).

AFB=Air Force Base

Table 2-3.

Double-Circuit Disturbance Type Specifications

Disturbance Type	Description	Acreage
Temporary disturbance for construction	Structure erection, wire pulling, access roads, trenching, etc.	16.707 acres
Permanent disturbance	Disturbance on ground surface for facilities and roadways	8.992 acres

Double-Circuit Transmission Support Structures

Transmission support structures (towers and poles) would be erected within the easement and be typically spaced 500 feet to 700 feet apart (center to center), depending on the topographic, hydrologic, and geologic conditions of the underlying lands, as well as to avoid sensitive resources if present.

For the Proposed Action, three double-circuit transmission structure types would be erected. Figure 2-1 provides a profile of the double-circuit steel mono-pole tangent structure (TU-3-230). Figure 2-2 provides a profile of the double-circuit steel mono-pole dead end/angle structure (TD-2-230), and Figure 2-3 provides a profile of the steel six pole crossing structure (TH-2-230). Table 2-4 summarizes the number and height of each structure.

Table 2-4.

Summary of Proposed Double-Circuit Transmission Structure Types

Structure Type	Number Proposed	Height
Double-circuit steel mono-pole tangent structure (TU-3-230)	46	Up to 125 feet
Double-circuit steel mono-pole dead end/angle structure (TD-2-230)	5	Up to 115 feet
Steel six-pole crossing structure (TH-2-230)	2	Up to 60 feet

Depending on the type of structure and its location within the corridor, transmission structure heights would generally be up to 125 feet above ground surface. The minimum ground clearance of the conductor cable would be 30 feet. Communications cable or fiber cable would be installed within a trench that runs parallel with the transmission line.

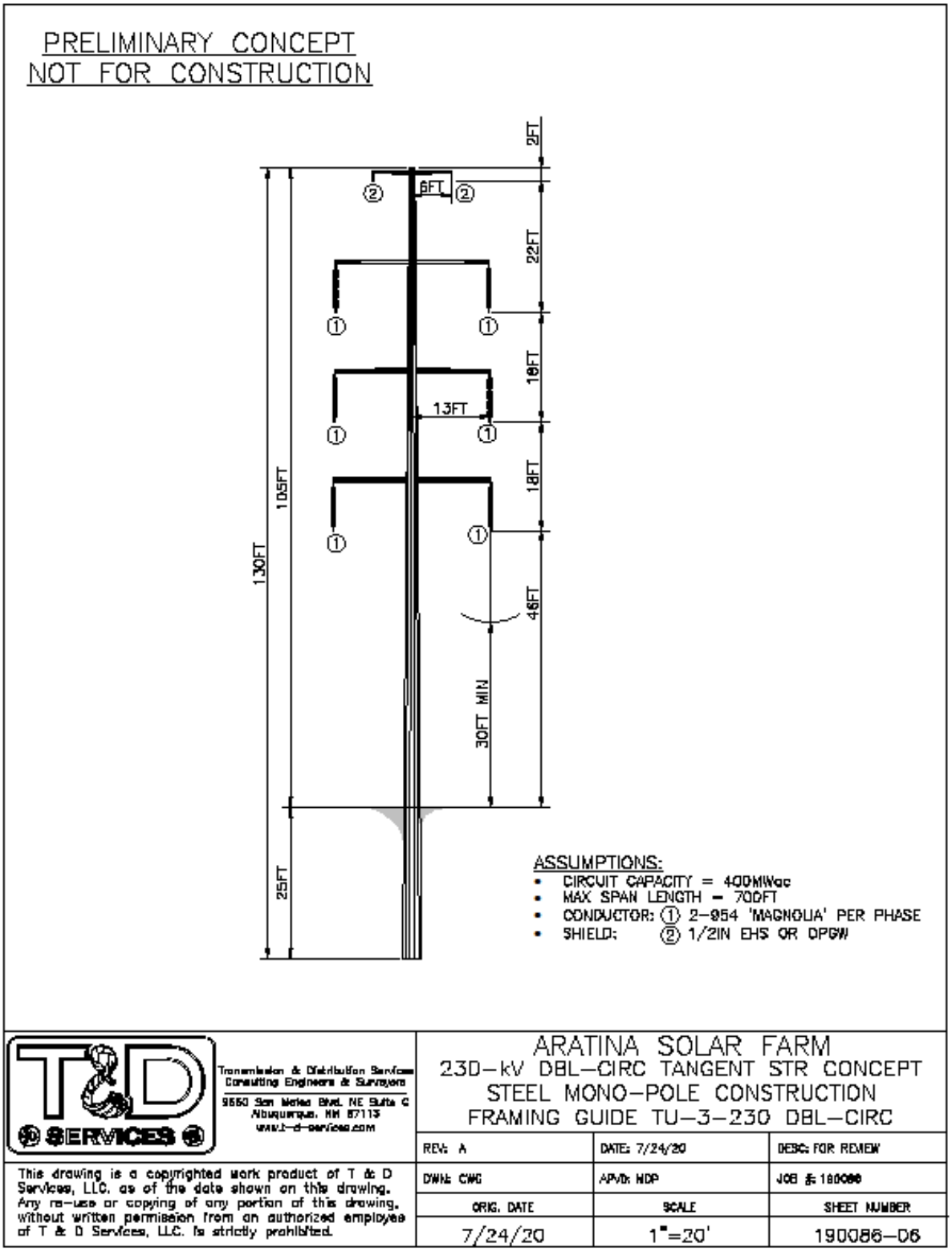


Figure 2-1. Steel Mono-Pole Construction/Tangent Structure (TU-3-230) (Double-Circuit)

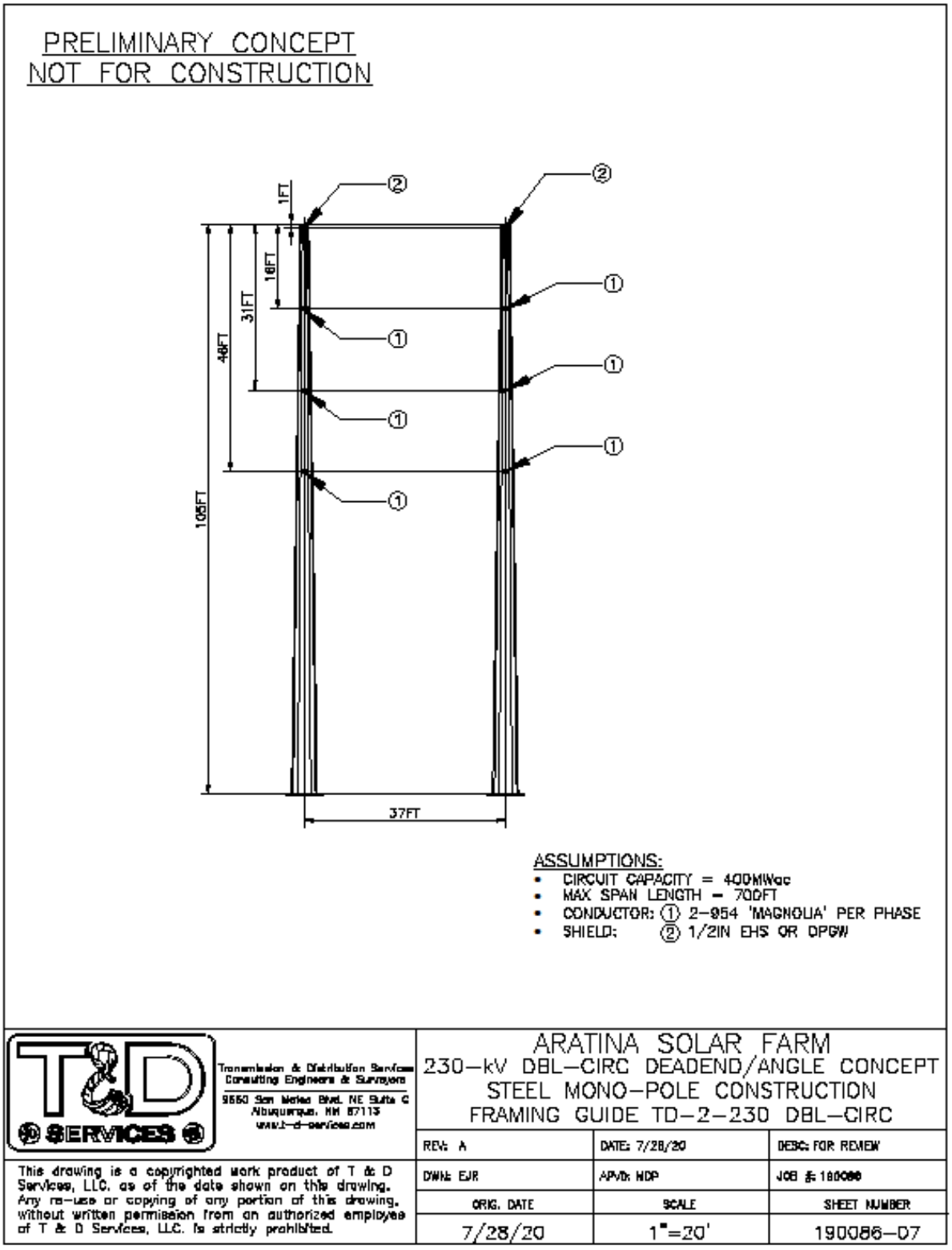


Figure 2-2. Steel Mono-Pole Construction/Dead-End Structure (TD-2-230) (Double-Circuit)

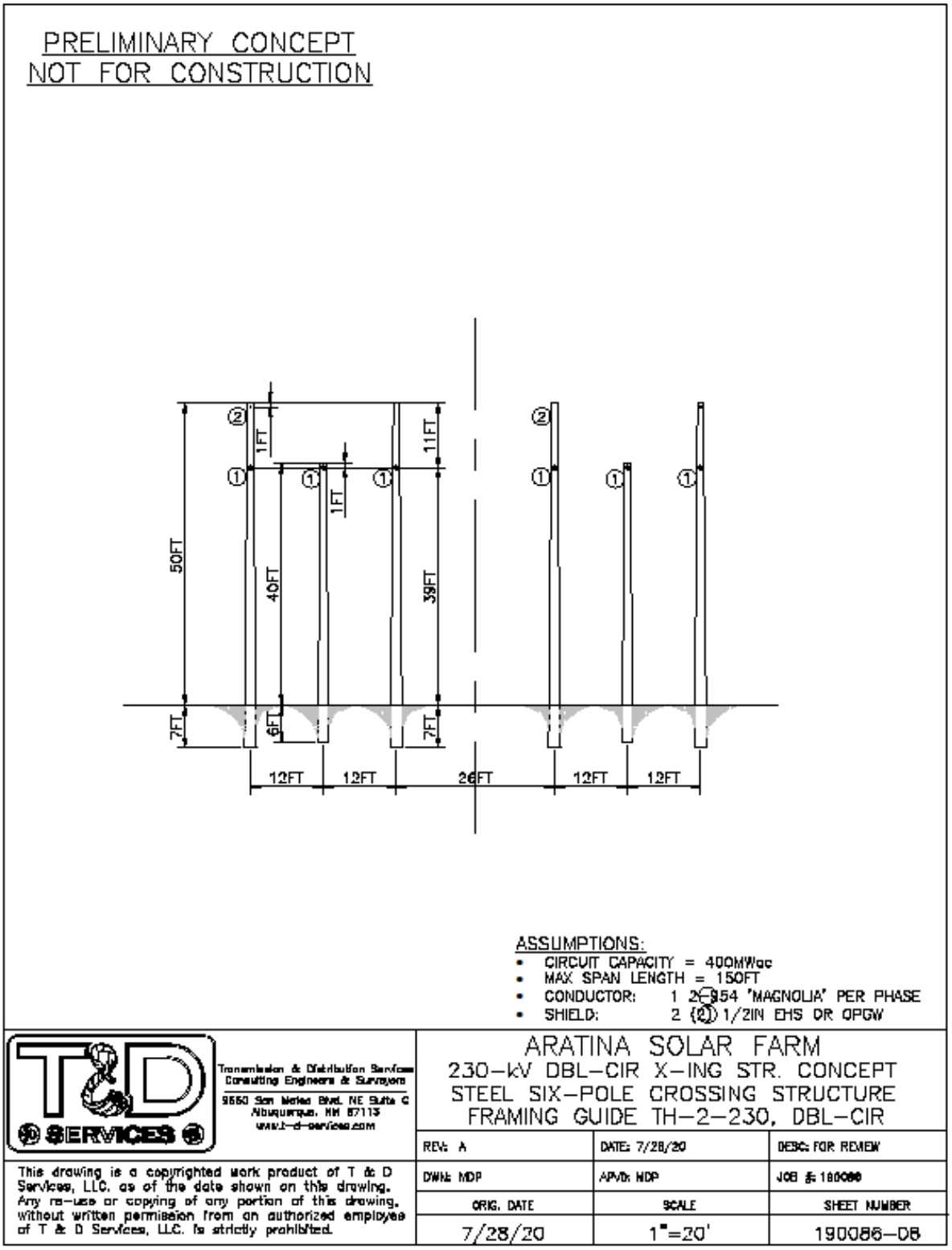


Figure 2-3. Steel Six-Pole Crossing Structure (TH-2-230) (Double-Circuit)

2.3.2 Single-Circuit Transmission Line

Instead of a double-circuit configuration, the Proposed Action may involve the construction and operation of a single-circuit transmission line. The single-circuit configuration would have the same point of connections as the double-circuit configuration and follow the same alignment as the double-circuit configuration.

Table 2-5 provides a summary of the transmission line component of the Proposed Action single-circuit specifications. Table 2-6 provides a summary of the Proposed Action single-circuit feature specifications. Table 2-7 provides the Proposed Action single-circuit disturbance type (temporary and permanent) specifications. The detailed preliminary plan and profile exhibits for the single-circuit configuration are provided in Appendix A.

Table 2-5.
Single-Circuit Transmission Line Specifications

Electrical Specifications for Single-Circuit 230-kV Line	Description
Nominal voltage	230-kV alternating current
Circuit configuration	Vertical
Ground clearance of conductor	30 feet minimum per California General Order 95 at Designed Thermal Limit for Emergency Line Loading Conditions (212 degrees Fahrenheit)
Type of pole	• Single-circuit steel mono-pole tangent structure (TU-1-230) • Single-circuit steel mono-pole dead end/angle structure (TD-1-230) • Steel three-pole crossing structure (TH-233)
Pole height	• Single-circuit steel mono-pole tangent structure (TU-1-230): up to 125 feet above ground surface • Single-circuit steel mono-pole dear end/angle structure (TD-1-230): up to 106 feet above ground surface • Steel three-pole crossing structure (TH-233): up to 50 feet above ground surface
Assumed pole diameter at base	8 feet (7 feet average diameter)
Easement width	100 feet typical
Span length	Typically 500 feet to 700 feet (maximum)

Notes:
kV=kilovolt

Table 2-6.
Single-Circuit Feature Specifications

Proposed Action Feature	Description	Within Edwards AFB Utility Corridor 5
Length of lines	Total length of line including final spans into the Proposed Action and interconnecting substations	6.50 miles
Number of poles	Single-circuit steel mono-pole tangent structure (TU-1-230)	46
	Single-circuit steel mono-pole dead end/angle structure (TD-1-230)	5
	Steel three-pole crossing structure (TH-233)	2
	Total	53
Structure erection sites	Typically 150 feet by 50 feet at each structure location	53[a]
Wire pulling and tensioning sites	100 feet wide by 400 feet long, generally extends past each dead-end or angle structure; necessary for conductor stringing equipment and placement of wire reels	6[a]
New construction/maintenance access road (graded for construction and would be used for on-going maintenance during operation)	Typically graded 12 feet wide only where necessary and not maintained after construction is complete; disturbance is assumed permanent to account for future access requirements For example, future access is needed for periodic maintenance activities; maintenance of a transmission line is a fundamental part of its functioning, a need that is accentuated by its outdoors location, so ongoing checks and inspections are required to assess and repair structure components from corrosive agents, ice, wind and ultraviolet radiation, which damage their structures, components, and parts	1.35 mile
Spur roads from existing access roads (graded for construction and would be used for on-going maintenance during operation)	Typically graded 12 feet wide only where necessary and not maintained after construction is complete; grading prepares an even, stable ground surface to allow the efficient and safe passage of construction equipment; disturbance is assumed permanent to account for future access requirements	0.45 mile

Notes:

[a] In five pole locations, pole construction would occur within partially within the area of disturbance associated with the wire pulling and tensioning site (occurs at pole locations 1, 7, 8, 50, and 53).

AFB=Air Force Base

Table 2-7.

Single-Circuit Disturbance Type Specifications

Disturbance Type	Description	Acreage
Temporary disturbance for construction	Structure erection, wire pulling, access roads, trenching, etc.	16.707 acres
Permanent disturbance	Disturbance on ground surface for facilities and roadways	8.992 acres

2.3.3 Single-Circuit Transmission Support Structures

The single circuit would also potentially utilize three different types of transmission structures as shown in Table 2-8. Figure 2-4 provides a profile of the single-circuit steel mono-pole tangent structure (TU-1-230). Figure 2-5 provides a profile of the single-circuit steel mono-pole dead end/angle structure (TD-1-230), and Figure 2-6 provides a profile of the steel three pole crossing structure (TH-233).

Table 2-8.

Single-Circuit Summary Of Proposed Transmission Structure Types

Structure Type	Number Proposed	Height
Single-circuit steel mono-pole tangent structure (TU-1-230)	46	Up to 125 feet
Single-circuit steel mono-pole dead end/angle structure (TD-1-230)	5	Up to 106 feet
Steel three-pole crossing structure (TH-233)	2	Up to 60 feet

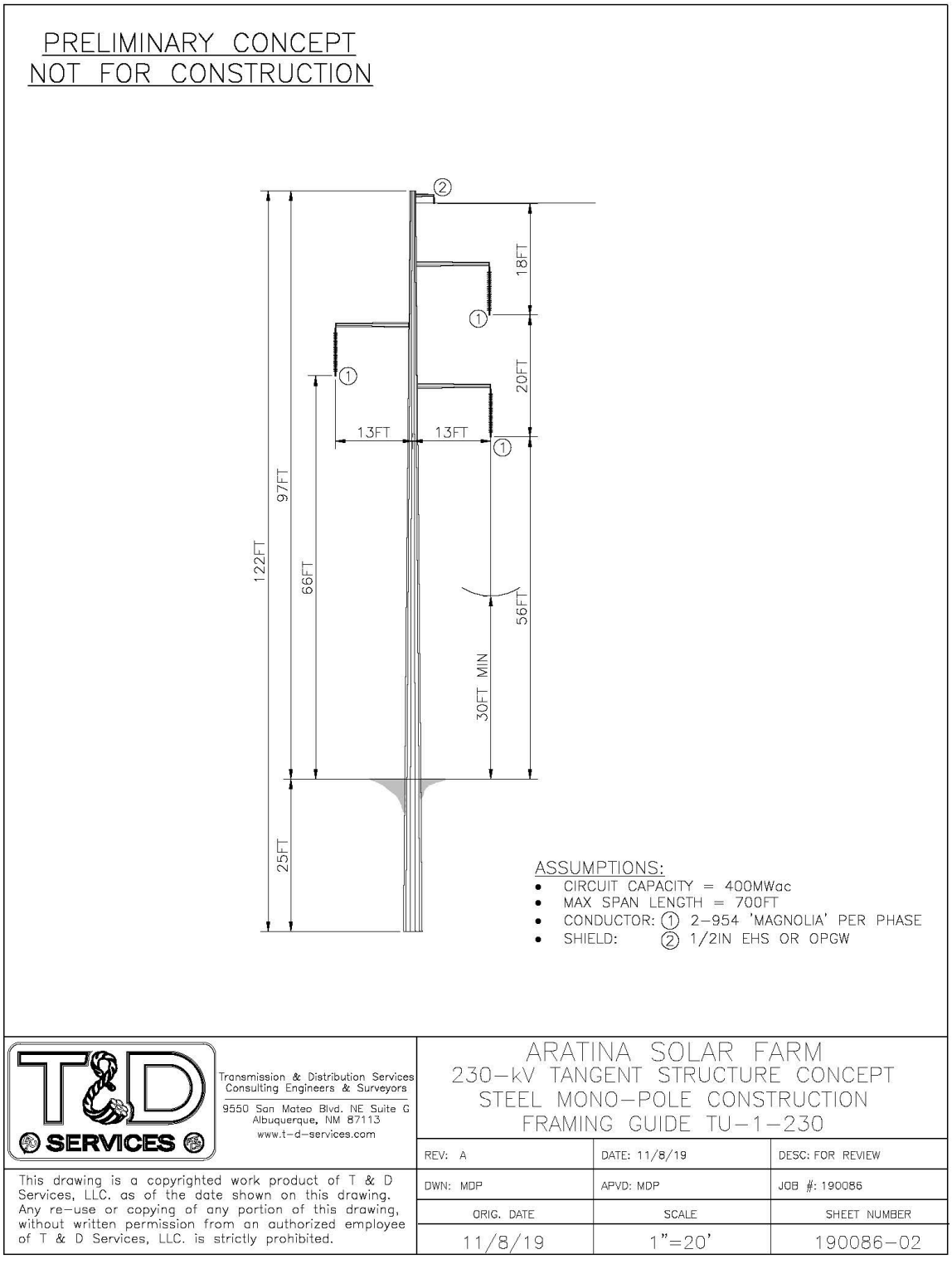
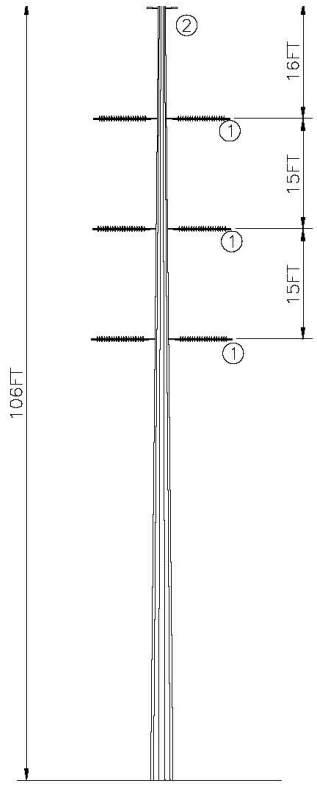


Figure 2-4. Steel Mono-Pole Construction/Tangent Structure (TU-1-230) (Single-Circuit)

