US Department of the Interior
Bureau of Land Management

Environmental Assessment

DOI-BLM-AZ-C020-2023-0015-EA

Elisabeth Solar Project

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Bureau of Land Management
Colorado River District Office
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ACRONYMS AND ABBREVIATIONS

	Full Phrase
°F	degrees Fahrenheit
ACEC	area of critical environmental concern
AGFD	Arizona Game and Fish Department
AIB	analyzed in brief
APE	area of potential effects
APS	Arizona Public Service
ASLD	Arizona State Land Department
AZDA	Arizona Department of Agriculture
BESS	battery energy storage system
BLM	United States Department of the Interior, Bureau of Land Management
BMP	Best Management Practices
CAISO	California Independent System Operator
CFR	Code of Federal Regulations
CO_2e	carbon dioxide equivalent
DPS	distinct population segment
EA	environmental assessment
EIS	environmental impact statement
EPM	environmental protection measures
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act of 1976
gen-tie	generation intertie
GHG	greenhouse gas
HDMS	Heritage Data Management Systems
IPCC	Intergovernmental Panel on Climate Change
kV	kilovolt
KOP	key observation point
LOS	level of service
MOA	memorandum of agreement
MW	megawatt
NAAQS	national ambient air quality standards
NEP	non-essential experimental population
NEPA	National Environmental Policy Act

NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
O&M	operations and maintenance
OHV	off-highway vehicle
PEIS	Programmatic Environmental Impact Statement
PFYC	Potential Fossil Yield Classification
project	Elisabeth solar plus battery storage project
project proponent	Elisabeth Solar, LLC
PV	photovoltaic
RDEP	Restoration Design Energy Project
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
SEZ	solar energy zone
SRMA	special recreation management area
USFWS	United States Fish and Wildlife Service
VRM	visual resource management

Chapter 1. Introduction

Elisabeth Solar, LLC (the project proponent) proposes to construct, operate, and decommission a solar and battery storage project on approximately 1,411 acres of public lands administered by the Bureau of Land Management (BLM), Yuma Field Office in the Agua Caliente Solar Energy Zone (SEZ) approximately 70 miles east of the city of Yuma and 12 miles north of the unincorporated community of Dateland, Arizona (the Elisabeth Solar Project; see Figure 1-1).

The proposed project includes an up to 270-megawatt (MW) alternating current solar photovoltaic (PV) power generating facility, a 300 MW battery energy storage system (BESS), associated access roads, an operation and maintenance (O&M) facility, construction laydown areas, and other ancillary components. The power produced by the project would be conveyed to the local power grid via the Hoodoo Wash switchyard into the Arizona Public Service (APS) or California Independent System Operator energy grid system. The project would utilize an existing electric generation intertie (gen-tie) line that was developed for use by the adjacent White Wing Ranch Solar Facility.

1.1 BACKGROUND

The BLM established the Agua Caliente SEZ in January 2013 (BLM 2013). A SEZ is an area that the BLM has determined is well suited for utility-scale production of solar energy and within which the BLM will prioritize and facilitate utility-scale production of solar energy and associated transmission infrastructure development (BLM and DOE 2012a).

The BLM Arizona State Office accepted competitive bids to lease public lands within the Agua Caliente SEZ through an auction held on December 8, 2021. Elisabeth Solar, LLC was the successful bidder on the Agua Caliente SEZ and subsequently entered into a lease with the BLM to develop the proposed Elisabeth Solar Project. The lease includes 2,550 acres in two noncontiguous parcels: 1,666 acres in the western SEZ parcel and 884 acres in the eastern SEZ parcel. However, the proposed action evaluated in this environmental assessment (EA) is to develop the Elisabeth Solar Project using only the 1,666-acre western SEZ parcel to avoid a number of potential resource conflicts. The project proponent has prepared this EA for consideration by the BLM in their evaluation of potential environmental effects from constructing, operating, and decommissioning the proposed project.