PRELIMINARY CONCEPT
NOT FOR CONSTRUCTION



ASSUMPTIONS:
- CIRCUIT CAPACITY = 400MWac
- MAX SPAN LENGTH = 700FT
- CONDUCTOR: ① 2–954 'MAGNOLIA' PER PHASE
- SHIELD: ② 1/2IN EHS OR OPGW

T&D SERVICES

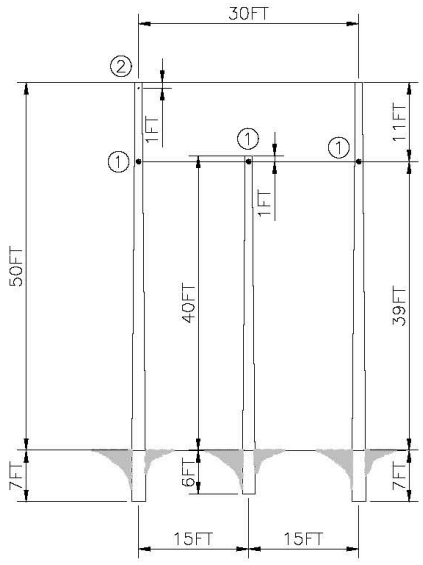
Transmission & Distribution Services
Consulting Engineers & Surveyors
9550 San Mateo Blvd. NE Suite G
Albuquerque, NM 87113
www.t-d-services.com

ARATINA SOLAR FARM
230–kV TANGENT STRUCTURE CONCEPT
STEEL MONO–POLE CONSTRUCTION
FRAMING GUIDE TD–1–230

REV: A	DATE: 11/8/19	DESC: FOR REVIEW
DWN: MDP	APVD: MDP	JOB #: 190086
ORIG. DATE	SCALE	SHEET NUMBER
11/20/19	1"=20'	190086–04

Figure 2-5. Steel Mono-Pole Construction/Tangent Structure (TD-1-230) (Single-Circuit)

PRELIMINARY CONCEPT
NOT FOR CONSTRUCTION



ASSUMPTIONS:
- CIRCUIT CAPACITY = 400MWac
- MAX SPAN LENGTH = 700FT
- (1) CONDUCTOR: 2-954 'MAGNOLIA' PER PHASE
- (2) SHIELD: (2) 1/2IN EHS OR OPGW

T&D SERVICES

Transmission & Distribution Services
Consulting Engineers & Surveyors
9550 San Mateo Blvd. NE Suite G
Albuquerque, NM 87113
www.t-d-services.com

ARATINA SOLAR FARM
230-kV DEAD-END STRUCTURE CONCEPT
STEEL THREE-POLE CROSSING STRUCTURE
FRAMING GUIDE TH-233

REV: A	DATE: 7/10/20	DESC: FOR REVIEW
DWN: MDP	APVD: MDP	JOB #: 190086
ORIG. DATE	SCALE	SHEET NUMBER
7/10/20	1"=20'	190086-05

Figure 2-6. Steel Three-Pole Crossing Structure (TH-233) (Single-Circuit)

2.3.4 Transmission Line Service Road

The proposed transmission line was designed with an emphasis on providing the smallest ground disturbance footprint within Edwards AFB Utility Corridor 5 and is sited to follow existing roads, where feasible. There are existing dirt roads in the vicinity of the proposed alignment associated with the existing SCE transmission facilities within the corridor. Primary access to work areas would be obtained by use of existing paved and unpaved roads in the area, existing south from points along SR 58. Where feasible, spur roads would be constructed from existing transmission structure footprints to access work areas for new transmission line structures.

2.3.5 Temporary Work Areas

A total of six temporary 1-acre pulling and tensioning sites would be needed to tension the transmission line after it is strung on the transmission structures. The tensioning and pulling sites have been designed to avoid desert washes and dry creeks.

2.3.6 Timing of Activities

Timing of construction would be coordinated with Edwards AFB. Heavy construction is expected to occur between 6:00 a.m. and 5:00 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or complete critical construction activities. Some activities may require construction activities 24 hours per day, 7 days per week. Low level noise activities may potentially occur between the hours of 10:00 p.m. and 7:00 a.m. Nighttime activities could potentially include, but are not limited to, refueling equipment, staging material for the following day's construction activities, quality assurance/control, and commissioning.

2.3.7 Access Roads

To construct the Proposed Action, as well as maintain the transmission line, access roads would be required and are proposed to be maintained during project operation. Generally, periodic inspection (3- or 4-year cycle) will identify when access road (including spur roads) restoration would be required.

The Proposed Action is designed to follow existing roads, where possible, to minimize the ground disturbance footprint within Utility Corridor 5. Specifically, there is an existing dirt road located immediately north of, and parallel to, the proposed transmission line alignment for the majority of the alignment (extending the length of the Proposed Action between transmission tower 6 through 46). New construction access roads would be graded at the westward and eastward portions of the transmission line, with new construction access extending from transmission tower 1 to 6 and then from transmission tower 46 to 53. These new access roads would typically be graded at a width of 12 feet. If necessary, the new roads would be compacted to ensure stability.

Spur roads would be required along the length of the transmission line route that would extend off (to the south) of the existing access road to access the construction sites for transmission towers 6 through 46. These spur roads would typically be graded at a width of 12 feet. If necessary, the new roads would be compacted to ensure stability.

Temporary access roads parallel to the transmission line alignment and spur roads specifically needed for the construction of the transmission line would be restored, as they would not be needed and/or no longer used after construction of the Proposed Action. These are distinguishable from the shared service roads that would be utilized for periodic maintenance activities discussed below. Appendix A and Appendix B provide the detailed plan and profile set for the Proposed Action. These exhibits depict the existing and proposed access roads that would be utilized by the Proposed Action.

2.3.8 Transmission Structure Erection Sites

Temporary transmission structure erection sites would be required at each transmission structure location. The transmission structure erection sites would typically encompass a maximum area approximately 150 feet long by 50 feet wide. These areas would be cleared of vegetation. The tangent transmission structures would be set in an augured hole, typically ranging between 6 to 10 feet in diameter and 15 to 25 feet in depth below the ground surface. The dead-end structures would be set in concrete pier foundations.

The annular space between the poles and holes would be backfilled with concrete or soil. Excavated soil material would be spread around the temporary work areas.

2.3.9 Conductor Pulling and Tension Sites

A total of six pulling and tensions sites would be required to install the conductors on the transmission structures. Pulling and tension sites would encompass an area approximately 400 feet long by 100 feet wide. These sites would be located within and adjacent to the transmission line service road.

2.3.10 Water Use

Water would be used for dust suppression and soil compaction during construction. Water would be obtained from an off-site water purveyor and trucked to the site. The most likely water purveyor would be either Boron Community Service District [CSD] or the Desert Lake CSD.

2.3.11 Industrial Wastes and Toxic Substances

The transmission line would have minimal levels of materials that have been defined as hazardous under 40 CFR Part 261. Hazardous materials spill kits would be carried in vehicles for any small spills that could occur. Hazardous materials would not be disposed of on site or released onto the ground, underlying groundwater, or any surface water. Fully enclosed containment would be provided for all refuse. All construction waste, including

trash, solid waste, petroleum products, and other hazardous materials, would be disposed of at a properly licensed waste disposal facility.

2.3.12 Transmission Line Construction Equipment and Construction Workforce

Construction of the proposed transmission line would involve the use of a variety of construction equipment and varying workforce to construct access/spur roads, foundation installation, pole erection, and cable pulling. Construction vehicles include bulldozers, graders, drilling rigs, compactors, cranes, and a variety of trucks. Although it is not expected, there is a possibility that a helicopter may be used for a certain part of the construction. Any use of helicopter would be limited and would undergo proper clearance with Edwards AFB. A list if the proposed construction equipment type, quantity and number of personnel associated with operation of each piece of equipment is provided in Appendix A.

2.3.13 Transmission Line Operation

Following construction, activities associated with the transmission line would be restricted to inspection and occasional maintenance and repair. Biannual visual inspections would be conducted by ground crews to inspect insulators, overhead grounds, and transmission structure hardware. Transmission line access roads would not be regularly maintained, but as-needed grading may be conducted to provide access to transmission structures for maintenance activities.

Additional operations and maintenance activities may include insulator washing (as needed), periodic air inspections (as needed), repair or replacement of lines (as needed), replacement of insulators (as needed), painting tower or pole identification markings or corroded areas (as needed), and response to emergency situations (e.g., outages) to restore power (infrequent/as needed).

Routine maintenance work would take place between 7 a.m. and 6 p.m., Monday through Friday. However, emergency situations may require maintenance to be performed 24 hours a day, 7 days a week. Maintenance work would be coordinated with Edwards AFB.

2.3.14 Safety

Safety precautions and emergency systems would be implemented as part of the design and construction of the transmission line to ensure safe and reliable operation. Administrative controls may include classroom and hands-on training in operating and maintenance procedures, general safety items, and a maintenance program plan. These controls would complement transmission line design and monitoring features to enhance safety and reliability.

2.4 NO ACTION ALTERNATIVE

CEQ and Air Force NEPA regulations require inclusion of a No Action Alternative in an EA. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and Alternatives can be evaluated.

Under the No Action Alternative, the Air Force would not approve an outgrant for an easement and the proposed transmission line would not be constructed within Edwards AFB. Rather, a transmission line would be constructed off base, on privately-owned lands.

If approved by Kern County, the transmission line would extend from the Aratina Solar Project to the existing Holgate Substation located approximately 1 mile northeast of the solar project. More specifically, this transmission line would begin on the portion of the Aratina Solar Project located on private land immediately south of SR 58 in proximity to the existing eastbound rest stop located west of Boron. The transmission line would exit the solar facility on the north or eastern boundary and extend approximately 0.4 mile east, generally parallel (and south) of SR 58. The transmission line would then turn north, crossing SR 58, and extending approximately 1/2-mile then again turning east for approximately .25 mile to connect with the existing Holgate Substation. The Holgate Substation is located approximately 1 mile from the Aratina Solar Project.

As discussed in Section 2.2.2, a private land connection to the Kramer Substation was evaluated and dismissed from further review. Therefore, the No Action Alternative evaluates the potential transmission line connection to the Holgate Substation.

2.5 SUMMARY OF ENVIRONMENTAL IMPACTS

Table 2-9 presents a summary of anticipated environmental impacts for all alternatives.

Table 2-9.
Summary of Environmental Impacts

Resource	Proposed Action (Double Circuit or Single-Circuit Transmission Line)	No Action
Air Quality and GHGs	During construction (site preparation and grading), fugitive dust (PM_{10}) would be generated from site grading and other earth-moving activities. Emissions would be below *de minimis* thresholds and would not be expected to have a significant impact on the environment. Implementation of AIR-1 through AIR-17 would ensure that impacts would not be significant.	Implementation of the No Action Alternative would likely result in the construction of a transmission line off base within privately owned lands, connecting to the existing Holgate Substation. A similar level of emissions as the Proposed Action associated with the construction of a transmission

Resource	Proposed Action (Double Circuit or Single-Circuit Transmission Line)	No Action
		line connection to the Holgate Substation would be expected.
Cultural and Paleontological Resources	The Proposed Action would potentially impact 15 archaeological sites located within the gen-tie APE, and 60 archaeological sites within the Aratina solar farm APE (which has been included within the Area of Potential Effect for evaluation subject to Section 106 of the NHPA review). Of the 15 archaeological sites located within the gen-tie APE, these sites consist of historic refuse deposits and are considered ineligible for listing on the NRHP and no effect to historic properties would occur. Of the 60 archaeological sites within the Aratina Solar Farm APE, 59 of these sites are considered ineligible for listing on the NRHP. Only one site, newly recorded site S-008 is evaluated as potentially eligible for listing in the NRHP under Criteria D. Edwards AFB is currently in the process of consultations with the SHPO and Native American tribes (refer to Sections 1.4.2 and 1.4.3). Based on the findings of the cultural resources surveys, the archaeological sensitivity of the gen-tie APE is considered low; however, there is always a possibility of encountering unanticipated archaeological resources during ground-disturbing activities. Implementation of CUL-1 through CUL-3 would ensure that impacts would not be significant. Within the Aratina solar farm APE, site S-008 can be avoided and potential impacts avoided by project specific mitigation measures (MM) 4.5-1 through 4.5-3, as required by the Aratina Solar Project EIR. The geologic deposits underlying the Proposed Action corridor (i.e., Quaternary older alluvium) have a high potential to contain paleontological resources. Implementation of CUL-3 would ensure that impacts would not be significant.	Implementation of the No Action Alternative would likely result in the construction of the transmission line off base within privately owned lands, connecting to the existing Holgate Substation. Similar to the Proposed Action, no NRHP-eligible cultural resources would be impacted; however, measures for unanticipated discovery of cultural resources and human remains would be required as part of the CEQA process.
Geology and Soils	The soils within the Proposed Action corridor are identified as having a high potential for soil loss due to wind erosion during construction and very high potential for soil loss due to sheet flow erosion. Implementation of GEO-1, GEO-2, GEO-3, GEO-4, and AIR-12 would ensure that impacts would not be significant.	Implementation of the No Action Alternative would likely result in the construction of the transmission line off base within privately owned lands, connecting to the existing Holgate Substation. Similar to the

Resource	Proposed Action (Double Circuit or Single-Circuit Transmission Line)	No Action
		Proposed Action, there would be ground disturbance associated with the construction of the transmission line that would result in the potential for soil loss due to wind erosion during construction and very high potential for soil loss due to sheet flow erosion.
Hazardous Materials and Hazardous Waste	Construction would require the use of minor amounts of hazardous materials. Implementation of HAZ-1 would ensure that impacts would not be significant. There is a potential presence of UXO and/or munitions debris with the Proposed Action corridor. Implementation of HAZ-2 would ensure that the impact would not be significant. An underground natural gas pipeline is located with the Proposed Action corridor. Implementation of HAZ-3 would ensure that impacts would not be significant. One monitoring well is located within the Proposed Action corridor. Implementation of HAZ-4 would ensure that impacts would not be significant.	Implementation of the No Action Alternative would avoid potential impacts associated with hazardous materials on Edwards AFB but may occur on private land.
Natural Resources	Impacts could occur on vegetation communities, which include saltbush scrub, playa/claypans, and creosote bush scrub. Special-status wildlife species with the potential to be impacted by the Proposed Action include desert tortoise and burrowing owl. Implementation of NAT-1 through NAT-18 would ensure that impacts would not be significant	Biological resources located within the transmission line corridor traversing private lands is similar to those associated with the Proposed Action. Measures to minimize impacts on natural resources may be required to minimize impacts as part of approval by Kern County.

Resource	Proposed Action (Double Circuit or Single-Circuit Transmission Line)	No Action
Water Resources	Construction of the Proposed Action has the potential for increasing sediment due to stormwater movement of disturbed sediments within the construction area. Implementation of HYD-1 would ensure that impacts would not be significant.	Similar to the Proposed Action, construction of a transmission line on private lands under the No Action Alternative would result in the potential for increasing sediment due to stormwater movement of disturbed sediments within the construction area.

Notes:
AFB=Air Force Base; APE=Area of Potential Effect; CEQA=California Environmental Quality Act; GHG=greenhouse gas; NRHP=National Register of Historic Places; PM_{10}=particulate matter less than 10 microns in diameter; UXO=unexploded ordinance

2.6 ISSUES TO BE ADDRESSED

The following issues and concerns are identified as requiring analysis in this EA as it relates to the currently Proposed Action.

Air Quality and GHGs. The Proposed Action would involve construction activities that would generate temporary, minor air pollutant emissions (primarily dust). Additional emissions, although periodic, would be associated with project operation (maintenance activities).

Cultural and Paleontological Resources. All cultural resources located within the gen-tie APE are identified as ineligible for listing on the NRHP. One cultural resource identified in the Aratina Solar Project APE (which is included within the Area of Potential Effects for evaluation under Section 106 of the NHPA) is recommended as potentially eligible for the NRHP under Criteria D. There is also the potential for inadvertent discovery of cultural and paleontological resources and/or buried remains during construction. Consultation with California SHPO is required.

Geology and Soils. Construction of the Proposed Action has the potential to involve ground-disturbing activities, such as grading for new access roads that may create soil erosion.

Hazardous Materials and Hazardous Waste. The generation, use, handling, transportation, and disposal of hazardous materials and hazardous waste may occur as a result of construction activities.

Natural Resources. Potential impacts on natural habitat may result during construction and operation of the proposed transmission line. Edwards AFB has previously consulted with USFWS regarding utility construction and maintenance activities within the base. The *Biological Opinion for Operations and Activities at Edwards Air Force Base, California (8-8-14-F-14)* (USFWS 2014) covers utility construction and maintenance activities.

Water Resources. Water may be required during construction for dust suppression. Water would be obtained from an off-site water purveyor and trucked to the site. The most likely water purveyor would be either Boron CSD or the Desert Lake CSD. Also, several drainages traverse the Proposed Action corridor.

2.7 ISSUES PREVIOUSLY ANALYZED IN PROGRAMMATIC ENVIRONMENTAL ASSESSMENT THAT DO NOT WARRANT FURTHER ANALYSIS

The following issues have already been analyzed under the Utility Corridor EA and do not warrant further analysis in this project-specific EA for the Proposed Action for the reasons described below. Consequently, they will not be addressed in Sections 3.0 and 4.0 of this EA.

Airspace. The Proposed Action is located within Utility Corridor 5. The Utility Corridor EA concluded that proposed utility corridor projects would not have any impact on the management or use of the airspace at Edwards AFB (Utility Corridor EA Section 1.5). The Proposed Action will involve the construction of transmission lowers up to, but would not exceed, 125 feet in height.

Public Safety/Emergency Services. The Utility Corridor EA concluded that construction of utilities within the corridors should not affect overall public safety at the base, nor affect emergency services at the base (Utility Corridor EA Section 1.5). Safety precautions and emergency systems would be implemented as part of the design and construction of the transmission line to ensure safe and reliable operation. Administrative controls may include classroom and hands-on training in operating and maintenance procedures, general safety items, and a maintenance program plan. These controls would complement transmission line design and monitoring features to enhance safety and reliability.

Environmental Justice and Protection of Children. Executive Orders (EO) on Environmental Justice and the Protection of Children require federal agencies to identify and address disproportionately high adverse effects of their activities on minority and low-income populations and children. The Utility Corridor EA concluded that given that the utility corridor construction activities would occur entirely on Edwards AFB, the Air Force has determined that this action would have no substantial, disproportionate impacts on minority and low-income populations and/or children (Utility Corridor EA Section 1.5).

Infrastructure. The Utility Corridor EA concluded that potential impacts on existing utilities may occur as a result of ground-disturbing activities. However, the Utility Corridor EA addressed impacts at a programmatic level (Utility Corridor EA Section 4.5). Existing utility infrastructure in the vicinity of the Proposed Action corridor for the majority of the alignment is the SCE transmission line and related easement. At the eastern extent of the of the Proposed Action, where the alignment turns north to connect into the Kramer Substation, additional utilities include natural gas (Kinder Morgan), Verizon, Pacific Gas and Electric, Caltrans and BNSF. The nature of the project allows for flexibility in placement of transmission towers and associated overhead lines, therefore, linear utility features, such as natural gas lines can be spanned without impacting the facilities.

The existing utility infrastructure has been considered as part of the design of the Proposed Action. As such, based on preliminary engineering and design, the Proposed Action alignment would not impact existing utilities.

Land Use. The Utility Corridor EA concluded that utility corridor management would be consistent with both mission operations and local/regional plans and development, including the Installation Development Plan (Utility Corridor EA Section 4.6). Because the Proposed Action would be implementing a project contemplated in the Utility Corridor EA, and within adopted Utility Corridor 5, the Proposed Action would be consistent with both mission operations and local/regional plans and development, including the Installation Development Plan. Per the Installation Development Plan, the PIRA's zoned for permitted uses to include: Aircraft Testing and Evaluation Ranges and Open Space. There is an approved Utility Corridor that goes along the Northern most region of this Sub District which is also where the Proposed Action is proposed to be constructed. This designation allows for the development of utilities; including electrical transmission lines; therefore, no land use change is required for implementation of the Proposed Action.

Noise. The Utility Corridor EA concluded that construction of transmission lines has the potential to result in temporary and localized minor noise impacts (Utility Corridor EA Section 4.8). However, the Utility Corridor EA addressed impacts at a programmatic level. The Proposed Action is not located in proximity to any sensitive noise receptors. Therefore, the Proposed Action does not have the potential to result in a noise impact associated with construction activities.

Socioeconomics. The Utility Corridor EA concluded that construction of utilities within any of the corridors would result in a temporary, minor increase in employment (Utility Corridor EA Section 4.9). This is considered a beneficial impact.

3.0 AFFECTED ENVIRONMENT

This section describes existing environmental conditions that may be affected by the proposed alternatives being considered for further evaluation: the Proposed Action Alternative and the No Action Alternative. It provides the baseline information that was used to identify and evaluate potential environmental changes resulting from the implementation of the proposed alternatives. This section accounts for the reasonably foreseeable environmental trends and planned actions in the area. The environmental trends and planned actions in the area are one of increasing development and encroachment on Edwards AFB. For instance, in November 2020 the Air Force signed a record of decision after completing an environmental impact statement for construction of a solar array that could produce up to 650 megawatts of power on up to 4,000 acres on Edwards AFB. Construction of this solar array is ongoing. In addition, the Aratina Solar Project by 64NB 8ME LLC [8minute Solar Energy] is a proposed photovoltaic solar facility with associated infrastructure to generate up to 530 MW-AC of renewable electrical energy, including up to 600 MW of energy storage (battery) facilities. This proposed project is sited in southeastern Kern County north of the Edwards AFB boundary, and is subject to approval by Kern County. In August 2021, Kern County completed and made available to the public, a Final Environmental Impact Report (FEIR) for the proposed Aratina Solar Project pursuant to the California Environmental Quality Act (CEQA). The proposed Aratina Solar Project would serve as a buffer between the growing community and Edwards AFB.

The Proposed Action would be located near the Air Force's existing Precision Impact Range Area (PIRA) where Edwards AFB conducts mission test and training activities. Most of the aircraft testing takes place at high altitudes and specific designated areas, and these activities produce few ground impacts. This section considers the projects on the Cumulative Projects List in the Aratina Solar Project DEIR, (DEIR Section 3.9 and Figure 3.12) to the extent they are reasonably foreseeable planned actions in the area.

3.1 AIR QUALITY AND GREENHOUSE GASES

The Proposed Action is partially located in the eastern portion of Kern County and partially located in the western portion of San Bernardino County.

The Kern County portion of the Proposed Action is under the jurisdiction of the Eastern Kern Air Pollution Control District (EKAPCD). The San Bernardino County portion of the Proposed Action is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). These two districts are part of the Mojave Desert Air Basin (MDAB).

3.1.1 Air Quality

Pursuant to the Federal Clean Air Act (CAA) Amendments of 1990, the United States Environmental Protection Agency (USEPA) established National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment.

NAAQS are established for six pollutants (known as criteria pollutants): ozone (O_3), particle pollution (i.e., particulate matter less than 10 microns in diameter [PM_{10}] and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$]), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). Under the federal CAA, attainment and maintenance of NAAQS are required.

The California Air Resources Board (CARB) has also adopted its own air quality standards in the state of California, known as the California Ambient Air Quality Standards (CAAQS) under the California CAA. The CAAQS are generally more stringent than the NAAQS and include air quality standards for all the criteria pollutants listed under NAAQS plus sulfates (SO_4), hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particulate matter. A summary of federal and state ambient air quality standards is outlined in Table 3-1.

Table 3-1.
National and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Primary
O_3	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.070 ppm[a]
PM_{10}	AAM	20 µg/m^3	—
	24-hour	50 µg/m^3	150 µg/m^3
$PM_{2.5}$	AAM	12 µg/m^3	12.0 µg/m^3
	24-hour	No Standard	35 µg/m^3
CO	1-hour	20 ppm	35 ppm
	8-hour	9.0 ppm	9 ppm
NO_2	AAM	0.030 ppm	0.053 ppm
	1-hour	0.18 ppm	100 ppb[b]
SO_2	24-hour	0.04 ppm	0.14 ppm
	3-hour	—	0.5 ppm
	1-hour	0.25 ppm	75 ppb
Lead	30-day average	1.5 µg/m^3	—
	Rolling 3-month average	—	0.15 µg/m^3

SO_4	24-hour	25 µg/m^3	No federal standards
H_2S	1-hour	0.03 ppm (42 µg/m^3)	
Vinyl chloride	24-hour	0.01 ppm (42 µg/m^3)	
Visibility-reducing particle matter	8-hour	Extinction coefficient: 0.23/kilometer-visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.	

Source: CARB 2021

Notes:

[a] On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[b] To attain this standard, the 3-year average of the 98th percentile daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

AAM=annual arithmetic mean; CO=carbon monoxide; H_2S=hydrogen sulfide; NO_2=nitrogen dioxide; O_3=ozone; $PM_{2.5}$=particulate matter less than 2.5 microns in diameter; PM_{10}=particulate matter less than 10 microns in diameter; ppb=parts per billion; ppm=parts per million; SO_2=sulfur dioxide; SO4=sulfates; µg/m^3=micrograms per cubic meter

Existing Conditions

USEPA classifies the air quality within an air quality control region with regard to its attainment of federal primary and secondary NAAQS. Pursuant to USEPA guidelines, an area with air quality better than the NAAQS for a specific pollutant is designated as being in attainment for that pollutant. Any area not meeting the NAAQS is classified as a nonattainment area. Where there is a lack of data for USEPA to make a determination regarding attainment or nonattainment, the area is designated as unclassified and is treated as an attainment area until proven otherwise. Similarly, California makes state area designations for the state criteria pollutants.

As of 2020, USEPA listed Eastern Kern County as attainment for all standards except the 8-hour O_3 and PM_{10} standards and designated San Bernardino County as attainment for all standards except the 8-hour O_3 and PM_{10} standard (USEPA 2020a). State attainment designations are listed in Table 3-2.

Table 3-2.

State Attainment Designations

CAAQS	Eastern Kern County	San Bernardino County Portion of MDAQMD
O_3	Nonattainment	Nonattainment
$PM_{2.5}$	Unclassified	Nonattainment
PM_{10}	Nonattainment	Nonattainment
CO	Unclassified	Attainment

CAAQS	Eastern Kern County	San Bernardino County Portion of MDAQMD
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
SO_4	Attainment	Attainment
Pb	Attainment	Attainment
H_2S	Unclassified	Unclassified
Visibility-reducing particles	Unclassified	Unclassified

Notes:

CAAQS=California Ambient Air Quality Standards; CO=carbon monoxide; H_2S=hydrogen sulfide; NO_2=nitrogen dioxide; O_3=ozone; Pb=lead; $PM_{2.5}$=particulate matter less than 2.5 microns in diameter; PM_{10}=particulate matter less than 10 microns in diameter; SO_2=sulfur dioxide; SO4=sulfate; MDAQMD=Mojave Desert Air Quality Management District

General Conformity Requirements

Section 176(c) of the federal CAA contains requirements that apply specifically to federal agency actions, including actions receiving federal funding. This section of the CAA requires federal agencies to ensure that their actions are consistent with the CAA and applicable state air quality management plans. The general conformity regulation is codified in 40 CFR Part 51, Subpart W, and 40 CFR Part 93, Subpart B.

The USEPA general conformity rule requires a conformity determination for federally sponsored or funded actions in nonattainment or maintenance areas when the net increase in emissions of nonattainment or maintenance pollutants exceeds specified *de minimis* thresholds.

Under the General Conformity Rule, the CAA applicability analysis is conducted for federal actions performed in locations with a history of noncompliance, as described below:

- An area that is in nonattainment (i.e., has recorded violations of the NAAQS) for each criteria pollutant (such as O_3, CO, and particulate matter) for which the area is designated nonattainment
- An area designated as nonattainment that was later redesignated by the administrator of USEPA as an attainment area and that is, therefore, required to develop a maintenance plan under Section 7505a of 42 USC with respect to the specific pollutant(s) for which the area was previously designated nonattainment

A conformity determination must be made if the annual emissions exceed the rates specified in 40 CFR Part 93.153(b), referred to as *de minimis* rates. If the applicable emissions exceed the *de minimis* rates outlined in the General Conformity Rule, then the federal agency would prepare a General Conformity Determination for public comment. If the estimated annual emissions are below the applicable *de minimis* rates, the Proposed Action

conforms to the State Implementation Plan (SIP) and is not subject to a general conformity determination (USEPA 2020b).

Thus, the Proposed Action's calculated emissions are compared with established *de minimis* emission levels based on the nonattainment status for each applicable criteria pollutant in the area of concern to determine the relevant compliance requirements. Table 3-3 defines the *de minimis* thresholds that apply to Kern and San Bernardino Counties. Specifically, these include EKCAPCD Rule 210.7 and MDAQMD Rule 2002. If the calculated emissions are equal to or greater than *de minimis* levels, then the requirements of air conformity apply to the action.

Table 3-3.
General Conformity De Minimis Emission Rates for the Kern County (Eastern Kern) and San Bernardino County Portion of the Mojave Desert Air Basin

Pollutant	Federal Attainment Status[a] Kern County (Eastern Kern)	*De Minimis* Emission Rate (tons/year)[b]	Federal Attainment Status[a] San Bernardino County	*De Minimis* Emission Rate (tons/year)
O_3 (VOC and NO_x)	Nonattainment – Severe for 2008 O_3 Standard	25[c]	Nonattainment-Severe15[d]	25
NO_2	Unclassified/Attainment[a]	—	Unclassified/Attainment[a]	—
CO	Unclassified/Attainment[a]	—	Unclassified/Attainment[a]	—
PM_{10}	Nonattainment Serious[a]	70	Nonattainment – Moderate[a]	100
$PM_{2.5}$	Unclassified/Attainment[a]	—	Unclassified/Attainment[a]	—
SO_2	Unclassified/Attainment[a]	—	Unclassified/Attainment[a]	—
Pb	Unclassified/Attainment[a]	—	Unclassified/Attainment[a]	—

Notes:

CO=carbon monoxide; NO_x=nitrogen oxides; NO_2=nitrogen dioxide; O_3=ozone; Pb=lead; PM_{10}=particulate matter 10 microns or less in diameter; $PM_{2.5}$=particulate matter 2.5 microns or less in diameter; SO_2=sulfur dioxide; USEPA=United States Environmental Protection Agency; VOC=volatile organic compound

Sources:

[a] USEPA 2020b

[b] USEPA 2017

[c] Kern County (Eastern Kern) is designated Nonattainment – Moderate for the 2015 O_3 Standard. The final rule for the 2015 O_3 standard was signed October 1, 2015, and effective December 28, 2015. However, the previous (2008) O_3 standards are not revoked and remain in effect for designated areas. Therefore, the *de minimis* rate for a severe nonattainment designation is used for conformity.

[d] This designation status is only applicable to the Los Angeles and San Bernardino Counties within the West Mojave Desert.

3.1.2 Greenhouse Gases

Background

Changes in global climate patterns have recently been associated with global warming, an average increase in the temperature of the atmosphere near the Earth's surface, attributed to accumulation of GHG emissions in the atmosphere. Common GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). GHGs are commonly quantified in the equivalent mass of CO_2 (carbon dioxide equivalent [CO_2e]), which considers the global warming potential of each individual GHG compound.

The federal government has taken numerous steps to address climate change:

EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance, issued in October of 2009, states that the policy of the United States is that federal agencies increase energy efficiency, measure, report and reduce their GHG emissions from activities. EO 13653, Preparing the United States for the Impacts of Climate Change, was signed in November 2013 to provide direction for federal agencies to take a series of steps to facilitate efforts for American communities to strengthen their resilience to climate change.

More recently, two new EOs related to climate change were issued in January 2021: EO 13990, Protecting Public Health, the Environment, and Restoring Science to Tackle Climate, and EO 14008, Tackling the Climate Crisis at Home and Abroad. In response to these orders, CEQ reinstated Obama administration policy on how GHG emissions and the effects of climate change are considered in environmental review under NEPA.

Existing Conditions

Based on the 2020 update of the California GHG inventory for 2000 to 2018, California emitted 452 million metric tons of CO_2e in 2018 (CARB 2020).

Currently, the Proposed Action corridor is vacant, with the exception of existing dirt roads and a SCE transmission line and is not a source of air pollutant/GHG emissions.

3.2 CULTURAL AND PALEONTOLOGICAL RESOURCES

Cultural and Paleontological Setting

This section presents a brief overview of the environmental setting and cultural history for the general location of the Proposed Action as summarized from the Utility Corridor EA. Additional information pertaining to the environmental setting is provided in the cultural resources report prepared for the Proposed Action (Appendix B).

3.2.1 Prehistoric Context

The Mojave Desert has been prehistorically occupied by human cultures. Archaeologists have proposed several chronological sequences to describe cultural change in Southern California (Jones and Klar 2007; Moratto 2004). Most recently, Sutton et al. (2007) devised an updated Mojave Desert cultural history, dividing it into four temporal periods: Pleistocene, Early Holocene, Middle Holocene, and Late Holocene.

3.2.2 Ethnographic Context

The APE is within a transitional zone that was occupied by multiple cultural groups including the Serrano, Kitanemuk, and Tataviam. All these groups are better associated with portions of the surrounding mountains—Serrano to the northeast, Kitanemuk to the northwest, Tataviam to the southwest—but all of them likely visited the Antelope Valley floor as part of their resource exploitation strategies. Ethnographic boundaries in the Mojave Desert are loosely defined, owing to the highly mobile nature of desert settlement and resource extraction strategies, as well as the variety of interpretations presented by previous researchers. Appendix B provides a more detailed summary of the ethnographic context of the Proposed Action.

3.2.3 Historic Setting

Post European contact history for the state of California is divided generally into three periods: the Spanish Period (1769 to 1822), the Mexican Period (1822 to 1848), and the American Period (1848 to present). Additionally, the Proposed Action is located in proximity to Boron, a census-designated place in the County of Kern, California, most famous for its extensive colemanite (a borax ore) deposits and is located within the boundaries of Edwards AFB. Appendix B provides a more detailed summary of the historic setting of the Proposed Action.

Native American Graves Protection and Repatriation Act of 1990

NAGPRA provides a process for federal agencies and museums that receive federal funds to repatriate or transfer from their collection's certain Native American cultural items to lineal descendants, and to Native American tribes, Alaska Native Corporations, and Native Hawaiian organizations. NAGPRA also provides a process for federal agencies to address new discoveries of Native American human remains, funerary objects, sacred objects, and objects of cultural property intentionally excavated or inadvertently discovered on federal or tribal lands. Edwards AFB can verify compliance with Sections 5 and 6 of NAGPRA.

3.2.4 Cultural and Paleontological Resources within the NHPA APE

The Proposed Action National Historic Preservation Act Area of Potential Effect (APE) is comprised of: 1) the gen-tie APE within Edwards AFB; and 2) the Aratina Solar Project APE, which is located on private lands outside of the Edwards AFB boundary.

A pedestrian survey of both the gen-tie APE and the Aratina Solar Project APE was conducted that involved a series of pedestrian transects oriented generally east-to-west and spaced no more than 15 meters apart across the entirety of the APE. Details of the pedestrian survey methodology for the gen-tie APE are provided in Appendix D. Cultural resource surveys on the area encompassed by the Aratina Solar Project APE were conducted as part of the California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) prepared by the County. Details of the pedestrian survey methodology for the Aratina Solar Project APE is provided in the Aratina Solar Project Environmental Impact Report (EIR) Appendix E, incorporated herein by reference. Significance evaluations and the rationale for recommendation for eligibility on the NRHP is provided in detail in the corresponding appendices.

Cultural resource surveys of the gen-tie APE identified and recorded 1 previously unrecorded site and updated 14 previously recorded sites. Cultural resource surveys within the Aratina solar project APE identified and recorded 60 archaeological sites within the Aratina solar farm APE (which has been included within the Area of Potential Effect for evaluation under Section 106 of the NHPA).

Based on the Cultural Resources Assessment Report (Rincon 2020) (EIR Appendix E), one cultural resource site (S-008) located on the Aratina Solar Project site has been identified as potentially eligible for listing on the National Register of Historic Places. Two cultural resources (P-15-000560, and P-15-017304) have been identified within the gen-tie route to the Holgate Substation, which is part of the No Action Alternative. Edwards AFB has assumed eligibility of these sites under the National Register of Historic Places.

Table 3-4 Summarizes the findings of the cultural resources pedestrian surveys within the entirety of the APE for purposes of the NRHP.

Table 3-4.

Summary of Cultural and Paleontological Resources within Proposed Action Area of Potential Effect

Resource	Description	Status
Within Proposed Action APE on Edwards Air Force Base		
ARA-S-003	Historic-period refuse deposit consisting of various metal objects, glass fragments, ceramic pieces, milled lumber, and concrete chunks	Not considered eligible for listing on the NRHP
EAFB 0802	Remnants of a historic-period two-track wagon road extending from Randsburg south to Kramer Hills and Red Buttes	Not considered eligible for listing on the NRHP
EAFB 1330	Historic-period refuse deposit consisting of sanitary and matchstick filler cans; the resource could not be found during the cultural resource survey for the	Presumed destroyed

Resource	Description	Status
	Proposed Action (or previous surveys reported in the site record)	
EAFB 2721	Historic-period refuse deposit consisting of household refuse including cans, glass, wood, and ceramics	Not considered eligible for listing on the NRHP
EAFB 2724	Recorded as a historic-period refuse deposit; however, this resource was not found within the survey boundaries during the cultural resources survey for the Proposed Action	Presumed destroyed
EAFB 2734	Historic period refuse deposit consisting of cans, glass, and milled lumber with no diagnostic markers; features consistent with the original findings of glass, milled lumber, and cans were observed during the cultural resources survey for the Proposed Action	Not considered eligible for listing on the NRHP
EAFB 2735	Historic-period refuse deposit containing construction material, domestic expendable items, domestic nonexpendable items, transportation items, and personal items, such as tin cans, glass and ceramic fragments, and miscellaneous metals	Not considered eligible for listing on the NRHP
EAFB 3219	Historic-period refuse scatter consisting of construction materials and expendable domestic items, such as tin cans, glass fragments, ceramics, corrugated sheet metal, lumber, and wire fencing	Not considered eligible for listing on the NRHP
EAFB 3737	Historic-period refuse scatter consisting of automotive and expendable domestic materials	Not considered eligible for listing on the NRHP
EAFB 3738	Historic-period refuse scatter	Not considered eligible for listing on the NRHP
EAFB 3817	Historic-period road, previously recorded solely through historical map research without any field survey to determine the physical presence of the resource; no cultural materials or features were observed within or near the previously recorded resource boundaries during the cultural resource survey for the Proposed Action	Presumed destroyed
EAFB 3852	Historic-period road; the road was recorded on the *Kramer* Quadrangle topographic maps from 1937 to	Not considered eligible for listing on the NRHP

Resource	Description	Status
	1956 and then again on the 1966 *San Bernardino* Quadrangle topographic map (USGS 2019)	
EAFB 3853	The cultural resources survey efforts associated with the Proposed Action were unable to relocate resource EAFB 3853; EAFB 3853 was recorded solely through historical map research without any field survey to determine the physical presence of the resource, and no cultural materials were observed within or near the previously recorded resource boundaries	Presumed destroyed
EAFB 3854	Historic-period road, recorded solely through historical map research without any field survey to determine the physical presence of the resource; no cultural materials were observed within or near the previously recorded resource boundaries during the cultural resources survey for the Proposed Action	Presumed destroyed
EAFB 3893	Historic-period road, recorded solely through historical map research without any field survey to determine the physical presence of the resource; no cultural materials were observed within or near the previously recorded resource boundaries during the cultural resources survey for the Proposed Action	Presumed destroyed
Within Proposed Action APE outside Edwards AFB boundary within Aratina Solar Project within the NHPA APE		
S-008	Site S-008 is a moderate density lithic scatter containing approximately 113 flakes of various material types including three varieties of cryptocrystalline silica (CCS; chert, jasper, and chalcedony), quartz, and basalt.	Assumed Eligible for the NRHP (Criteria D).
Within No Action Alternative Gen-tie Route to Holgate Substation		
P-15-000560	Resource P-15-000560 is a historic period railroad first recorded in 1977 and last updated in 2013. The segment within the gen-tie alternatives area was given an NRHP status code of 3B: Appears eligible for listing on the NRHP both individually and as a contributor to a NRHP eligible district through survey evaluation.	Assumed Eligible for the NRHP
P-15-017304	Resource P-15-017304 consists of the historic period Twenty Mule Team Road and State Route 58 recorded	Assumed Eligible for the NRHP

Resource	Description	Status
	in 2013. This resource was not evaluated when it was recorded in 2013; however, Twenty Mule Team Road is a California Point of Historical Interest.	

Notes:
NRHP=National Register of Historic Places; USGS=United States Geological Survey

3.2.5 Paleontological Resources

Paleoenvironment and Paleontological Setting

Paleontological resources are the mineralized (fossilized) remains of prehistoric plants and animals and the mineralized impressions (trace fossils) left as indirect evidence of the forma and activity of such organisms.

Holocene sedimentary deposits, particularly those younger than 5,000 years old, are generally too young to contain fossilized material. Therefore, the Holocene alluvial and Aeolian deposits mapped in the Proposed Action corridor have been assigned a low paleontological sensitivity. Older Quaternary (Pleistocene) sediments may underlie the Holocene sediments at depths as shallow as 3 feet below ground surface (bgs) in the vicinity of the Proposed Action (Air Force 2016). The older Quaternary alluvium has a high paleontological sensitivity and a high potential to contain buried intact paleontological resources because the unit has proven to yield significant vertebrate fossils near the Proposed Action corridor.

3.3 GEOLOGY AND SOILS

3.3.1 Geology and Soils within Proposed Action Corridor

Quaternary alluvium, Quaternary sand, and Quaternary older alluvium are the geologic formations located within the Proposed Action corridor (Figure 3-1). Utility Corridor 5 bisects the Muroc fault and Spring fault; however, these faults do not cross the Proposed Action corridor (the faults are located further west of the western terminus of the Proposed Action corridor).

3.3.2 Topography

The elevations within the entire extent of Utility Corridor 5 ranges from approximately 2,500 to 2,580 feet above mean sea level. The corridor is generally flat, with the highest elevations occurring in the west central portion of the corridor (Appendix E). Similarly, the topography of the Proposed Action corridor is generally flat.