Arizona's Renewable Portfolio Standard requires that 15 percent of all electricity generated in Arizona be derived from renewable sources by 2025. California has a Renewable Portfolio Standard goal of 60 percent of electrical power retail sales by 2030, expanding to 100 percent carbon-free resources by 2045. The proposed project would provide a new source of renewable energy to serve electricity users in Arizona and California and help meet the applicable Renewable Portfolio Standard goals.

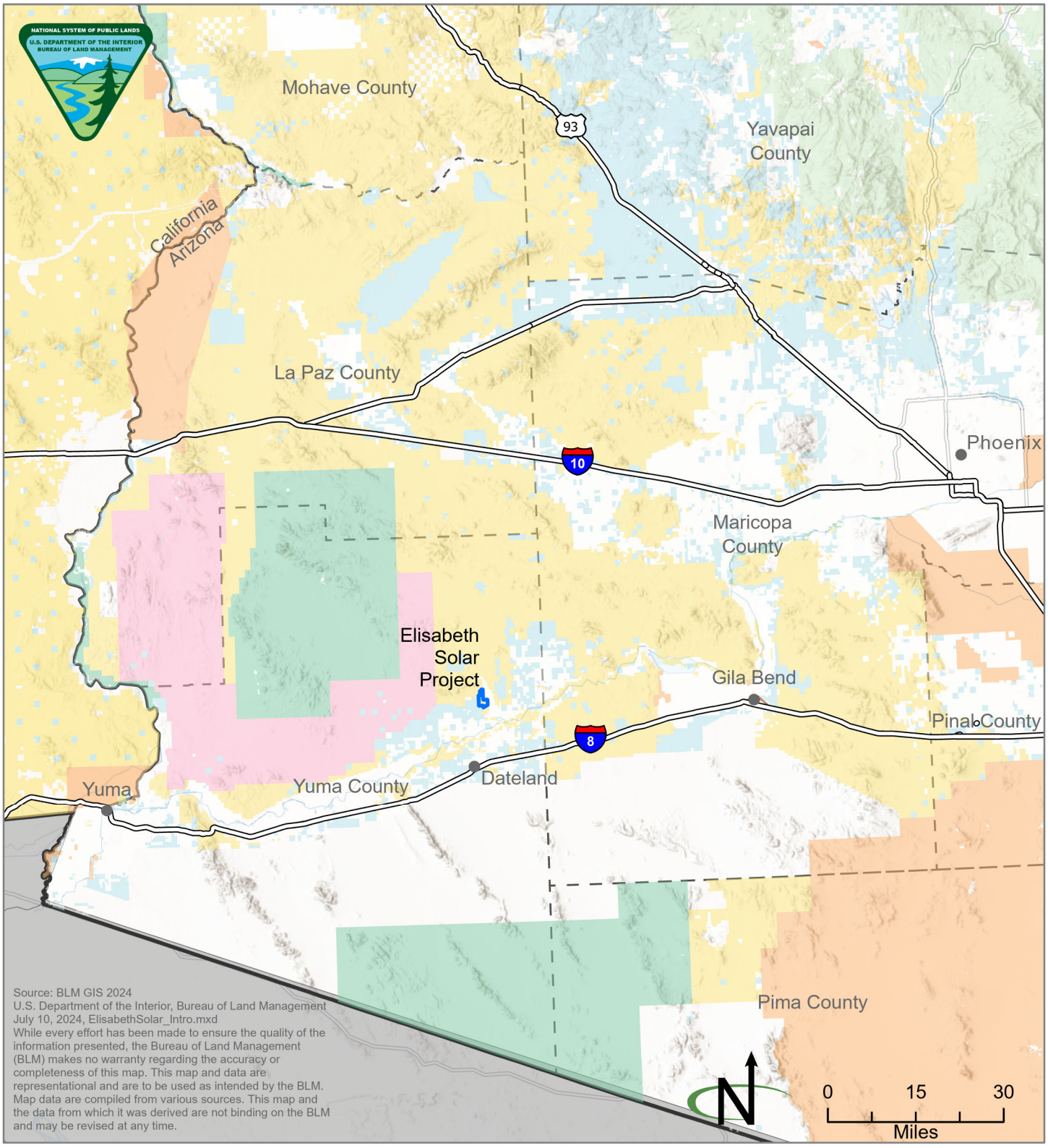

Figure 1-1
Regional Location

- Elisabeth Solar Project
- Bureau of Land Management
- Bureau of Indian Affairs
- State
- Forest Service
- Fish and Wildlife Service
- Army
- Private