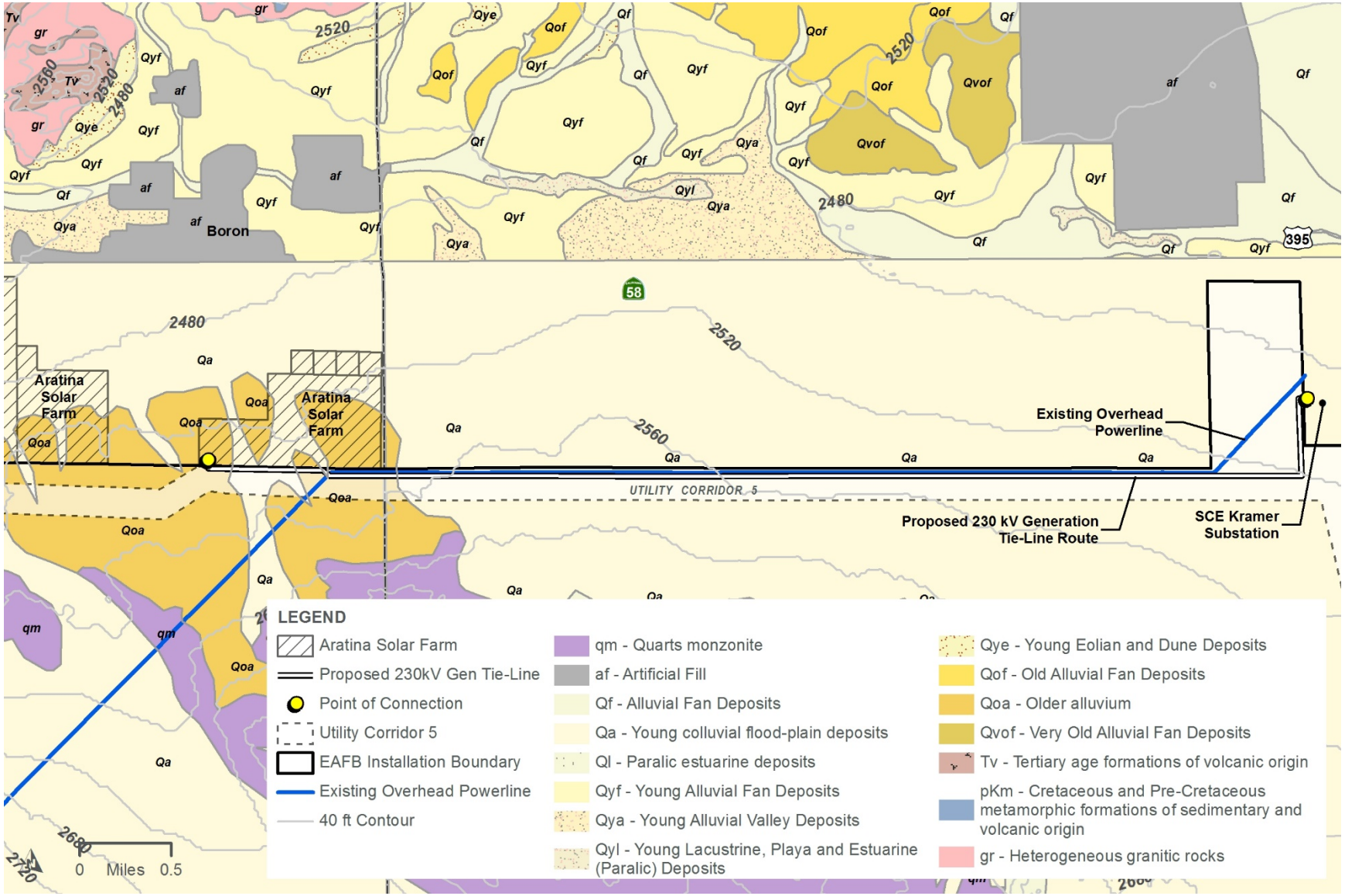


Figure 3-1. Geology and Soils

3.3.3 Soil/Bedrock Data

The surface lithology of the Proposed Action corridor is generally unconsolidated sediments of fluvial and aeolian origin. These sediments consist of gravels and sands with varying degrees of silts and clays. These sediments are understood to be over 2,000 feet thick and are underlain by quartzmonzonite intrusive units (Air Force 2016) consisting of Quaternary Alluvial, Quaternary Older Alluvial, and Quaternary Surficial deposits as follows:

- **Quaternary Alluvial Deposits.** Very young alluvial-valley deposits (late Holocene) consisting of unconsolidated silt, sand, and cobbles
- **Quaternary Older Alluvial Deposits.** Moderately to well consolidated old alluvial deposits of the late to middle Pleistocene era consisting of silt, sand, and gravel
- **Quaternary Surficial Deposits.** Mostly unconsolidated very young surficial deposits (late Holocene) consisting of silt, sand, gravel, and small cobbles)

Figure 3-2 depicts the soils within the Proposed Action corridor. The Proposed Action corridor traverses Cajon-Norob complex, Cajon loamy coarse sand, and Norob sandy loam. None of these soil types are associated with prime, unique, or farmland of statewide importance.

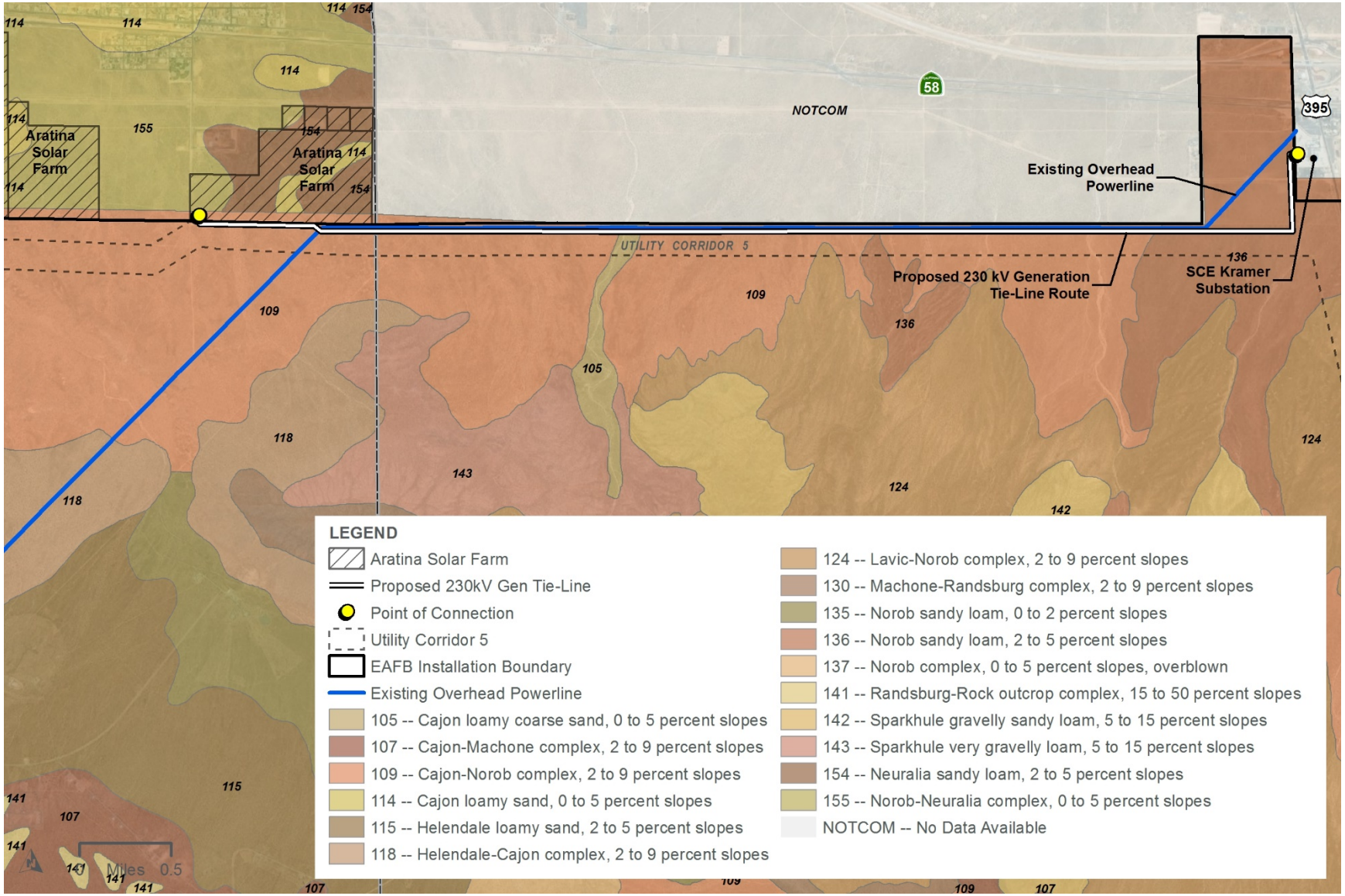


Figure 3-2. Soils within Proposed Action Corridor

3.3.4 Regional Seismicity

The Proposed Action corridor is located within a highly active seismic zone. Several of the more recent earthquakes in the Proposed Action corridor include the 1992 Johnson earthquake, the 1992 Big Bear earthquake, the 1994 Northridge earthquake, and the 1999 Hector Mine earthquake (Stantec Consulting Services, Inc. 2019).

The estimated distance of the Proposed Action to the nearest expected surface expression of major active faults is presented in Table 3-5.

Table 3-5.
Approximate Distance of Major Faults to Proposed Action Corridor

Fault	Approximate Distance (miles)	Maximum Moment Magnitude
Helendale-South Lockhart	9.2	7.4
Lenwood-Lockhart-Old Woman Springs	9.9	7.5
Gravel Hills – Harper Lake	22.2	7.1
Garlock	26.8	7.6
South Sierra Nevada	28.5	7.5
Blackwater	31.0	7.1
South San Andreas	38.1	8.2

Source: Stantec Consulting Services, Inc. 2019

3.3.5 Fault Rupture Hazard

The Proposed Action corridor is not located within a currently mapped Alquist-Priolo Special Studies Fault Zone (Air Force 2016). As noted above, the nearest active major fault is the Helendale – South Lockhart fault, located approximately 9.2 miles northeast of the Proposed Action corridor. Based on the fault's distance from the Proposed Action corridor, and since the fault does not project toward the Proposed Action corridor, the potential for surface fault rupture to occur is low.

3.3.6 Erosion

Potential erosion from wind and water to soils within the Proposed Action corridor are based on the evaluation conducted for the Utility Corridor EA. A soil survey was conducted, and potential erosion from wind and water to soils has been determined by the National Resources Conservation Service. For the soils within Edwards AFB, a Wind Erodibility Group (WEG) has been determined for those soils with similar properties that affect their susceptibility to wind erosion.

The Cajon-Norob complex, Cajon loamy coarse sand, and Norob sandy loam soils have a WEG of 1 and 2, on a scale of 8, with those categorized in the WEG 1 as the most susceptible to wind erosion, and the soils assigned to Group 8 as the least susceptible to wind erosion.

3.4 HAZARDOUS MATERIALS AND HAZARDOUS WASTE

Hazardous materials and waste management activities at Edwards AFB are governed by specific environmental regulations including Resource Conservation and Recovery Act (RCRA) (42 USC 6901); Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (42 USC 9601); the Federal Facility Compliance Act of 1992 (Public Law 102-386); AFMAN 32-7002, Hazardous Materials Management; 40 CFR Parts 260-299, Storage, Treatment and Disposal of Waste; and 49 CFR Parts 171-185, Waste Transportation and Packaging.

The use of hazardous materials results in generation of hazardous waste (e.g., paint waste, used oil, contaminated rags, etc.) and requires proper handling. USEPA enforces the RCRA (40 CFR Parts 260-272), which provides guidelines for the generation, storage, transportation, and disposal of hazardous waste. The California Environmental Protection Agency (Cal-EPA) enforces hazardous waste laws embodied in 22 California Code of Regulations (CCR) Chapters 10-20 and the California Health and Safety Code (Section 25100). Environmental Management manages hazardous waste accumulation.

Guidelines used by the Air Force include the Edwards AFB Hazardous Waste Management Plan (Air Force 2016), which was prepared in accordance with AFMAN 32-7002, Waste Management. The Hazardous Waste Management Plan contains requirements for solid and hazardous waste characterization, training, accumulation, turn-in, and disposal, as well as procedures for inspections, permits, and recordkeeping. It is intended to ensure compliance with applicable federal, state, and local regulations; simplify administrative procedures; and reduce pollution and environmental impacts through improved waste management practices.

3.4.1 Hazardous Substances Within Proposed Action Corridor

A Phase I Environmental Site Assessment was prepared for the Proposed Action corridor to determine the potential for the presence of hazardous materials or substances or hazards (Appendix E). The following summarizes the findings of the Phase I Environmental Site Assessment.

Precision Impact Bombing Area (PIRA) and Target Site PB-9 Overshoot Area. The PIRA contains targets, gunnery ranges, and drop zones for pilots and engineers to test aircraft and weapon systems using primarily infrared laser imaging. The Phase I Environmental Site Assessment indicated that there is the potential for unexploded ordnance (UXO) or munitions debris within the Proposed Action corridor (Appendix E). The potential presence for UXO and/or munitions debris is considered a recognized environmental concern (REC).

Underground Natural Gas Pipelines. Signage for underground natural gas pipelines was observed that indicated gas lines pass through the north-to-south trending segment of the Proposed Action corridor near Kramer Junction. Various leak-identification systems are in place for natural gas pipelines, and it is unlikely that any leakage has occurred. Therefore, the presence of the pipeline facilities is not considered a REC.

Water Wells. One monitoring well was observed within the western portion of the Proposed Action corridor (Appendix E, Figure 3). The specific use of the monitoring well was not known during the Phase I ESA but was reported as likely a part of the Edwards AFB Operable Unit 3, Basewide Monitoring Wells. Operable Unit 3 is defined as the basewide water wells and originally included 660 potential well sites determined from historical records and archival research. An Edwards AFB AFCEC/CZOW program manager was consulted regarding this well. Although the exact use of the well was not determined, it is likely used as part of the groundwater monitoring well network as part of the base boundary and/or is used as a sentinel well. This well is planned to be avoided during construction of the Proposed Action. Further, a record of decision was adopted in 2003 which documents the process and rationale for taking no further action regarding the abandoned water wells within Operable Unit 3 at Edwards AFB, since no contamination of soils or groundwater was found.

Environmental Restoration Program (ERP) Site 438. ERP Site 438 is located in the northeast portion of Edwards AFB along the segment of the Proposed Action corridor that extends north toward the SCE Kramer Substation (Appendix E, Figure 7).

Based on the Phase I Environmental Site Assessment, the information obtained during the investigation of ERP Site 438 was summarized in a "No Further Investigation" (NFI) letter submitted by the Department of the Air Force to the Regional Water Quality Control Board (RWQCB), Department of Toxic Substances Control (DTSC), and USEPA. The NFI letter was signed by each of the agencies indicating their concurrence with the finding that no further investigation was necessary.

Asbestos. Asbestos can be found in many applications, including sprayed-on or blanket-type insulation, pipe wraps, mastics, floor and ceiling tiles, wallboard, mortar, roofing materials, and a variety of other materials commonly used in construction. The greatest asbestos-related human health risks are associated with friable asbestos, which is asbestos-containing material (ACM) that can be reduced to powder by hand pressure. There are no buildings or structures within the Proposed Action corridor. Therefore, the presence of ACM is unlikely. There is the potential that underground utilities are coated with or wrapped with ACM.

Lead-based Paint. Concern for the presence of lead-based paint is primarily related to residential structures. There are no painted structures or surfaces within the Proposed Action corridor. Lead-based paint is not expected to be encountered within the Proposed Action corridor.

Radon. According to the USEPA Map of Radon Zones, the Proposed Action corridor is located within Zone 2, which indicates a moderate potential, where the chance of a house exceeding the USEPA recommended radon action level of 4 picocuries per liter is relatively moderate.

3.5 NATURAL RESOURCES

3.5.1 Existing Conditions

The Proposed Action corridor is generally located approximately 300 feet south of the northern boundary of Edwards AFB except in the area of the Kramer Substation. The eastern 5.4 miles of the Proposed Action corridor lies at the northern boundary of the Bureau of Land Management-designated Fremont-Kramer Area of Critical Environmental Concern (ACEC). This area provides high density desert tortoise habitat and encompasses designated desert tortoise critical habitat. This area provides critical tortoise habitat linkage

Biological surveys were conducted within the Proposed Action corridor between June 2, 2020 and June 5, 2020 (Appendix F). Table 3-6 and Figure 3-3 through Figure 3-8 depict the vegetation communities within the Proposed Action corridor.

Table 3-6.
Proposed Action Vegetation Communities

Vegetation Community[a]	Proposed Action Transmission Line (Acres)	Proposed Action Transmission Line (Percent)
Larrea tridentate – Ambrosia dumosa Shrubland Alliance (creosote bush – white bursage scrub)	41.58	54.2
Atriplex spinifera Shrubland Alliance (spinescale scrub)	30.50	39.8
Larrea tridentate Shrubland Alliance (creosote bush scrub)	3.18	4.1
Ambrosia dumosa Shrubland Alliance (white bursage scrub)	0.73	1.0
Atriplex polycarpa Shrubland Alliance (allscale scrub)	0.67	0.9

Vegetation Community[a]	Proposed Action Transmission Line (Acres)	Proposed Action Transmission Line (Percent)
—	**76.66**	**100.0**

Source: Appendix F

Notes:

[a] Vegetation communities per Sawyer et al. 2009

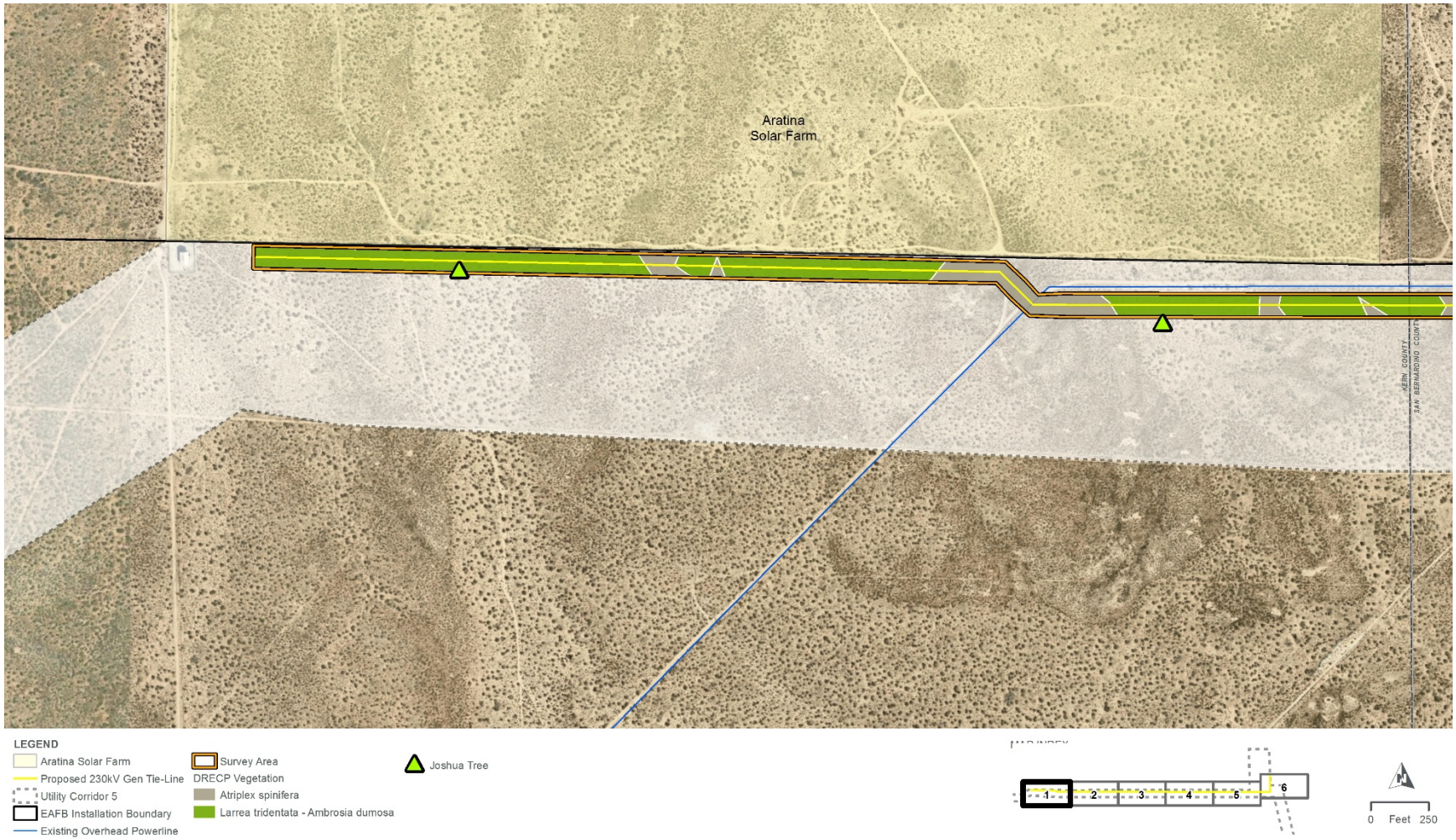


Figure 3-3. Vegetation Communities (Sheet 1 of 6)

Figure 3-4. Vegetation Communities (Sheet 2 of 6)

Figure 3-5. Vegetation Communities (Sheet 3 of 6)

Figure 3-6. Vegetation Communities (Sheet 4 of 6)

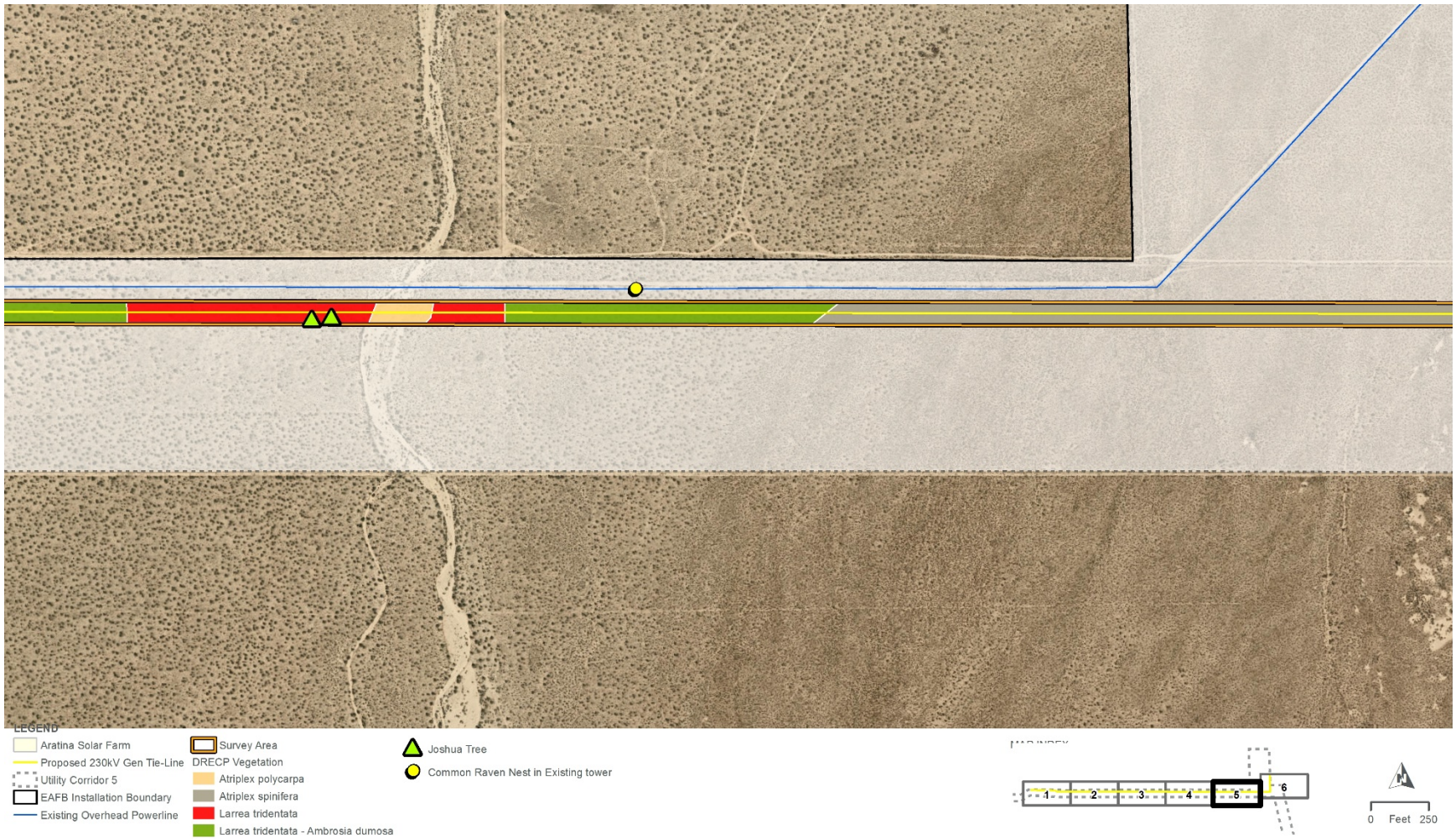


Figure 3-7. Vegetation Communities (Sheet 5 of 6)

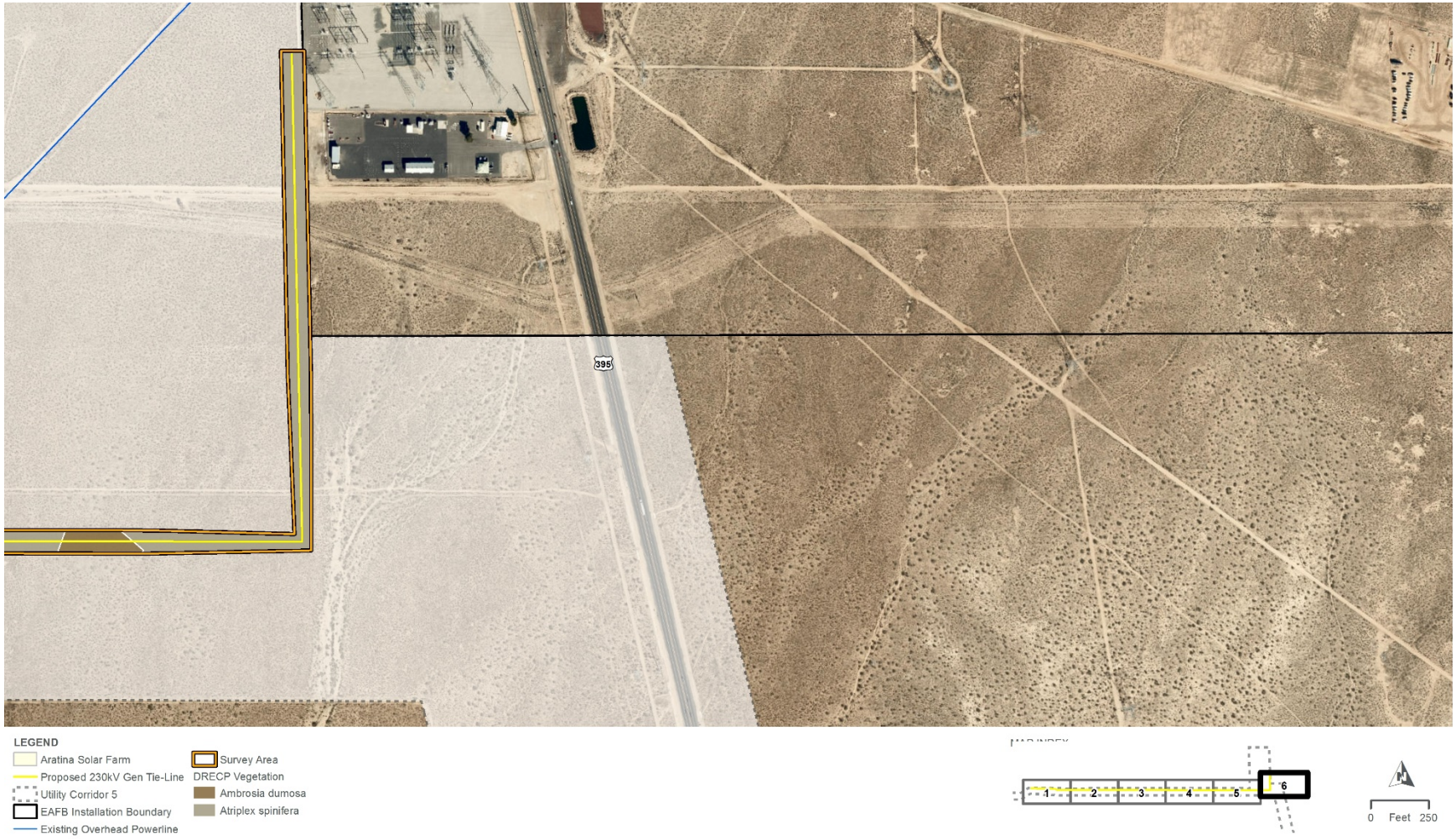


Figure 3-8. Vegetation Communities (Sheet 6 of 6)

Figure 3-9 depicts the location of observed species within the Proposed Action corridor.

3.5.2 Desert Tortoise

The Proposed Action corridor is located in designated desert tortoise critical habitat (Figure 3-10). The Proposed Action area is located within both desert tortoise critical habitat (85%) and outside desert tortoise critical habitat (15%). No desert tortoise sign was detected in 25.4 miles of transects walked within the Proposed Action corridor during the field survey. However, it must be acknowledged that the sample size of 25.4 miles of transects is relatively small and could result in failure to detect individuals that do not reside on the site but may walk onto the site and use it for forage.

3.5.3 Burrowing Owl

No burrowing owl sign was detected in 25.4 miles of transects walked within the Proposed Action corridor during the field survey.

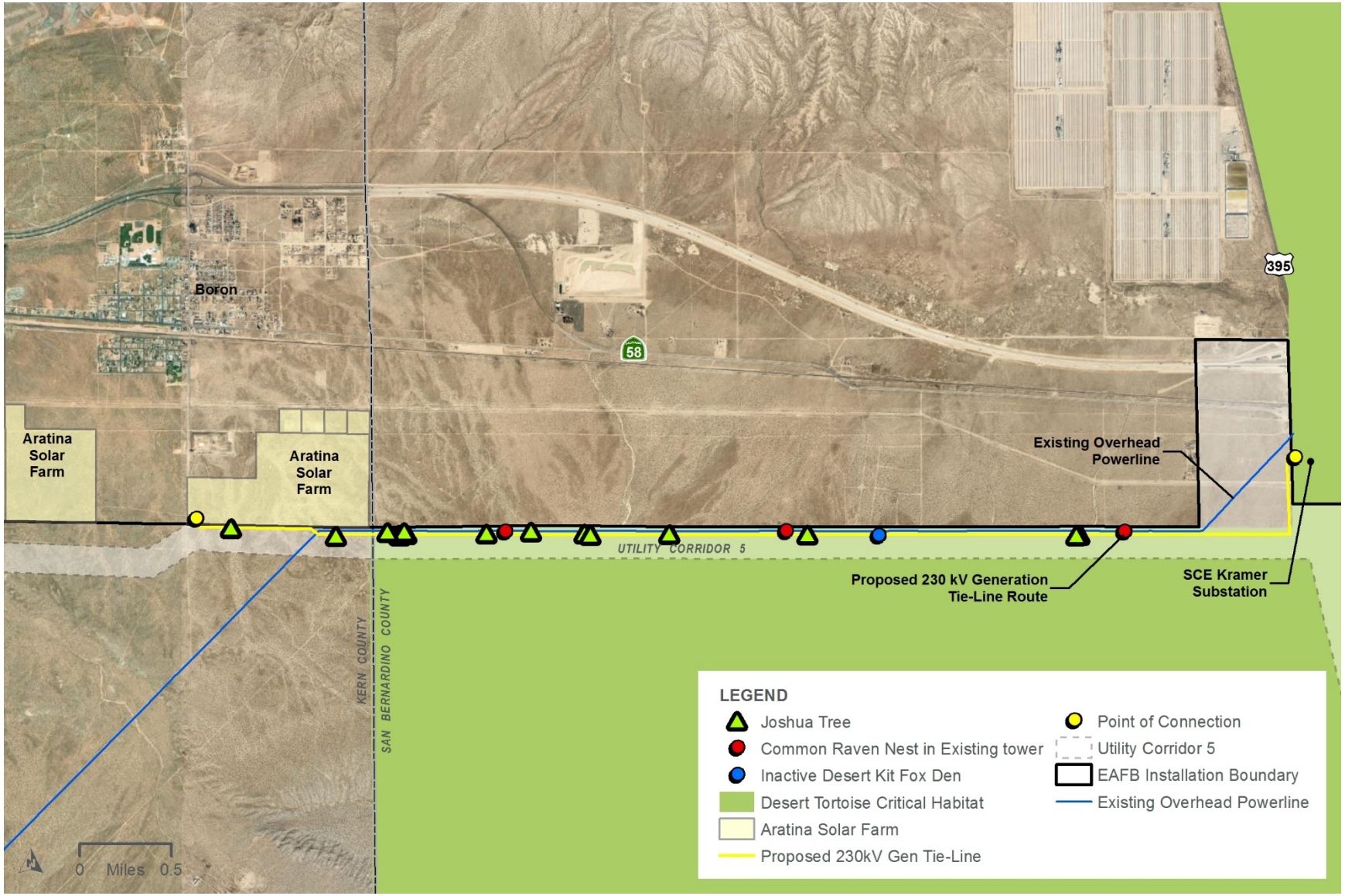


Figure 3-9. Wildlife Data

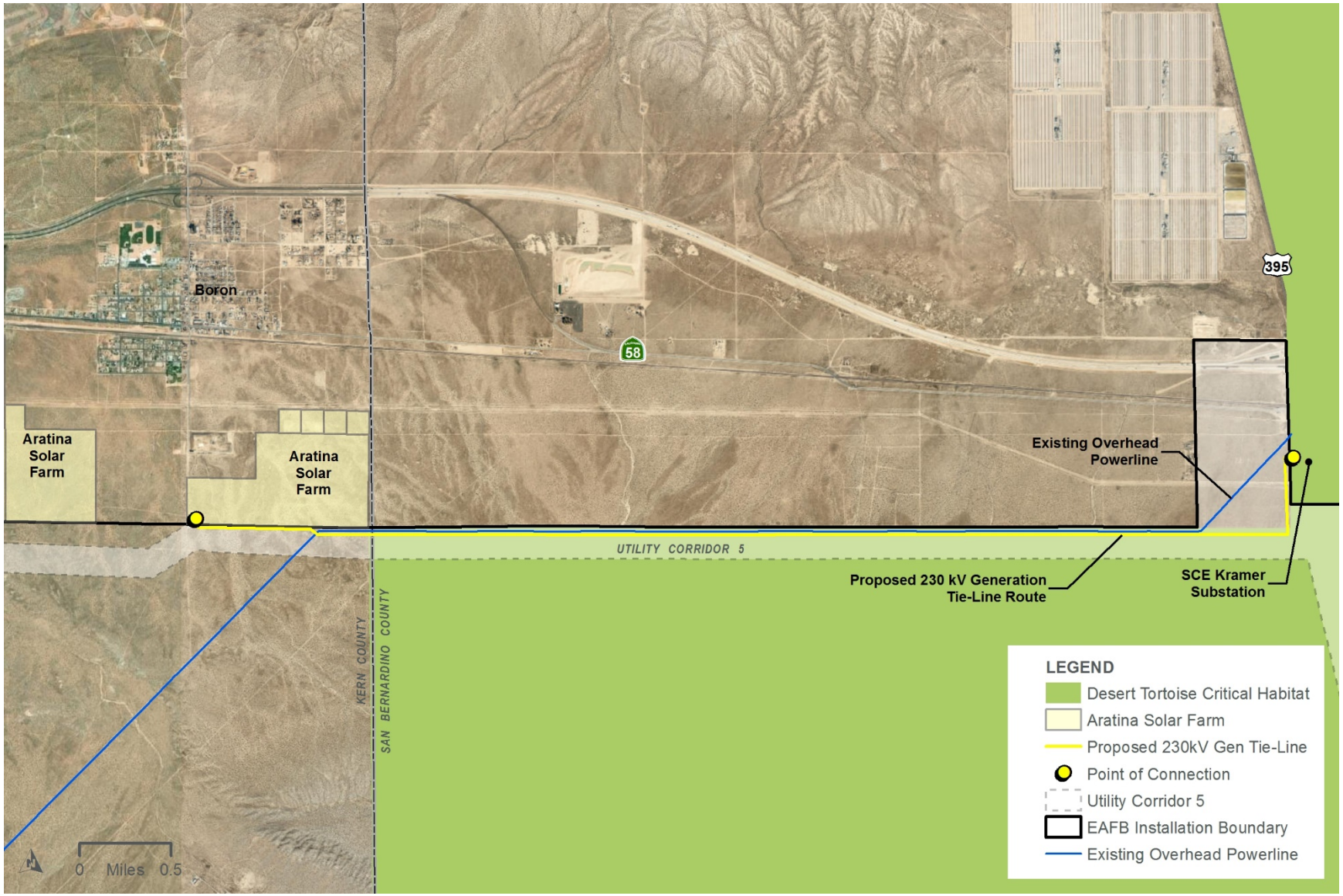


Figure 3-10. Desert Tortoise Critical Habitat

3.5.4 Mohave Ground Squirrel

The Proposed Action corridor is within the geographic range of Mohave ground squirrel (MGS), and there are multiple records of this species being trapped and identified during surveys within the Proposed Action corridor. The current California Natural Diversity Database (CNDDB) contains multiple records of MGS in the general vicinity of the Proposed Action corridor.

Given the intact nature of the vegetation communities, limited human disturbances, the appropriate soil types for burrow construction, and the availability of forage and cover from predators and weather events, MGS populations could be supported within the Proposed Action corridor (Appendix F).

3.5.5 Desert Kit Fox

One inactive desert kit fox den was located during the survey of the Proposed Action corridor. There was no evidence of recent use of any of the four entrances.

3.5.6 Western Joshua Tree

On September 22, 2020, the California Fish and Game Commission accepted for consideration a petition to list the wester Joshua tree (*Yucca brevifolia*) as threatened or endangered under the California Endangered Species Act and made the wester Joshua tree a candidate species. A total of 27 western Joshua trees were identified within the Proposed Action corridor.

3.5.7 Other Special-Status Species

There were three observations of common raven (*Corvus corax*) nests on the cross beams of three of structures of the existing transmission line. Ravens are not a special-status species but are granted protection, like many bird species, under the MBTA of 1918 (Appendix F).). This protection is extended to their nests and eggs.

Common ravens are also a well-known predator of juvenile tortoises. It takes several years for the bones underlying the scutes on a juvenile desert tortoise to ossify. During this time, they are vulnerable to predation by several species, including common ravens. Ravens can peck a hole in the shell and remove and consume the juvenile tortoise leaving only the shell remains. The resulting hole in the carcass is a distinctive indicator of raven predation. Ravens will sometimes consume juvenile tortoises where they are found. Other times, ravens will carry the juvenile tortoise to their nest, consume the animal, and discard the carcass from the nest. This results in juvenile tortoise carcasses sometimes being found below raven nests. No juvenile carcasses were found below the three raven nests found on the Proposed Action corridor.

3.5.8 General Species Observations

A total of 13 vertebrate species were detected within the Proposed Action corridor. These included eight bird species, two mammal species, and four reptile species. Table 3-7 lists the general species observations.

Table 3-7.
General Species Observations

Scientific Name	Common Name
Birds	
Zenaida macroura	Mourning Dove
Tyrannidae	Flycatchers
Sayornis saya	Say's Phoebe
Tyrannus verticalis	Western Kingbird
Lanius ludovicianus	Loggerhead Shrike
Corvus corax	Common Raven
Campylorhynchus brunneicapillus	Cactus Wren
Artemisiospiza belli	Bell's Sparrow
Mammals	
Ammosphermophilus leucurus	Whitetail Antelope Squirrel
Lepus californicus	Black-tailed Jackrabbit
Reptiles	
Phrynosoma platyrhinos	Desert Horned Lizard
Gambelia wislizenii	Long-nosed leopard lizard
Aspidoscelis tigris	Western Whiptail
Chionactis occipitalis	Western Shovel-nosed Snake

3.6 WATER RESOURCES

Edwards AFB is located in a basin that is essentially closed with respect to both surface drainage and groundwater movement. Most of the precipitation of the region falls in higher elevations, and any resulting stormwater flow in ephemeral and/or intermittent streambeds evaporates or infiltrates before it reaches lower elevations. There are no jurisdictional waters or perennial streams within Edwards AFB.

Flood Hazards. Figure 3-11 depicts the Proposed Action corridor in relation to the Federal Emergency Management Agency flood hazard zones. As shown, the Proposed Action corridor is located within an area

designated as "Area of Undetermined Flood Hazard." There are no 100-year flood hazards zones located within the Proposed Action corridor.

The Proposed Action corridor is located within the Town of Boron Watershed and the Town of Kramer Junction Watershed. Figure 3-12 depicts the location of the Proposed Action within the context of these watersheds. As shown, the Proposed Action corridor is traversed by several north-to-south trending National Hydrology Dataset (United States Geological Survey [USGS]) flow lines.

Groundwater. Edwards AFB overlies portions of the following groundwater basins that are part of the South Lahontan Hydrologic Region.

The western portion of the Proposed Action corridor is located within the Antelope Valley groundwater basin (6-044) and the eastern portion is within the Harper Valley groundwater basin (6-047).

Based on topography, surface water within the Proposed Action corridor infiltrates the ground surface or flows over land to the north down seasonal waterways. Several low-lying areas are also present within the Proposed Action corridor, discernable by the accumulation of rainwater and subsequent fine-grained sediment material, creating small playas. According to the California Department of Water Resources (CDWR) online Groundwater Information Center Interactive Map Application (GICIMA), groundwater in the area of the Proposed Action corridor is approximately 170 feet bgs, or deeper, and generally flows northwest (Appendix E).