1.2 PURPOSE AND NEED

In accordance with the Federal Land Policy and Management Act of 1976 (FLPMA), public lands are to be managed for multiple uses that take into account the long-term needs of future generations for renewable and nonrenewable resources. The BLM is authorized to grant rights-of-way (ROWs) on public lands for systems of generation, transmission, and distribution of electrical energy (Section 501(a)(4) of FLPMA) and to offer leases for solar energy development in SEZs in accordance with the competitive lease process under 43 Code of Federal Regulations (CFR) 2809.

The BLM's purpose for this action is to respond to and evaluate the project proponent's plan of development to construct, operate, and decommission a solar and battery energy storage project on public lands in the Agua Caliente SEZ per 43 CFR 2809, which requires the BLM to evaluate a plan of development for all executed SEZ leases. The purpose is also to respond to a ROW application for co-utilization of the White Wing Ranch gen-tie ROW grant (AZA 036884) to convey power generated by the Elisabeth Solar Project to the regional electrical grid. The need is established by FLPMA, BLM ROW and lease regulations (43 2800 and 2809), and other applicable federal and state laws and policies.

1.3 DECISION TO BE MADE

The BLM will decide whether to approve the project proponent's request to use public lands to develop the proposed solar facilities and if so, what additional stipulations to the lease terms and conditions would be required. Additional BLM decisions to be made include whether to approve a ROW grant for Elisabeth Solar, LLC to co-utilize the existing White Wing Ranch gen-tie ROW (AZA 036884) and whether to approve any other realty actions as determined by the authorized officer for access roads or other ancillary facilities analyzed in this EA.

1.4 RESOURCE MANAGEMENT PLAN CONFORMANCE AND RELATIONSHIP TO OTHER PLANS AND ANALYSES

1.4.1 Yuma Field Office Resource Management Plan Conformance

The proposed project would be located on BLM-administered lands within the Yuma Field Office's jurisdiction. As such, it is subject to the management direction outlined in the Yuma Field Office Approved Resource Management Plan (Yuma RMP; BLM 2010), as amended by the Arizona Restoration Design Energy Project Approved RMP Amendments (RDEP; BLM 2013). RDEP amended the Yuma RMP to incorporate the designation of the Agua Caliente SEZ, designate the SEZ as VRM Class IV, and identify design features and best management practices (BMPs). Because the proposed action is a use for which the SEZ was designated and incorporates design features and BMPs as required by RDEP, it is in conformance with the amended Yuma RMP for development of a solar energy facility. The proposed project also conforms to applicable decisions related to ROW developments, including LR-027: Public demand for ROWs is met on a case-by-case basis (page 2-171) and LR-031: To the extent possible, locate new ROWs within or parallel to existing ROWs or ROW corridors to minimize resource impacts (page 2-171).

1.4.2 Relationship to Other Plans and Analyses

The following documents as they relate to the proposed action were considered during the development of this EA.

Arizona Restoration Design Energy Project Approved RMP Amendments

The Arizona RDEP Approved RMP Amendments (BLM 2013) designated the Agua Caliente SEZ. The draft environmental impact statement (EIS; BLM 2012a) for that effort described the affected environment and evaluated potential impacts on the human and natural environment from solar development within six alternative SEZ boundaries ranging in size from 2,760 to 20,600 acres. Based on public comments on the Draft EIS, along with additional information from the Arizona Game and Fish Department (AGFD) and a Class III cultural survey, the BLM reduced the SEZ boundary to 2,550 acres to address concerns related to wildlife habitat and migration, lands with wilderness characteristics, cultural resources, and riparian areas. The BLM and project proponent have reviewed the public input on, and the assessment of baseline conditions and analysis contained within, the RDEP Final EIS (BLM 2012b). Chapter 3 of this EA makes reference to and incorporates the baseline conditions and analysis contained within the Final EIS for the designated Agua Caliente SEZ where the baseline conditions and analysis were found to still be reliable upon BLM review.