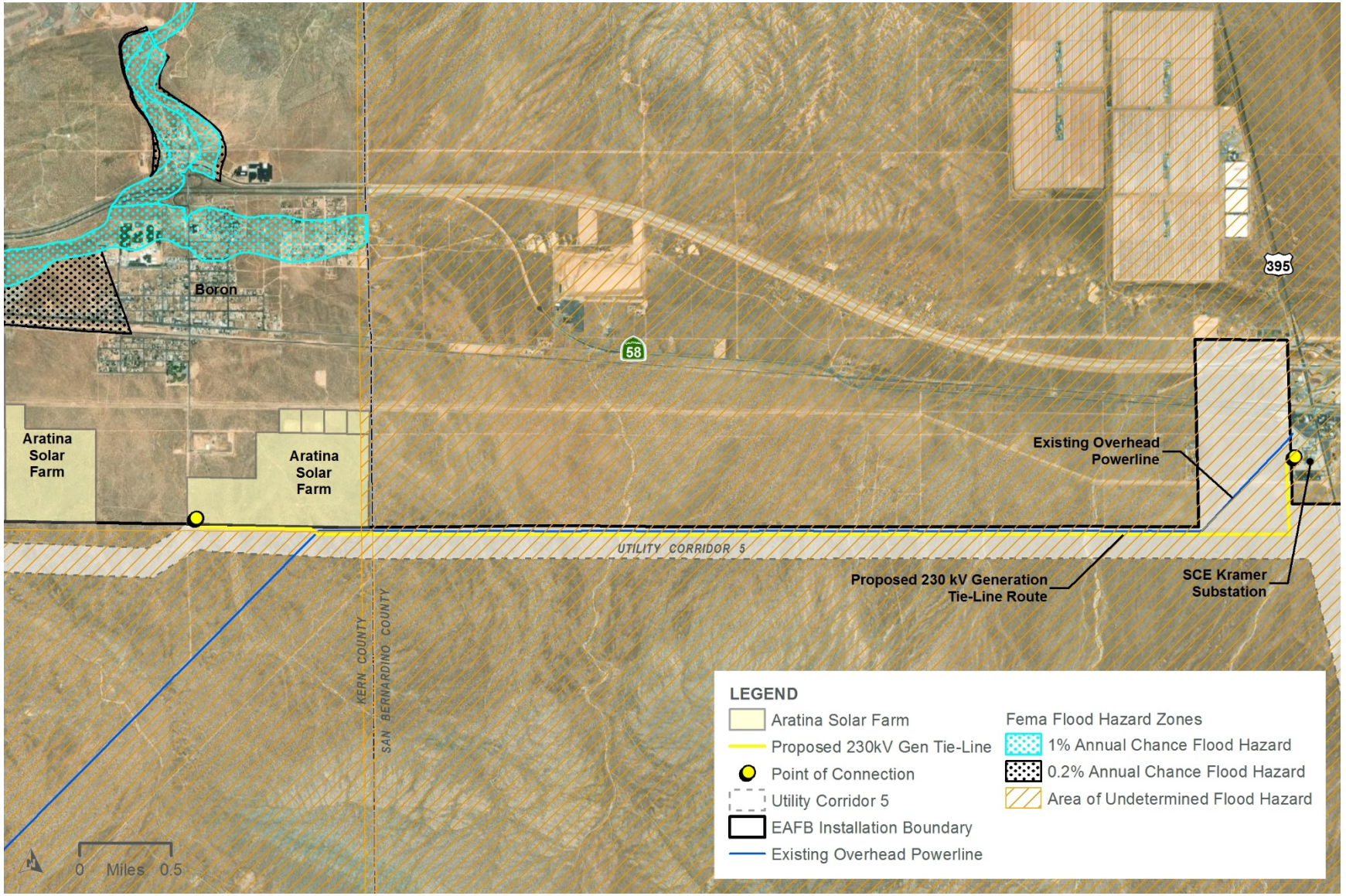


Figure 3-11. Federal Emergency Management Agency Flood Hazard Areas

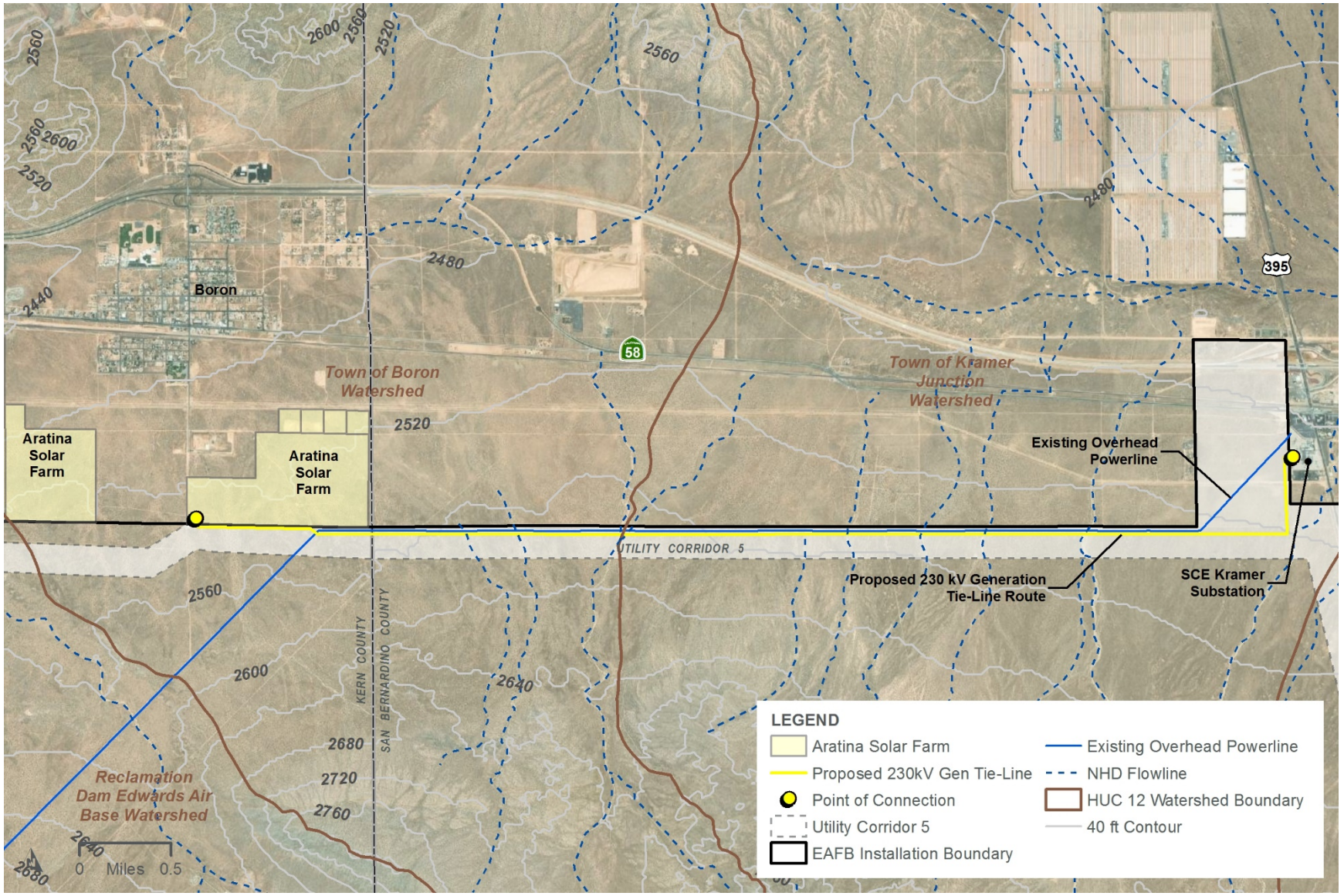


Figure 3-12. Watersheds

4.0 ENVIRONMENTAL CONSEQUENCES

This section presents the potential environmental consequences that could result from implementation of the Proposed Action and No Action Alternative. The potential environmental effects or impacts analyzed in this section are changes to the human environment from the Proposed Action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives.

4.1 AIR QUALITY AND GREENHOUSE GASES

4.1.1 Proposed Action Alternative

The Proposed Action could have an adverse impact on air quality if it would exceed the *de minimis* rates that apply to the Kern County (Eastern Kern) and San Bernardino County portions of the MDAB, as previously listed in Table 3-3 for construction and operation.

For GHG emissions, CEQ rescinded the 2019 *Draft NEPA Guidance on Consideration of Greenhouse Gas Emissions* and is currently updating the 2016 *Guidance on GHG and Climate Change*. In the interim, CEQ encourages all agencies to use available tools and resources for evaluating GHG emissions, including the 2016 guidance (*Federal Register* 86, 10252, February 19, 2021). The 2016 guidance does not establish a significance threshold for GHG emissions, and CEQ cautions against an in-depth analysis because climate change impacts are not attributable to a single action. Instead, it is recommended that the "rule of reason" and the "concept of proportionality" be used instead to evaluate GHG emissions (CEQ 2016). As described in the guidance, the rule of reason is inherent in NEPA and the CEQ regulations, allowing agencies to determine how to consider an environmental effect and prepare an analysis based on available information and expertise. Per the guidance, under the concept of proportionality, agencies should discuss impacts in proportion to their potential significance.

General Conformity Assessment

A General Conformity assessment was conducted for the Proposed Action, which includes EKAPCD Rule 210.7 and MDAQMD Rule 2002 thresholds. Table 4-1 presents the total annual criteria air pollutants that would be generated during construction of the Proposed Action. Table 4-1 also provides a comparison of the maximum total annual emissions and the applicable *de minimis* rates. The total and maximum total annual emissions for other criteria air pollutants and GHGs are also reported for informational purposes.

The maximum total emissions from the Proposed Action would not exceed the tons per year *de minimis* rate for voltaic organic compounds (VOC) and nitrogen oxides (NO_x) or the 70 tons per year *de minimis* rate for PM_{10}.

Therefore, the Proposed Action conforms to the SIP, and a General Conformity determination is not necessary. Furthermore, the modeled emissions do not account for the fugitive dust measures and exhaust control measures that would be implemented, as identified under Avoidance and Mitigation Measures, which would further minimize the estimated annual emissions for construction activities. The Air Conformity Applicability Model results and fugitive dust emissions from unpaved road calculations are provided in Appendix C.

Table 4-1.
Total Annual Emissions for Proposed Action

Year Construction	Estimated Annual Emissions (tons/year)[a]								
	VOC	NO_x	PM_{10}	CO	SO_x	$PM_{2.5}$	Pb	Ammonia	CO_2e
2021	0.4	2.4	24.1	1.7	<1.0	<1.0	0	<1.0	692
2022	0.8	4.5	44.8	3.2	<1.0	<1.0	0	<1.0	1,321
Maximum Annual Emissions	**0.8**	**4.5**	**41.6**	**3.2**	**<1.0**	**<1.0**	**0**	**<1.0**	**1,321**
De Minimis Rates	25	25	70	—	—	—	—	—	—
De Minimis Rate Exceeded?	No	No	No	—	—	—	—	—	—

Notes:

[a] This includes the unpaved road fugitive dust emissions.

See Appendix C for Air Conformity Applicability Model results and other calculations.

CO=carbon monoxide; CO_2e=carbon dioxide equivalent; NO_X=nitrogen oxides; Pb=lead; $PM_{2.5}$=particulate matter with a diameter of 2.5 or less; PM_{10}=particulate matter with a diameter of 10 microns or less; SO_x=sulfur oxide; VOC=volatile organic compound

Climate Change and Greenhouse Gases

The Proposed Action would generate GHG emissions during construction and routine operation and maintenance activities. Table 4-1 lists the estimated construction-related GHGs (CO_2e) from the Proposed Action. As shown in Table 4-1, the GHGs (CO_2e) generated by construction of the Proposed Action are not adverse. Because the operation of the Proposed Action would require only periodic maintenance, with limited use of vehicle and/or equipment, there would be no impact associated with operation. Additionally, the construction and operation of new renewable energy facilities would offset GHG emissions, as well as criteria pollutants, including NO_x, VOC, $PM^{2.5}$, PM^{10}, and SO_x, by allowing for the replacement and decommissioning of fossil-fueled power plants that

generate high levels of GHG emissions and criteria pollutants. The project would facilitate the provision of solar-generated electricity each year to the power grid, which would be used instead of electricity generated by fossil fuels. The Proposed Action would convey up to 600 megawatts of renewable energy to the electric grid to assist the state of California in achieving its 50 percent RPS by 2030 and its 100 percent clean energy goal by 2050. Therefore, the Proposed Action would result in a lifetime reduction of GHG emissions and be regionally beneficial because it would provide renewable energy for the state.

The Proposed Action would not cause any significant changes to air quality and greenhouse gas emissions that are reasonably foreseeable and have a reasonably close causal relationship to the Proposed Action, taking into account those effects that occur at the same time and place as the Proposed Action and effects that are later in time or farther removed in distance from the Proposed Action.

4.1.2 No Action Alternative

With implementation of the No Action Alternative, there would be no temporary construction emissions within Corridor 5, and no measures would be required to minimize construction emissions and dust. However, if approved by Kern County, implementation of the No Action Alternative would likely result in the construction of the transmission line off base within privately owned lands, connecting to the existing Holgate Substation. A similar level of emissions as the Proposed Action associated with the construction of a transmission line connection to the Holgate Substation would be expected. Likewise, a similar level of GHG emission reductions and criteria pollutant (NO_x, VOC, $PM_{2.5}$, PM_{10}, and SO_x) reductions would be achieved.

The No Action Alternative would not cause any significant changes to air quality and greenhouse gas emissions that are reasonably foreseeable and have a reasonably close causal relationship to the No Action Alternative, taking into account those effects that occur at the same time and place as the No Action Alternative and effects that are later in time or farther removed in distance from the No Action Alternative. No federal conformity analysis would be required as there would be no federal approval associated with this alternative.

4.1.3 Avoidance and Mitigation Measures

Avoidance and mitigation measures previously identified in the Utility Corridor EA would be required to be implemented for the Proposed Action. Several of these Utility Corridor EA measures listed are non-discretionary (i.e., they are required by existing rules of the applicable Air Quality Districts). Such measures include compliance with all applicable rules and regulations as identified in AFMAN 32 7002, compliance with all applicable rules and regulations of the EKAPCD and MDAQMD including obtaining applicable permits for construction. Avoidance and mitigation measures to further minimize air emissions are listed in Table 4-2.

Table 4-2.

Air Quality and Greenhouse Gas Avoidance and Avoidance and Mitigation Measures

AIR-1	The Proposed Action shall not discharge from any source whatsoever, such quantities of air contaminants or other material that will cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; endanger the comfort, repose, health, or safety of any such persons or the public; or cause or have a natural tendency to cause injury or damage to business or property.
AIR-2	All earthwork activities shall be planned and conducted to minimize the duration that soils will be left unprotected. The extent of the area of disturbance necessary to accomplish the Proposed Action shall be minimized. Exposed surfaces shall be periodically sprayed with water.
AIR-3	Water or dust suppressants shall be applied to roads and open areas where dust is being generated. If winds produce excessive visible emissions, erect wind barriers. Do not grade or till compacted dirt without applying water or dust suppressant.
AIR-4	Grading and other ground-disturbing activities shall be discontinued at wind speeds exceeding 25 miles per hour.
AIR-5	All vehicles transporting fill material or debris shall be covered to minimize $PM_{2.5}$ and PM_{10} emissions during transport.
AIR-6	Temporary coverings shall be installed over open storage piles.
AIR-7	All mechanical and construction equipment shall be kept in good working order according to applicable technical orders and the manufacturer's equipment maintenance manuals to minimize emissions to acceptable levels.
AIR-8	A dust control plan shall be prepared for the Proposed Action. The dust control plan shall identify the following: • Dust control measures that shall be implemented during site preparation (i.e., clearing, grading, etc.), excavation, and/or post construction include the following: o All soil excavated or graded shall be sufficiently watered to prevent excessive dust. Watering shall occur as needed with complete coverage of disturbed soil areas. o Watering shall be a minimum of twice daily on unpaved/untreated roads and disturbed soil areas with active operations. o All clearing, grading, earth-moving, and excavation activities shall cease during periods of winds greater than 20 miles per hour (averaged over 1 hour), if disturbed material is easily windblown or when dust plumes of 20% or greater opacity impact public roads, occupied structures, or neighboring property. o All fine material transported off site shall be either sufficiently watered or securely covered to prevent excessive dust. o All haul trucks shall be required to exit the site via an access point where a gravel pad or grizzly has been installed.

	○ Stockpiles of soil or other fine loose material shall be stabilized by watering or other appropriate method to prevent wind-blown fugitive dust. ○ Once clearing or grading has ceased, all inactive soil areas within the Proposed Action corridor shall either be seeded and watered until plant growth is evident, treated with a dust palliative, or watered twice daily until soil has sufficiently crusted to prevent fugitive dust emission. ○ On-site vehicle speed shall be limited to 15 miles per hour. ○ All areas with vehicle traffic shall be paved, treated with dust palliatives, or watered a minimum of twice daily. ○ Streets adjacent to the Proposed Action site shall be kept clean, and accumulated silt shall be removed. ○ Revegetation/restoration shall be required based on the level of disturbance created from Proposed Action activities. Revegetation/restoration shall be in accordance with the *Edwards Air Force Base Revegetation Plan* (Air Force 1994).

Notes:

AFB=Air Force Base; AFMAN=Air Force Manual; AVAQMD=Antelope Valley Air Quality Management District; CARB=California Air Resources Board; CCR=California Code of Regulations; CFR=Code of Federal Regulations; EKAPCD=Eastern Kern Air Pollution Control District; EO=Executive Order; MDAQMD=Mojave Desert Air Quality Management District; $PM_{2.5}$=particulate matter less than 2.5 microns in diameter; PM_{10}=particulate matter less than 10 microns in diameter; USEPA=United States Environmental Protection Agency; VOC=volatile organic compound

4.2 CULTURAL AND PALEONTOLOGICAL RESOURCES

4.2.1 Proposed Action Alternative

Implementation of the Proposed Action on Edwards AFB would result in ground-disturbing activities with the potential to disturb cultural and paleontological resources. The cultural resource records search and survey identified 1 previously unrecorded site and 14 previously recorded cultural resources within the portion of the Proposed Action APE on Edwards AFB (the gen-tie APE). Within the gen-tie APE on Edwards AFB, four of the sites (EAFB 1330, EAFB 2721, EAFB 2724, and EAFB 2734) would be disturbed with implementation of the Proposed Action. Cultural resources sites EAFB 1330, EAFB 2721, EAFB 2724 and EAFB 2734 are identified as historic trash dumps and have been recommended as ineligible for listing in the NRHP and, therefore, do not qualify as historic properties under Section 106 of the NHPA.

The proposed Aratina Solar Project is located entirely on private lands immediately north of the western most extent of the Proposed Action. Edwards AFB has included the area encompassed by the Aratina Solar Project within the National Historic Preservation Act Area of Potential Effect (APE). Based on the California Environmental Quality Act (CEQA) Environmental Impact Report prepared for the Aratina Solar Project (Kern County, 2021) and Cultural Resources Assessment Report (Rincon 2020) (EIR Appendix E), of the 60 archaeological sites within the Aratina Solar Farm APE, 59 of these sites are considered ineligible for listing on the NRHP. One site, cultural resource site S-008 (identified as a prehistoric lithic scatter), located on the Aratina

Solar Project site, has been identified as potentially eligible for listing on the National Register of Historic Places. Edwards AFB has assumed eligibility of this site under the NRHP. The EIR recommends Mitigation Measures MM 4.5-1, MM 4.5-2, MM 4.5-3, MM 4.5-4, MM 4.5-5 and MM 4.5-6 (Kern County, 2021) to ensure impacts to this resource is avoided. Therefore, the Proposed Action would not cause any effects to cultural resources.

Based on the cultural resources assessment for the Proposed Action (Appendix D), a finding of ***no effect on historic properties*** under Section 106 of the NHPA has been recommended by the Air Force. The archaeological sensitivity of the APE has been identified as low based on the Proposed Action location and characteristics; however, there is always a possibility of encountering unanticipated archaeological resources during ground-disturbing activities. Standard conditions for the treatment of unanticipated discoveries are recommended. Archaeological and Native American monitoring may further minimize the likelihood of disturbing or otherwise impacting inadvertent discoveries of cultural resources. Implementation of CUL-1 and CUL-2 would ensure that any potential impacts for disturbance to inadvertent discoveries of cultural resources are not significant.

Paleontological Resources

The geologic deposits underlying the Proposed Action corridor (i.e., Quaternary older alluvium) have a high potential to contain paleontological resources. As such, ground-disturbing activities in previously undisturbed portions of the Proposed Action corridor could result in adverse impacts on paleontological resources. Impacts would be adverse if construction activities result in the destruction, damage, or loss of scientifically important paleontological resources and associated stratigraphic and paleontological data. Activities may include grading, excavation, drilling, or any other activity that disturbs the surface or subsurface geologic formations with a high paleontological sensitivity. Implementation of CUL-3 would ensure that any adverse impacts are not significant.

The Proposed Action would not cause any significant changes to cultural and paleontological resources that are reasonably foreseeable and have a reasonably close causal relationship to the Proposed Action, taking into account those effects that occur at the same time and place as the Proposed Action and effects that are later in time or farther removed in distance from the Proposed Action.

4.2.2 No Action Alternative

Under the No Action Alternative, no action-related changes would occur, and existing trends and conditions in the Proposed Action corridor would continue. The No Action Alternative would not result in ground disturbance on Edwards AFB, which would avoid potential impacts on cultural and paleontological resources on the base. However, if approved by Kern County, implementation of the No Action Alternative would likely result in the construction of the transmission line off base within privately owned lands, connecting to the existing Holgate Substation. A cultural resources survey has been conducted for the area that would be impacted by a transmission line located within privately owned lands. The results indicate that, similar to the Proposed Action, no NRHP-eligible cultural resources would be impacted; however, measures for unanticipated discovery of cultural

resources and human remains would be required. Historical resources within the gen-tie route to the Holgate Substation include P-15-000560, identified as a historic railroad, and P-15-017304, identified as a historic highway. Resource P-15-000560 is an old railroad bed and associated historic era refuse deposits on Edwards AFB. This resource was previously given an NRHP status code of 3B: Appears eligible for listing on the NRHP both individually and as a contributor to a NRHP eligible district through survey evaluation. Resource P-15-017304 is the historic period Twenty Mule Tam Road and State Route 58. Twenty Mule Team Road is a California Point of Historical Interest. However, avoidance of these sites is proposed as part of the construction of the Aratina Solar Project.

The No Action Alternative would not cause any significant changes to cultural and paleontological resources that are reasonably foreseeable and have a reasonably close causal relationship to the No Action Alternative, taking into account those effects that occur at the same time and place as the No Action Alternative and effects that are later in time or farther removed in distance from the No Action Alternative.

4.2.3 Avoidance and Mitigation Measures

Avoidance and mitigation measures to minimize and avoid potential impacts on cultural and paleontological resources are listed in Table 4-3.

Table 4-3.

Cultural and Paleontological Resources Avoidance and Mitigation Measures

CUL-1	If any prehistoric or historic artifacts, or other indications of archaeological resources such as unusual deposits of stone, bone or shell, stone artifacts, or historic trash deposits or foundations are discovered once ground-disturbing activities are underway, the find(s) shall be immediately evaluated by a qualified archaeologist meeting Secretary of Interior standards and directly reported to the Edwards AFB Cultural Resources Manager by the Applicant. All work shall comply with the Archaeological Resources Protection Act. Work may continue on other parts of the APE outside a 60-foot buffer from the unanticipated discovery. Additionally, the appropriate Native American representatives shall be contacted regarding any pre-contact and/or post-contact finds and be provided information after the archaeologist makes the initial assessment of the nature of the find, so as to provide Tribal input with regards to significance and treatment. If pre-contact and/or post-contact cultural resources that are potentially NRHP-eligible historic properties are discovered, and avoidance cannot be ensured, the Applicant's qualified archaeologist shall develop a Monitoring and Treatment Plan, the draft of which shall be provided to the Edwards AFB Cultural Resources Manager and the appropriate Native American representatives for review and comment. This Monitoring and Treatment Plan shall allow for a monitor to represent the appropriate Native American representatives for the work at the site of the discovery, should the appropriate Native American representatives elect to

	place a monitor on-site. The archaeologist shall monitor the remainder of the project activities and implement the Monitoring and Treatment Plan accordingly.
CUL-2	The discovery of human remains is always a possibility during ground-disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the county coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the county coroner must be notified immediately. If the human remains are determined to be prehistoric, the coroner shall notify the Native American Heritage Commission, which will determine and notify a most likely descendant. All work shall comply with the requirements of NAGPRA.
CUL-3	The following mitigation shall address adverse impacts relating to the potential discovery of paleontological resources during construction of the Proposed Action. These measures shall apply to all phases of Proposed Action construction that involve excavations greater than 3 feet in depth: • **Develop a paleontological resources mitigation plan.** Prior to the commencement of ground-disturbing activities, a qualified professional paleontologist shall be retained to prepare and implement a paleontological resources mitigation plan for the Proposed Action. A qualified paleontologist is an individual that shall have at least a master's degree or equivalent work experience in paleontology, knowledge of the local paleontology, and be familiar with paleontological procedures and techniques. The paleontological resources mitigation plan shall describe mitigation recommendations in detail, including paleontological monitoring procedures; communication protocols to be followed in the event that an unanticipated fossil discovery is made during development of the Proposed Action; and preparation, curation, and reporting requirements. • **Paleontological WEAP.** Prior to the start of construction, the qualified paleontologist or his or her designee, shall conduct training for construction personnel regarding the appearance of fossils and the procedures for notifying paleontological staff should fossils be discovered by construction staff. The WEAP shall be fulfilled at the time of a preconstruction meeting. In the event a fossil is discovered by construction personnel anywhere in the Proposed Action corridor, all work in the immediate vicinity of the find shall cease, and a qualified paleontologist shall be contacted to evaluate the find before restarting work in the area. If it is determined that the fossil(s) is (are) scientifically significant, the qualified paleontologist shall complete the mitigation outlined below to mitigate impacts on significant fossil resources. • **Paleontological monitoring.** Initially, full-time monitoring shall be conducted during ground construction activities (i.e., grading, trenching, foundation work, and other excavations) within previously undisturbed Quaternary older alluvium and where ground disturbance exceeds 3 feet bgs within intact Holocene deposits. Monitoring shall be conducted by a qualified paleontological monitor. The duration and timing of the monitoring shall be determined by the qualified paleontologist and the location and extent of proposed ground disturbance. If the qualified paleontologist determines that

	full-time monitoring is no longer warranted, based on the specific geologic conditions at the surface or at depth, the qualified paleontologist may recommend that monitoring be reduced to periodic spot-checking or cease entirely. • **Fossil discovery, preparation, and curation.** If a paleontological resource is discovered, the monitor shall have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and collected. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammals) require more extensive excavation and longer salvage periods. In this case, the paleontologist should have the authority to temporarily direct, divert, or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner. Once salvaged, significant fossils shall be identified to the lowest possible taxonomic level, prepared to a curation-ready condition, and curated in a scientific institution with a permanent paleontological collection (such as the Natural History Museum of Los Angeles County) along with all pertinent field notes, photos, data, and maps. The cost of curation is assessed by the repository and is the responsibility of the project Applicant/owner. • **Final paleontological mitigation report.** At the conclusion of laboratory work and museum curation, a final report shall be prepared describing the results of the paleontological mitigation monitoring efforts associated with the Proposed Action. The report shall include a summary of the field and laboratory methods, an overview of the Proposed Action geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. The final report shall be submitted to the Edwards AFB. If the monitoring efforts produced fossils, then a copy of the report shall also be submitted to the designated museum repository.
CUL-4	During and subsequent to the project construction phase, any and all archaeological/cultural documents created as a part of the project (isolate records, site records, survey reports, testing reports, etc.) shall be supplied by the Applicant to the Edwards AFB Cultural Resources Manager for dissemination consistent with applicable law.