Regional Mitigation Strategy for the Arizona Solar Energy Zones

The Regional Mitigation Strategy for the Arizona Solar Energy Zones (BLM 2016a) presents a strategy for compensating for potential residual or unavoidable impacts that could occur from the development of the SEZs in Arizona. The strategy, which included input from stakeholders, reviewed updated data and recommended areas within the SEZ boundaries to be avoided for protection of resources. Within the Agua Caliente SEZ, approximately 540 acres were recommended for avoidance related to floodplains, cultural resources, and lands with wilderness characteristics. The BLM considered this information in the terms and conditions of the lease sale and the proponent considered this information in the development of the proposed action and alternatives. Information in the regional mitigation strategy is incorporated by reference in Chapter 3 of this EA, as applicable.

Vegetation Treatments Programmatic EISs and EAs

The 2007 Vegetation Treatments Using Herbicide on Bureau of Land Management Lands in 17 Western States Programmatic EIS (PEIS; BLM 2007); the 2016 Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States PEIS (BLM 2016b); and the 2023 PEIS Addressing Vegetation Treatments Using Herbicides (BLM 2023a) disclosed the potential human health and ecological risk from the use of chemical herbicides on public lands in 17 western states, including Arizona. These programmatic documents evaluated a wide range of issues, including the effect of listed herbicides on the health of humans, vegetation, fish and wildlife, livestock, and wild horses and burros; water quality; and Native American use of resources and evaluated the cumulative impact of herbicide use by the BLM and other landowners. The Yuma Field Office Herbicide Application EA, Finding of No Significant Impact, and Decision Record were prepared in 2018 to analyze the effects of authorizing all approved herbicides and pesticides from the 2007 and 2016 PEISs and area-specific mitigation measures (BLM 2018). The analysis in these three

herbicide PEISs and the herbicide EA were reviewed and found to still be reliable. The detailed analysis for the effects of herbicides on animals and plants described in the programmatic EISs and EA is incorporated by reference in Chapter 3 of this EA. In addition, the limits and restrictions for use on public lands and standard operating procedures for all approved BLM herbicides are incorporated by reference.

Chapter 2. Proposed Action and Alternatives

Chapter 2 describes the proposed action, a project-specific alternative to the proposed action, the no action alternative, and alternatives dismissed from detailed analysis. The description of the proposed action, along with the measures that would be adhered to by the project proponent to avoid and minimize impacts, provides the detailed information that forms the basis for the analysis in the EA.

2.1 Development of Alternatives

The development of alternatives reflects the BLM's evaluation of the proposed plan of development, internal scoping with BLM specialists, and external scoping and outreach with agencies, tribes, and the public by the BLM and the project proponent.

Upon lease award, the project proponent submitted a plan of development for a 350 MW PV solar energy generating facility and 300 MW BESS on approximately 1,866 acres of the 2,550-acre lease area. This proposed project layout maximized development of the solar arrays in the two noncontiguous leased SEZ parcels while avoiding development in BLM-recommended nondevelopment areas that were identified through the Arizona Regional Mitigation Strategy process described in Section 1.4.2. This included avoidance of floodplains in both SEZ parcels, sensitive resource areas in the eastern SEZ parcel, and lands with wilderness characteristics in the western SEZ parcel.

During review of the initial plan of development, the BLM and project proponent identified potential resource concerns in the eastern SEZ parcel. The project proponent elected to forego development of the eastern SEZ parcel and submitted a revised plan of development for a 270 MW facility utilizing only the 1,666-acre western SEZ parcel (Elisabeth Solar, LLC 2023a). The 270 MW plan of development is the proposed action described in Section 2.2.