Notes:
AFB=Air Force Base; APE=Area of Potential Effect; bgs=below ground surface; NAGPRA=Native American Graves Protection and Repatriation Act; NRHP=National Register of Historic Places; WEAP= worker environmental awareness program

4.3 GEOLOGY AND SOILS

4.3.1 Proposed Action Alternative

The Proposed Action is not traversed by any earthquake faults or otherwise unstable soils conditions. There would be no impact on life/safety concerns as a result of the Proposed Action.

The soils within the Proposed Action corridor are identified as having a high potential for soil loss due to wind erosion during construction and very high potential for soil loss due to sheet flow erosion. Construction activities would involve grading associated with creating or improving existing access roads and road spurs, preparing transmission tower erection sites and wire pulling sites, and trenching for placement of cable. Approximately 16 acres are anticipated to be temporarily disturbed as a result of construction activity, with approximately 9 acres anticipated to be permanently disturbed. Grading and vegetation removal has the potential to result in soil erosion within the Proposed Action corridor. Implementation of GEO-1, GEO-2, GEO-3, GEO-4, and AIR- 8 would ensure that impacts no impacts would occur.

The Proposed Action would not cause any significant changes to geology and soils that are reasonably foreseeable and have a reasonably close causal relationship to the Proposed Action, taking into account those effects that occur at the same time and place as the Proposed Action and effects that are later in time or farther removed in distance from the Proposed Action.

4.3.2 No Action Alternative

Under the No Action Alternative, no action-related changes would occur, and existing trends and conditions in the Proposed Action corridor would continue. The No Action Alternative would not result in ground disturbance, which would avoid potential impacts related to geology and soils on the base. However, implementation of the No Action Alternative would likely result in the construction of the transmission line off base within privately owned lands, connecting to the existing Holgate Substation. Similar to the Proposed Action, there would be ground disturbance associated with the construction of the transmission line that would result in the potential for soil loss due to wind erosion during construction and very high potential for soil loss due to sheet flow erosion.

The No Action Alternative would not cause any significant changes to geology and soils that are reasonably foreseeable and have a reasonably close causal relationship to the No Action Alternative, taking into account those effects that occur at the same time and place as the No Action Alternative and effects that are later in time or farther removed in distance from the No Action Alternative.

4.3.3 Avoidance and Mitigation Measures

Avoidance and mitigation measures to minimize and avoid potential impacts on geology and soils are listed in Table 4-4.

Table 4-4.

Geology and Soils Avoidance and Mitigation Measures

GEO-1	Prior to final design of the Alternative, a combined geotechnical engineering and engineering geology study shall be conducted by a qualified geologist/engineer to identify site-specific geologic conditions and potential geologic hazards in sufficient detail to support sound

	engineering. Appropriate mitigations for identified geological hazards shall be identified in the geotechnical study.
GEO-2	A construction SWPPP shall be prepared and implemented prior to the commencement of soil disturbance activities associated with construction.
GEO-3	Nonhazardous dust suppression palliatives, approved by Edwards AFB, and water shall be used on an as-needed basis to suppress wind-blown dust generated at the site during construction. Dust suppression palliatives are materials that work by either agglomerating the fine particles, adhering/binding the surface particles together, or increasing the density of the surface material.
GEO-4	Erosion control measures shall be implemented during construction, including stabilization of construction areas, employing a concrete wash out area, as needed, and tire washes near the entrance to existing roadways.
GEO-5	Silt fences shall be used for erosion control.
AIR-8	See Table 4-2

Notes:
AFB=Air Force Base; SWPPP=stormwater pollution prevention plan

4.4 HAZARDOUS MATERIALS AND HAZARDOUS WASTE

4.4.1 Proposed Action Alternative

The Proposed Action would involve the use and transport of small quantities of hazardous materials. While the overall risk is relatively low, there is the potential that hazardous materials (e.g., oil, fuels) could spill or leak during construction activity. Implementation of HAZ-1 will ensure that potential impacts are not significant.

UXO and/or munitions debris. The potential presence for UXO and/or munitions debris is considered a REC. Transmission line construction planning and ground-disturbance work should proceed under the consultation and guidance of Edwards AFB. Implementation of HAZ-2 will ensure that potential impacts are not significant.

Underground natural gas pipelines. At least one underground natural gas pipeline runs through the Proposed Action corridor (in the northeastern portion of the corridor). As currently proposed, the Proposed Action would maintain existing infrastructure in-place, and pipelines would not be disturbed. Because various leak-identification systems are in-place for such pipelines, it is unlikely that any leakage has occurred. Therefore, the presence of the pipeline facilities is not considered a REC. However, civil engineers should be contacted to determine, and confirm, the locations of the underground pipeline and the required easements prior to any ground disturbance. Implementation of HAZ-3 will ensure that potential impacts are less than significant.

Water wells. One monitoring well was observed within the western portion of the Proposed Action corridor. As currently planned, this well would not be disturbed during construction activities. No impact to the water well will occur.

ERP Site 438. The information obtained during the investigation of ERP Site 438 was summarized in an NFI letter submitted by the Department of the Air Force to the RWQCB, DTSC, and USEPA. The NFI letter was signed by each of the agencies indicating their concurrence with the finding that no further investigation was necessary. Given the NFI issued by three environmental agencies, no further investigation of this issue is recommended, and no impact is anticipated.

Radon gas, asbestos, and lead-based paint. There is the potential that underground utilities are coated or wrapped with ACM; however, as currently proposed, existing utilities would be avoided. The presence of radon and lead-based paint is unlikely. HAZ-4 requires Edwards AFB be contacted to determine the appropriate course of action should asbestos, radon, or lead-based paint be encountered during construction.

The Proposed Action would not cause any significant changes to hazardous materials and hazardous waste that are reasonably foreseeable and have a reasonably close causal relationship to the Proposed Action, taking into account those effects that occur at the same time and place as the Proposed Action and effects that are later in time or farther removed in distance from the Proposed Action.

4.4.2 No Action Alternative

Under the No Action Alternative, potential impacts associated with encountering hazardous materials on Edwards AFB would not occur, as the transmission line would not be constructed within the base. The No Action Alternative would involve construction of a transmission line on private lands north of SR 58 and connect from the proposed Aratina Solar Project to the Holgate Substation. There are no known hazardous materials or substances located within the No Action Alternative alignment; therefore, impacts would not be expected to occur under this alternative.

The No Action Alternative would not cause any significant changes to hazardous materials and hazardous waste that are reasonably foreseeable and have a reasonably close causal relationship to the No Action Alternative, taking into account those effects that occur at the same time and place as the No Action Alternative and effects that are later in time or farther removed in distance from the No Action Alternative.

4.4.3 Avoidance and Mitigation Measures

Avoidance and mitigation measures to minimize and avoid potential impacts on hazardous materials and hazardous waste are listed in Table 4-5.

Table 4-5.
Hazardous Materials and Hazardous Waste Avoidance and Mitigation Measures

HAZ-1	Prior to construction activities, a health and safety plan in compliance with 29 CFR Part 1910.120 shall be prepared and approved by Edwards AFB. The site-specific health and safety plan shall address all site-specific safety and environmental hazards that have the potential to be encountered during construction of the Proposed Action, including physical hazards, biological hazards, and general safety hazards. Any training required by construction personnel shall be identified.
HAZ-2	Construction planning and eventual ground-disturbance work shall proceed under the consultation and guidance of Edwards AFB.
HAZ-3	Underground pipeline located within the Proposed Action corridor shall remain in-place as part of construction of the Proposed Action. However, civil engineers shall be contacted to determine, and confirm, the locations of the underground pipeline and the required easements prior to any ground disturbance.
HAZ-4	Edwards AFB shall be contacted to determine the appropriate course of action should asbestos, radon, or lead-based paint be encountered during construction.

Notes:
AFB=Air Force Base; CFR=Code of Federal Regulations; UXO=unexploded ordinance

4.5 NATURAL RESOURCES

4.5.1 Proposed Action Alternative

Special-Status Wildlife Species

Desert Tortoise

No desert tortoise sign was detected during wildlife surveys for the Proposed Action corridor. However, the Proposed Action corridor is located in designated desert tortoise critical habitat. The Proposed Action area is located within both desert tortoise critical habitat (85%) and outside desert tortoise critical habitat (15%). Construction activities (e.g., vegetation removal and grading) associated with the Proposed Action would result in permanent and temporary impacts on suitable desert tortoise habitat. The entire Proposed Action corridor was determined to support suitable desert tortoise habitat; therefore, it is assumed that all areas impacted by the Proposed Action support suitable desert tortoise habitat.

Although no desert tortoise has been detected within the Proposed Action corridor, there is the potential for impacts. Impacts during construction, operation, and maintenance would include disturbance, injury, or mortality of desert tortoise individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows, noise and/or vibration from heavy equipment, increased human presence/activity, and vehicle strike. Desert tortoise may also die or become injured when captured for relocation purposes, particularly during extreme temperatures or if they void their bladders. Pathogens may also be spread among desert tortoise. For desert tortoises near but not within the Proposed Action corridor, removal of habitat within an individual's home range could result in displacement stress that could result in loss of health, exposure, increased risk of predation, increased intraspecific competition, and death.

Impacts on desert tortoise could also occur from increased common raven presence associated with the construction of new elevated perching and nesting sites (e.g., transmission line structures). Development of new elevated perching and nesting sites could increase local raven numbers, which could result in increased predation on desert tortoise in the Proposed Action corridor and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract common ravens and other desert tortoise predators such as coyotes and feral dogs.

Effects could also result from potential introduction of invasive plants or increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce adjacent habitat quality, diminish valuable forage, and impede movement of desert tortoise. Potential deposition of sediment loads during heavy rain events and flooding could potentially affect existing desert tortoise burrows in the Proposed Action corridor.

Potential impacts on desert tortoise would be avoided and minimized through implementation of NAT-1 through NAT-18. As noted previously, the USFWS does not recommend that the project Applicant apply for an incidental take permit. With implementation of these mitigation measures, no impact on desert tortoise would occur.

The Biological Opinion for Operations and Activities at Edwards Air Force Base, California (8-8-14-F-14) dated 11 March 2014 covers utility construction and maintenance activities. The Proposed Action's potential impacts on the desert tortoise are covered by the biological opinion. Pursuant to the biological opinion, the Air Force has determined the Proposed Action is not likely to adversely affect the desert tortoise or its critical habitat. The Air Force maintains an appropriate record supporting this determination.

Burrowing Owl

No burrowing owl or sign of burrowing owl was detected during species surveys of the Proposed Action corridor. If burrowing owl is present, impacts during construction and operation of the Proposed Action may include disturbance, injury, or mortality of individuals. Disturbance, injury, or mortality may result from individuals being crushed or buried in their burrows, noise and/or vibration from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to visitors. In addition, burrowing owls

potentially occupying the Proposed Action corridor may be injured or killed by collisions with or electrocution by overhead transmission wires.

Potential impacts on burrowing owl, if present, could result from increased predation pressure from other raptors associated with the construction of new elevated perching and nesting sites (e.g., transmission line structures). Development of new elevated perching and nesting sites could increase raptor numbers locally, which could result in increased predation on burrowing owl in the Proposed Action corridor and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract raptors and other predators of burrowing owl such as coyotes and feral dogs.

Effects could also result from potential introduction of invasive plants or increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce adjacent habitat quality for burrowing owl. Potential deposition of sediment loads during heavy rain events and flooding could potentially affect burrows in the Proposed Action corridor.

Potential impacts on burrowing owl would be avoided and minimized through implementation of NAT-1 through NAT-18. The Applicant would comply with Avian Power Line Interaction Committee (APLIC; 2012) guidelines for preventing avian electrocutions and collisions with overhead power lines to avoid and minimize impacts on burrowing owl and other avian species. With implementation of these mitigation measures, no impact on burrowing owl would occur.

Mohave Ground Squirrel

The Proposed Action corridor is identified as within the geographic range of MGS, and there are multiple records of this species being trapped and identified during surveys within the area. The current CNDDB contains multiple records of MGS in the general vicinity of the Proposed Action.

Given the intact nature of the vegetation communities, limited human disturbances, the appropriate soil types for burrow construction, and the availability of forage and cover from predators and weather events, the Proposed Action corridor could support an MGS population.

Impacts on MGS during construction, operation, and maintenance of the Proposed Action may include disturbance, injury, or mortality of MGS individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows, noise and/or vibration from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to visitors.

Potential impacts on MGS, if present, could result from increased predation pressure from common ravens and raptors associated with the construction of new elevated perching and nesting sites (e.g., transmission line structures). Development of new elevated perching and nesting sites could increase raven and raptor numbers locally, which could result in increased predation on MGS in the Proposed Action corridor and vicinity.

Additionally, garbage, road-killed animals, and water from increased human presence could attract common ravens, raptors, and other predators of ground squirrels such as coyotes and feral dogs.

Effects could also result from potential introduction of invasive plants or increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce adjacent habitat quality, diminish valuable forage, and impede movement of MGS. Potential deposition of sediment loads during heavy rain events and flooding could potentially affect potential MGS burrows in the Proposed Action corridor.

Potential impacts on MGS would be avoided and minimized through implementation of NAT-1 through NAT-18. With implementation of these mitigation measures, no impact on MGS would occur.

Desert Kit Fox

One inactive desert kit fox den was located during the species survey for the Proposed Action. There was no evidence of recent use of any of the four entrances. The desert kit fox has the potential to be present within the Proposed Action corridor. Potential impacts on desert kit fox would be avoided and minimized through implementation of NAT-1 through NAT-18.

Special-Status Plant Species

Western Joshua Tree

The western Joshua tree was declared a State Candidate Species by the California Department of Fish and Wildlife on September 24, 2020. Surface impacts from a transmission line are generally limited to a small fraction of the total corridor and includes tower sites, access roads, tensioning and pull sites, and staging areas. At this point, only the preliminary planned locations for the tower sites are known. The location of western Joshua trees was cross-referenced with these tower site locations, and no overlap was noted. In general, there is enough flexibility in the engineering of a transmission line such that avoidance of all western Joshua trees can be accomplished. With implementation of avoidance and mitigation measures, no impact on western Joshua tree would occur.

Migratory Birds

Potential impacts on other raptor species and migratory birds protected by the Migratory Bird Treaty Act (MBTA) include removal of nesting and/or foraging habitat during construction of the Proposed Action. The degree of impact on individual raptor and migratory bird species would vary depending on species-specific behaviors in the Proposed Action corridor and habitat requirements. Potential impacts on raptor and migratory bird nest sites would be more detrimental relative to impacts on foraging habitat for such species. Impacts on tree or cliff raptor nest sites are not expected, given that these features are generally absent from the Proposed Action corridor; however, nest sites for ground-nesting raptors may be impacted during construction of the Proposed Action.

Potential impacts on other raptor species and migratory birds also include potential injury or mortality. Injury or mortality may occur during construction if individuals are struck by equipment or vehicles. Injury or mortality to avian species resulting from construction most frequently occurs during vegetation management and involves eggs, nestlings, and recently fledged young that cannot safely avoid equipment. Injury or mortality may also result from collisions or electrocution with overhead transmission wires. Avian power line collisions are a widespread problem with potentially adverse local impacts when high-risk conditions are present (Air Force 2016). The level of risk depends on a combination of biological and physical factors such as weather, design, and placement of transmission structures, as well as species-specific behavior.

Potential impacts on raptors and migratory birds include increased noise levels, human use and the potential for long-term unauthorized trespass, erosion, sedimentation, stormwater contaminant runoff, and risk of fire, as well as the potential introduction and proliferation of invasive non-native plant species. These impacts have the potential to degrade raptor and migratory bird habitat and alter breeding, foraging, and migratory behaviors.

Potential impacts on other raptors and migratory birds would be avoided and minimized through implementation of NAT-1, NAT-4, and NAT-11. Additionally, the Applicant would comply with APLIC (APLIC 2012) guidelines for preventing avian electrocutions and collisions with overhead power lines to avoid and minimize impacts on raptors, burrowing owl, migratory birds, and other avian species. With implementation of these avoidance and mitigation measures, no significant impact on migratory birds would occur.

Other Special-Status Species

There were three observations of common raven (*Corvus corax*) nests on the cross beams of three of structures of the existing transmission line. Ravens are not a special-status species but are granted protection, like many bird species, under the MBTA (Appendix F). This protection is extended to their nests and eggs. With implementation of avoidance and mitigation measures, no significant impact on these special-status species would occur.

Non-Special-Status Plant and Animal Species

Impacts on non-special-status species would not be considered adverse.

The Proposed Action would not cause any significant changes to natural resources that are reasonably foreseeable and have a reasonably close causal relationship to the Proposed Action, taking into account those effects that occur at the same time and place as the Proposed Action and effects that are later in time or farther removed in distance from the Proposed Action.

4.5.2 No Action Alternative

Under the No Action Alternative, no action-related changes would occur, and existing trends and conditions in the Proposed Action corridor would continue. The No Action Alternative would not result in ground disturbance

directly within Edwards AFB, which would avoid potential impacts on natural resources on the base. However, implementation of the No Action Alternative would likely result in the construction of the transmission line off base within privately owned lands, connecting to the existing Holgate Substation. Natural resources located within the transmission line corridor traversing private lands is similar to those associated with the Proposed Action. Resources potentially impacted by the No Action Alternative include temporary and permanent impacts on Mojave Creosote Bush Shrubland, containing creosote bush and white bursage, and Mojave Desert Saltbush Shrubland, containing spinescale and allscale. Similar to the Proposed Action, the No Action Alternative would potentially impact western burrowing owl, desert tortoise, San Joaquin kit fox, and MGS; however, based on biological surveys, no live western burrowing owl, desert tortoise, or San Joaquin kit fox were observed, although sign of these species were detected. It is assumed that MGS is present based on suitable habitat for this species. Measures to minimize impacts on natural resources would be required to minimize impacts, as identified in Table 4-6. Consultation with USFWS would be anticipated specifically with respect to the desert tortoise. Impacts on non-special-status species would not be considered adverse.

The No Action Alternative would not cause any significant changes to natural resources that are reasonably foreseeable and have a reasonably close causal relationship to the No Action Alternative, taking into account those effects that occur at the same time and place as the No Action Alternative and effects that are later in time or farther removed in distance from the No Action Alternative.

4.5.3 Avoidance and Mitigation Measures

Avoidance and mitigation measures to minimize and avoid potential impacts on natural resources are listed in Table 4-6.

Table 4-6.
Natural Resources Avoidance and Mitigation Measures

NAT-1	A WEAP shall be provided to all individuals that will be working on the Proposed Action in the field. This program may consist of videos, brochures, and briefings and shall include information on: 1. The role of biological monitors and authority of monitors to stop work 2. Locally known invasive weeds and limiting weed spread and colonization 3. The MBTA and nest-avoidance measures 4. Special-status species present or potentially present within the corridor 5. Desert tortoise history in the Proposed Action corridor, desert tortoise ecology, threats to the species, and the protection measures described here and in the Biological Opinion (USFWS 2014)

	6. MGS history in the Proposed Action corridor, ecology, and the avoidance and mitigation measures described in this section for this species 7. Other sensitive species that may be found throughout the construction of the Proposed Action and the avoidance and mitigation measures described in this section for these species 8. Locations and designations of critical habitat and Desert Wildlife Management Area in the Proposed Action corridor All personnel shall sign a statement that they have received, understand, and will follow the regulations and protection measures presented in the program. Copies of signed statements shall be on file at the Environmental Management Office. This measure fulfills or exceeds the requirements in the Biological Opinion (USFWS 2014).
NAT-2	All vehicles and equipment shall be washed prior to bringing them on site if they have been used in areas off-base.
NAT-3	All Proposed Action-related construction activities shall be conducted during daylight hours. If any activities are to disturb native habitat between dusk and dawn, they shall be limited to areas that have already been cleared of desert tortoises and other sensitive species by biological monitors and enclosed by a fence to exclude desert tortoises (USFWS 2014).
NAT-4	Qualified biological monitors shall be present during all construction-related activities to confirm avoidance and mitigation of all biological resources is being conducted to the maximum extent practicable. These measures include the following: 1. Biological monitors shall be available during site development activities, which may result in injury or mortality of desert tortoises. The authorized biologist shall determine which activities require biological monitoring (an authorized biologist shall be approved by the Natural Resource Manager and USFWS to act as authorized biologist in implementing terms and conditions of the Biological Opinion (USFWS 2014). Desert tortoise monitors shall be approved by authorized biologist (USFWS 2014). 2. Any desert tortoises found in harm's way during construction-related activities may be relocated by a desert tortoise monitor to a nearby safe area preselected by the authorized biologist, or the desert tortoise monitor can maintain the desert tortoise in their immediate possession until an authorized biologist assumes care of the animal. 3. When handling desert tortoises, the authorized biologists and desert tortoise monitors shall follow the procedures described in *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1996). 4. Only authorized biologists, as defined by USFWS, and desert tortoise monitors directly supervised by an authorized biologist, shall conduct preconstruction surveys for desert tortoises.