A 250 MW alternative to the proposed action that would place some project components in the BLM-recommended nondevelopment areas in lieu of preserving vegetation from grading along swales in other areas is also considered. This alternative, described in Section 2.3, also includes temporary, construction-related use of an existing route across land primarily administered by the Arizona State Land Department (ASLD). Use of this route would reduce effects from construction traffic.

Section 2.5 describes the alternatives dismissed from detailed analysis, including the alternative to develop a 350 MW solar facility utilizing both SEZ parcels.

2.2 Alternative 1 – Proposed Action

The proposed action is to construct, operate, and decommission an up to 270 MW alternating current PV solar-generating facility, up to 300 MW of battery energy storage, substation, and associated access roads, O&M facilities, construction laydown areas, and other ancillary components on BLM-administered land within the western portion of the Agua Caliente SEZ, as presented in the applicant's plan of development (Elisabeth Solar, LLC 2023a).

The Agua Caliente SEZ is a 2,550-acre area, divided into two parcels that surround the existing White Wing Ranch and Agua Caliente Solar Facilities. The SEZ is located on public lands administered by the BLM in rural Yuma County, Arizona, approximately 70 miles east of the city of Yuma and 12 miles north of the unincorporated community of Dateland, located along Interstate 8 (see Figure 1-1). Primary access to the site is via Palomas Road and Palomas Harquahala Road and then through private access easements across the Agua Caliente and White Wing Ranch Solar Facilities (Figure 2-1). Palomas Road and the portion of Palomas Harquahala Road that would be utilized are paved roads that require no improvements.

The proposed project would include a 1,548-acre fenced facility within the 1,666-acre western SEZ lease area. It would also include utilization of the existing White Wing Ranch gen-tie ROW, which borders the proposed facility to the east. This gen-tie ROW consists of 118 acres within the western SEZ boundary and 14.8 acres on BLM-administered lands outside the SEZ boundary (see Figure 2-1). A short segment of Palomas Harquahala Road also crosses BLM-administered land. Table 2-1 shows the legal description for all public lands that would be utilized by the proposed project. While there is no fencing associated with the White Wing Ranch gen-tie ROW, the Agua Caliente Solar Facility, White Wing Ranch Solar Facility, and proposed Elisabeth Solar Project fence lines would border the ROW to the east, west, and north.

Table 2-1. Township/Range and Section Information for BLM-Administered Lands

Township/Range	Section	Landownership	Legal Description for Project Site Facilities
Western SEZ portion of solar field and ancillary facilities			
5S/12W	17	BLM	SE1/4NE1/4 and SE1/4
5S/12W	20	BLM	NE1/4, SE1/4NW1/4, E1/2SW1/4, and SE1/4
5S/12W	28	BLM	W1/2NE1/4, W1/2, and W1/2SE1/4
5S/12W	29	BLM	E1/2, E1/2NW1/4, and E1/2SW1/4
5S/12W	33	BLM	A portion of NW1/4 and a portion of NW1/4NW1/4NE1/4
Lands outside the western SEZ parcel			
Initial segment of Palomas Harquahala Road off of Palomas Road			
5S/12W	26	BLM	SW1/4SW1/4SW1/4
Access to the White Wing Ranch gen-tie ROW through the Agua Caliente Solar Facility			
5S/12W	28	BLM	SW1/4SE1/4
5S/12W	33	BLM	N1/2NE1/4

The power produced by the project would be conveyed to the local power grid via the Hoodoo Wash switchyard into the APS energy grid system. The project would electrically interconnect to the existing White Wing Ranch gen-tie line (BLM-approved ROW grant AZA 036884) at the White Wing Ranch project substation. The proposed action requires approval of a ROW grant for Elisabeth Solar, LLC to use the White Wing Ranch gen-tie ROW.