	5. The Applicant shall employ the services of a qualified biologist if the Applicant plans to install, repair, maintain, or remove a utility during nesting season (1 February through 30 August).
NAT-5	Disturbance areas shall be limited during construction to the minimum needed to perform activities. During construction, activity areas shall be clearly fenced, marked, and flagged at the outer boundaries to define the limits of work areas. Installation of fencing along roadways shall be implemented in areas deemed hazardous to desert tortoise to prevent injury or mortality. All workers shall be instructed to confine their activities to the marked areas (USFWS 2014).
NAT-6	Laydown, parking, and staging areas shall be restricted to previously disturbed areas to the maximum extent practicable (USFWS 2014).
NAT-7	Vehicles shall, to the maximum extent practicable, remain on established roads. Equipment and vehicle operators shall be alert for desert tortoises and other wildlife in and along access routes. When traveling off road, speed limits shall not exceed 5 miles per hour, the route shall first be surveyed/flagged by an authorized biologist, and shrubs shall be avoided as much as possible. Speed limits on dirt roads within the Proposed Action corridor shall be less than 20 miles per hour unless otherwise posted.
NAT-8	All personnel on the site shall check under parked vehicles and equipment for desert tortoises and other wildlife species before moving vehicles. If a desert tortoise is discovered under a parked vehicle, an authorized biologist shall relocate the animal to a nearby, safe location. The authorized biologist shall use his or her best professional judgment to ensure that desert tortoises moved in this manner are not subjected to temperature extremes, which could result in injury or death. Alternatively, the vehicle shall be left in place until the desert tortoise moves of its own volition (USFWS 2014).
NAT-9	All trash shall be placed in closed and covered containers for proper disposal to reduce its attractiveness to desert tortoise predators (e.g., coyotes and common ravens). The containers shall not be able to be opened by predators and shall be emptied regularly to ensure adequate capacity is maintained. Water tanks and trucks shall be maintained in good working order and free of leaks so common ravens and other predators will not be attracted to standing water (USFWS 2014).
NAT-10	If common raven presence increases locally as a result of the Proposed Action, perch deterrents shall be placed on structures that are supporting perching (USFWS 2014).
NAT-11	Preconstruction surveys shall be conducted by an authorized biologist or the desert tortoise monitor immediately in front of all equipment. During these surveys, the desert tortoise monitor shall identify the following resources and complete the following activities: 1. Identify active nests that fall under the MBTA and flag an avoidance area for each nest at a minimum of 50 meters from the nest.

	2. Identify rare plant species occurrence. Avoid rare plant species locations whenever possible. 3. Identify potential desert tortoise burrows and flag for avoidance, if possible, at a minimum distance of 10 meters to avoid any activities affecting the burrow or any individuals underground. If avoidance of desert tortoise burrows is not possible, individual burrows shall be scoped to determine if there is an animal underground. If no tortoise is using the burrow, the burrow shall be excavated by an authorized biologist or a directly supervised desert tortoise monitor according to the *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1996). 4. Avoid the desert tortoise. However, if avoidance is not possible, individuals found above-ground within the Proposed Action corridor shall be temporarily moved out of harm's way by an authorized biologist according to the *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1996). Desert tortoises shall not be released more than 100 meters from the point of capture (USFWS 2014).
NAT-12	All Proposed Action personnel shall immediately report sightings of desert tortoises and other sensitive species and their burrows found within the Proposed Action corridor to the desert tortoise monitor.
NAT-13	Aboveground utilities lines shall be placed at least 18 inches aboveground when they traverse desert tortoise habitat. If at any time after installation, the height of the gas pipes above the ground has been reduced to less than 18 inches, the pipelines shall either be raised or the materials causing the reduction shall be removed (USFWS 2014).
NAT-14	Underground utilities shall be located adjacent to or within previously disturbed areas when possible (USFWS 2014).
NAT-15	Lands above utilities shall be revegetated unless a road needs to be constructed and maintained for access and maintenance activities. Roads needed for utility maintenance shall be concentrated in previously established corridors when possible (USFWS 2014).
NAT-16	Habitat restoration in the form of revegetation shall be implemented, as follows, as required: 1. Habitat restoration for ground disturbance shall include techniques to control soil erosion that have been proven successful in the desert environment and shall include the use of native plants and seeds to mimic natural biodiversity. 2. Habitat restoration activities shall be conducted in accordance with the *Edwards Air Force Base Revegetation Plan* prepared by Edwards AFB (Air Force 1994; Air Force 2012). 3. Monitoring success of efforts shall be implemented for a longer period than the standard 5-year monitoring period due to slow recovery rates of revegetation areas in the desert.

NAT-17	Open excavations shall be checked three times per day, and authorized personnel shall remove any trapped animals. Open excavations shall be covered, backfilled, or fenced at the end of each workday unless other methods of excluding desert tortoises ae employed. At the ends of a ditch or trench, a 3:1 slope shall be created to allow wildlife to exit should they become trapped (USFWS 2014).
NAT-18	Any pipes left or stored on the ground in the Proposed Action corridor shall be capped on both ends to prevent entry by desert tortoises or other wildlife (USFWS 2014).

Notes:
AFB=Air Force Base; MBTA=Migratory Bird Treaty Act; MGS=Mohave ground squirrel; USFWS=United States Fish and Wildlife Service; WEAP=worker environmental awareness program

4.6 WATER RESOURCES

To evaluate the Proposed Action impacts on surface water resources, a review was conducted of previously completed investigations associated with the playa lake beds and surface water. The Proposed Action was reviewed related to potential impacts on water quality due to ephemeral drainages, as well as potential flooding hazards.

4.6.1 Proposed Action Alternative

The Proposed Action corridor does not traverse any floodplains or flood hazard areas. Development of the Proposed Action would not result in an increase in groundwater withdrawal at Edwards AFB. Therefore, the Proposed Action would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

According to the CDWR online GICIMA, groundwater in the area of the property is approximately 170 feet bgs, or deeper, and generally flows northwest (CDWR 2019). Development of the Proposed Action would not result in an increase in groundwater withdrawal at Edwards AFB. Therefore, the Proposed Action would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

The Proposed Action corridor is crossed by several unnamed ephemeral drainages; therefore, construction of the Proposed Action has the potential to increase sediment due to stormwater movement of disturbed sediments within the construction area. The project will require the implementation of a SWPPP in support of a National Pollutant Discharge Elimination System permit in connection with construction activities. Implementation of a SWPPP will ensure protection of downstream water quality, as sediment erosion will be controlled and sediment movement from the Proposed Action during construction will be minimized. Compliance with the SWPPP will ensure this potential impact is not significant. In addition the Applicant shall design a storm water management system so storm water discharges do not exceed the 95th percentile storm in adherence with the Energy Independence and Security Act. Under 42 U.S.C. § 17094, EISA requires federal agencies to establish storm water design requirements for construction projects that disturb a footprint greater than 5,000 ft^2 of land in order to maintain or restore the property to its pre-development hydrology state.

The Proposed Action would not cause any significant changes to water resources that are reasonably foreseeable and have a reasonably close causal relationship to the Proposed Action, taking into account those effects that occur at the same time and place as the Proposed Action and effects that are later in time or farther removed in distance from the Proposed Action.

4.6.2 No Action Alternative

Similar to the Proposed Action, construction of a transmission line on private lands under the No Action Alternative would result in the potential for increasing sediment due to stormwater movement of disturbed sediments within the construction area.

The No Action Alternative would not cause any significant changes to water resources that are reasonably foreseeable and have a reasonably close causal relationship to the No Action Alternative, taking into account those effects that occur at the same time and place as the No Action Alternative and effects that are later in time or farther removed in distance from the No Action Alternative.

4.6.3 Avoidance and Mitigation Measures

No avoidance and mitigation measures are required related to water resources.

4.7 UNAVOIDABLE ADVERSE IMPACTS

4.7.1 Air Quality and Greenhouse Gases

Emissions resulting from construction equipment and vehicles would be below established significance and *de minimis* thresholds and would meet all local, state, and federal regulations. Therefore, no unavoidable adverse air quality effects would occur as a result of the implementation of the Proposed Action. The Proposed Action would have a beneficial impact, as it would convey renewable energy to the electric grid, which would replace fossil fuel-based electricity generation, thereby reducing GHGs and criteria pollutant emissions.

4.7.2 Cultural and Paleontological Resources

No NRHP-eligible cultural resources have been identified within the Proposed Action APE; therefore, there are no unavoidable adverse impacts on cultural resources anticipated as a result of implementation of the Proposed Action. Potential impacts associated with inadvertent discovery of cultural resources identified for the Proposed Action on cultural resources can be mitigated (e.g., avoidance; selective placement of above-ground utility poles; placement of underground utility or fiber optic lines).

4.7.3 Geology and Soils

No unavoidable adverse impacts from the proposed undertaking of geologic and soils would occur. Mitigation incorporated into the Proposed Action design will ensure that impacts are not significant.

4.7.4 Hazardous Materials and Hazardous Waste

No unavoidable adverse impacts from the proposed undertaking of hazardous materials or hazardous waste would occur.

4.7.5 Natural Resources

It is anticipated that the potential impacts identified for the Proposed Action on natural resources could be mitigated (e.g., avoidance; selective placement of above-ground utility poles; placement of underground utility or fiber optic lines) because natural resources surveys of the Proposed Action corridor did not indicate the presence of sensitive wildlife or plant species. All potential impacts on natural resources associated with the proposed utility corridors would not be significant.

4.7.6 Water Resources

For water resources, the primary concerns associated with the Proposed Action are impacts on water quality during construction activities. The Proposed Action corridor is not located within a floodplain. Water quality best management practices are required by the NPDES permit and corresponding SWPPP, which will minimize effects of the Proposed Action to water quality and no unavoidable adverse or significant impacts would occur.

4.8 SHORT-TERM VERSUS LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

Examples of short-term uses of the environment include construction-related disturbances and impacts associated with an increase in population and activity that occurs over a period typically less than 5 years. Long-term uses of the environment include impacts occurring over a period of more than 5 years, including permanent resource loss.

In the short term, the Proposed Action would result in minor, temporary, construction-related disturbances, but the Proposed Action would not result in an increase in population in the area on a long-term basis.

4.8.1 Air Quality and Greenhouse Gases

Short-term air quality emissions would result from dust and construction equipment and vehicles. However, such emissions would be below established significance and *de minimis* thresholds and would meet all local, state, and federal regulations. No long-term impacts would occur with the implementation of avoidance and mitigation measures described in Section 4.1.

4.8.2 Cultural and Paleontological Resources

In accordance with Section 102 of NEPA, all archaeological field studies, data recovery, and analyses associated with the Proposed Action would contribute to the present level of professional knowledge about cultural resources. However, no NRHP-eligible sites would be impacted with implementation of the Proposed Action.

With respect to paleontological resources, should any resources be encountered during construction activities, documentation for paleontological resources in this area of the Antelope Valley would contribute to the greater understanding of fossil remains. Because the depth of excavation and amount of ground disturbance associated with the Proposed Action is relatively limited, if paleontological resources are encountered, the Proposed Action would affect only a small percentage of paleontological resources and create no significant long-term loss of potential for exploration and recovery of these resources.

4.8.3 Geology and Soils

Regional seismic hazards have the potential to affect geologic resources in the short and the long terms. Temporary, minor, adverse impacts on soils would occur in the short term due to clearing and vegetation removal associated with the construction of the Proposed Action. With appropriate mitigation, including adherence to appropriate soils erosion control requirements, the Proposed Action would not result in short-term or long-term impacts on geologic or soil resources.

4.8.4 Hazardous Materials and Hazardous Waste

Short-term adverse impacts may result from the use of hazardous materials and subsequent disposal of hazardous waste during the construction of the Proposed Action. The disposal of hazardous waste could result in potential impacts on the environment, as well the health and safety of personnel, if it is not properly handled. Compliance with all applicable federal, state, and local laws and regulations addressing hazardous material and waste management is required and would ensure proper handling, storage, and disposal of hazardous materials and wastes, which would ensure the hazardous material and waste impacts are not significant. Implementation of avoidance and mitigation measures with respect to potential presence of hazards within the corridor would ensure impacts are not significant.

4.8.5 Natural Resources

In the short term, the Proposed Action would result in minor, temporary, construction-related disturbances to the natural resources in the Proposed Action corridor. In the long term, there would be no changes in productivity of the habitats on Edwards AFB or in the surrounding areas. It is anticipated that the Proposed Action would affect only a small percentage of natural resources in the area and would not create significant long-term loss of such resources, as no sensitive species are anticipated to be impacted with implementation of the Proposed Action. With appropriate mitigation, the Proposed Action would not result in significant short-term or long-term impacts on natural resources at Edwards AFB or the surrounding area.

4.8.6 Water Resources

Construction of the Proposed Action would not cause any changes in use at Edwards AFB; therefore, there would be no long-term impacts on water resources, including water use, groundwater use, and floodplains or flood hazards. With appropriate mitigation, the proposed undertaking would not result in short-term or long-term impacts on water quality due to soil erosion. Because the Proposed Action is not located within a floodplain, there would be no short-term or long-term effects related to floodplains.

4.9 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

In accordance with NEPA (40 CFR Part 1502.16), this section includes a discussion of any irreversible and irretrievable commitment of resources associated with the Proposed Action. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of those resources will have on future generations.

Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of implementing an action (e.g., extinction of a rare or threatened species or the disturbance of an important cultural resource site). There would be no irreversible or irretrievable commitment of resources for any of the environmental resources analyzed in this EA. Biological and water resources are also discussed here but are unlikely to result in the irreversible or irretrievable commitment of resources if appropriate mitigation measures are implemented, as no sensitive species were identified within the Proposed Action corridor.

All previously unevaluated archaeological sites were evaluated for inclusion to the NRHP, and all sites potentially affected by the Proposed Action are identified as ineligible for listing on the NRHP. Mitigation is proposed to address potential inadvertent discovery during construction. Native American resources, once destroyed or altered, cannot be replaced; any loss of sacred sites or traditional cultural properties would be considered irreversible and irretrievable.

For natural resources, development of the Proposed Action would result in short-term effects associated with construction and long-term effects associated with utility maintenance and access road construction. With proper mitigation, both temporary and permanent effects can be mitigated such that there would be no irreversible or irretrievable commitment of natural resources.

For water resources, the primary concern associated with the Proposed Action is impacts on water quality during development-related construction activities. No portion of the Proposed Action corridor is located within a floodplain. No irreversible or irretrievable commitment of water resources are anticipated.

5.0 REFERENCES

Avian Power Line Interaction Committee (APLIC). 2012. *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*. Edison Electric Institute and APLIC, Washington, D.C.

California Air Resources Board (CARB). 2020. *2000-2018 GHG Inventory (2020 Edition).* Accessed July 19, 2021. https://ww2arb.ca.gov/ghg-inventory-data.

——— 2021. *Ambient Air Quality Standards.* Accessed July 19, 2021. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

Council on Environmental Quality (CEQ). 2016. *Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in the National Environmental Policy Act Reviews.* Accessed April 2021. https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf.

County of Kern. 2021. *Aratina Solar Project Final Environmental Impact Report.*

Department of the Air Force. 2021. *Interim Policy on Update of the Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA).*

Desert Tortoise Council. 1996. *Guidelines for Handling Desert Tortoises During Construction Projects.* Revised 1999. San Bernardino, California.

Jones, Terry L., and Kathryn A. Klar. 2007. California Prehistory: Colonization, Culture, and Complexity. Altamira Press, New York.

Moratto, Michael J. 2004. *California Archaeology*. Coyote Press, Salinas, California

Rincon Consultants, Inc. 2021. *Aratina Solar Project Air Quality and Greenhouse Gas Study*.

Sawyer, T.T. Keeler-Wolf, and J.M. Evens. 2009. *A manual of California vegetation.* Second edition. California Native Plant Society Press. Sacramento, CA. 1300 pp.

Stantec Consulting Services, Inc. 2019. CEQA Level Geotechnical Study Aratina Solar Project.

Sutton, M.Q., M.E. Basgall, J.K. Gardner, and M.W. Allen. 2007. Advances in Understanding Mojave Desert Prehistory. In California Prehistory: Colonization, Culture, and Complexity, edited by T.L. Jones and K.A. Klar, pp. 229-245. AltaMira Press, New Work.

United States Air Force (Air Force). 1994. *Edwards Air Force Base Revegetation Plan.* Air Force Flight Test Center, Environmental Management Office, Edwards Air Force Base, California.

———2012. *Comprehensive Base-Wide Habitat Restoration Plan.* Environmental Management Office, Edwards Air Force Base, California.

——— 2016. Environmental Assessment for Proposed Utility Corridors at Edwards Air Force Base, California.

——— 2020. Air Force Manual 32-7002 Environmental Compliance and Pollution Prevention. Accessed April 2021. https://www.jble.af.mil/Portals/46/Documents/Eustis%20Environmental/Required%20Reading/AFMAN%2032-7002%20Env%20Compliance%20and%20P2%20(4%20Feb%2020).pdf?ver=wEo2KX7mr4FA5OWRdB_ISg%3D%3D

United States Air Force Air Force Flight Center Environmental Management Office Edwards AFB California. 2003 CERCLA No Action Record of Decision Basewide Water Wells Operable Unit 3.

United States Environmental Protection Agency (USEPA). 2017. "De Minimis Tables." Last modified August 4, 2017. Accessed April 2021. https://www.epa.gov/general-conformity/de-minimis-tables.

——— 2020a. "Current Nonattainment Counties for All Criteria Pollutants. Last modified March 31, 2021. Accessed April 2021. https://www3.epa.gov/airquality/greenbook/ancl.html.

——— 2020b. "De Minimis Emission Levels." Last modified May 21, 2020. Accessed March 2021. https://www.epa.gov/general%20conformity/de%20minimis%20emission%20levels.

United States Fish and Wildlife Service (USFWS). 2014. *Biological Opinion for Operations and Activities at Edwards Air Force Base, California (8-8-14-F-14).*

United States Geological Survey (USGS). 2019. Historical Topographic Map Explorer. [online map database]. Accessed March 20, 2019. www. Historicalmaps.arcgis.comm/usgs/.

6.0 LIST OF AGENCIES AND ORGANIZATIONS TO WHOM COPIES OF THE ENVIRONMENTAL ASSESSMENT ARE SENT

California State Clearinghouse Office of Planning and Research PO Box 3044 Sacramento, CA 95812-3044	US Department of the Interior Fish and Wildlife Service, Carlsbad Field Office 2177 Salk Ave #250 Carlsbad, CA 92008
AFTC Technical Library 812 TSS/ENTL Edwards AFB, CA 93524	California Department of Fish and Wildlife 1416 Ninth Street Sacramento, CA 95814
Edwards Base Library 412 FSS/FSDL 5 West Yeager Blvd., Building 2665 Edwards AFB, CA 93524	Chemehuevi Indian Tribe 1990 Palo Verde Drive PO Box 1976 Havasu Lake CA 92363
Kern County Library Rosamond/Wanda Kirk Branch 3611 Rosamond Boulevard Rosamond, CA 93560	Colorado River Indian Tribes 26600 Mohave Road Parker, AZ 85344
Mr. Octavio Escobedo, Chairman Tejon Indian Tribe P.O. Box 640 Arvin, CA 93203	Morongo Band of Mission Indians 161 W Ramsey St Banning, CA 92220
Mr. Colin Rambo Cultural Resources Management Technician Tejon Indian Tribe P.O. Box 640 Arvin, CA 93203	San Manuel Band of Mission Indians 26569 Community Center Drive Highland, CA 92346
Ms. Jessica Mauck, Director Cultural Resources Management San Manuel Band of Mission Indians	Mr. Robert Martin, Chairman Morongo Band of Mission Indians 12700 Pumarra Road

26569 Community Center Drive Highland, CA 92346	Banning, CA 92220
Mr. Charles F. Wood, Chairman Chemehuevi Indian Tribe P.O. Box 1976 Havasu Lake, CA 92363	Ms. Ann Brierty Tribal Historic Preservation Officer Morongo Band of Mission Indians 12700 Pumarra Road Banning, CA 92220
Mr. Bryan Etsitty Tribal Historic Preservation Officer Colorado River Indian Tribes 26600 Mohave Road Parker, AZ 85344	Ms. Kaitlin Songrara, Director Cultural Center Chemehuevi Indian Tribe P.O. Box 1976 Havasu Lake, CA 92363

7.0 LIST OF PREPARERS

(in alphabetical order)

Del Rosario, Sharyn, Senior Environmental Planner, HDR

B.A., 2008, Geography, San Diego State University, San Diego, CA

Years of Experience: 12

Gnibus, Tim, Associate Vice President, HDR

B.A., 1989, Social Ecology – Environmental Health and Planning, University of California, Irvine, CA

Years of Experience: 31

This page is intentionally blank.

8.0 ACRONYMS AND ABBREVIATIONS

AAM	annual arithmetic mean
ACEC	Area of Critical Environmental Concern
ACM	asbestos-containing material
ADP	Area Development Plan
AFB	Air Force Base
AFMAN	Air Force Manual
Air Force	United States Air Force
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
AQIA	air quality impacts analysis
AVAQMD	Antelope Valley Air Quality Management District
bgs	below ground surface
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal-EPA	California Environmental Protection Agency
CalOSHA	California Occupational Safety and Health Administration
CARB	California Air Resources Board
CCR	California Code of Regulations
CDWR	California Department of Water Resources
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
CH_4	methane
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CSD	Community Service District
DTSC	Department of Toxic Substances Control
EA	environmental assessment
EIAP	Environmental Impact Analysis Process
EKAPCD	Eastern Kern Air Pollution Control District

EO	Executive Order
ERP	Environmental Restoration Program
GHG	greenhouse gas
GICIMA	Groundwater Information Center Interactive Map Application
H_2S	hydrogen sulfide
HFC	hydrofluorocarbons
kV	kilovolt
MBTA	Migratory Bird Treaty Act
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
MGS	Mohave ground squirrel
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFI	No Further Investigation
NHPA	National Historic Preservation Act of 1966
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
PFC	perfluorocarbons
PIRA	Precision Impact Range Area
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental concern
RPS	Renewables Portfolio Standard
RWQCB	Regional Water Quality Control Board
SCE	Southern California Edison

SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_4	sulfate
SR	State Route
SWPPP	stormwater pollution prevention plan
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UXO	unexploded ordinance
VOC	volatile organic compound
WEAP	worker environmental awareness program
WEG	Wind Erodibility Group
$\mu g/m^3$	micrograms per cubic meter