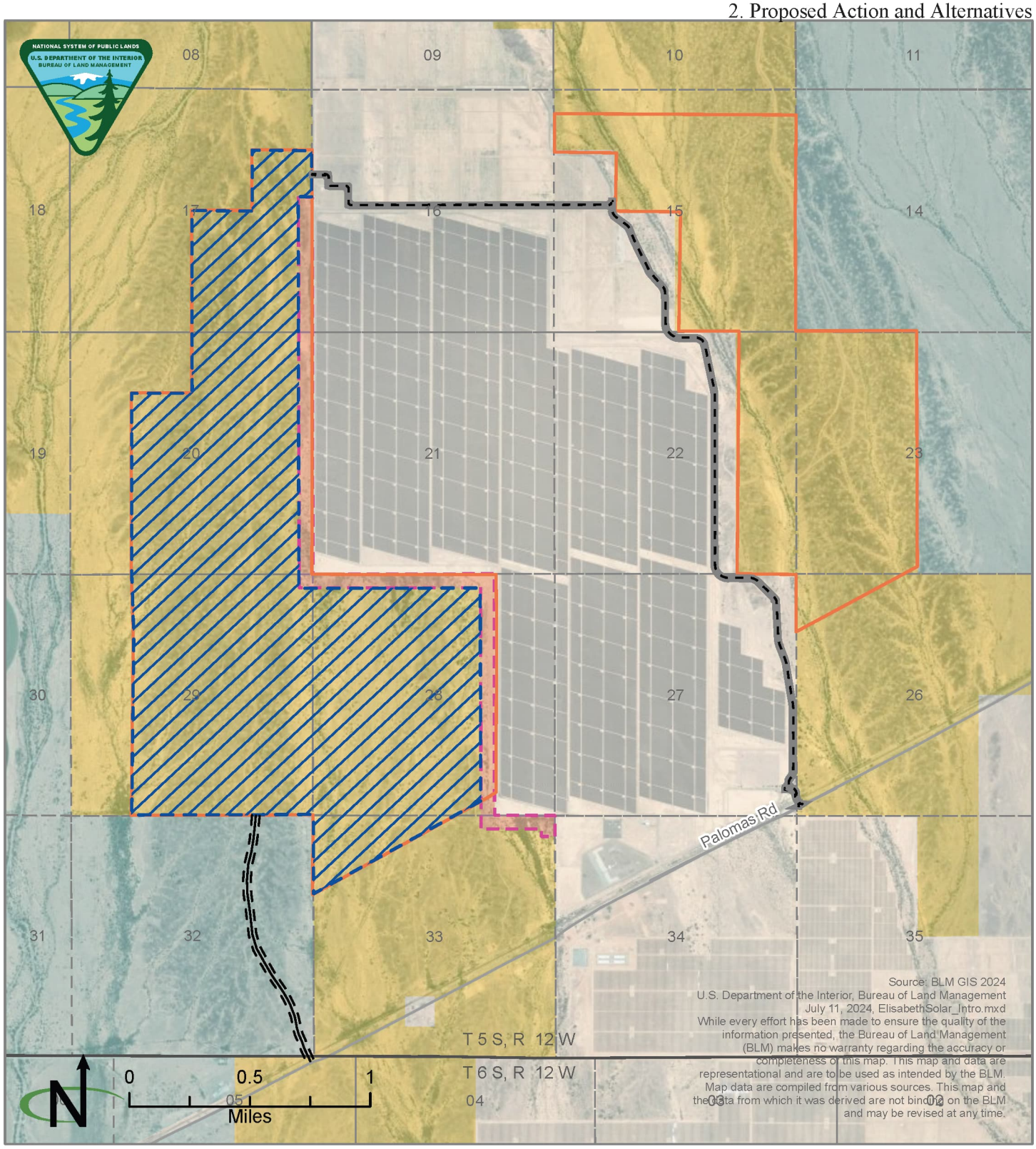

Figure 2-1
Project Location

- Elisabeth Solar Project proposed development area
- Agua Caliente leased SEZ boundary
- Shared gen-tie line (constructed by others)
- Permanent access road
- Temporary construction access route (reduced grading alternative only)
- Bureau of Land Management
- Private
- State
- Township/Range
- Section

2.2.1 Overview of Solar Energy Generation

PV solar facilities rely on sunlight as their sole source of fuel. All of the electricity generated by the proposed project would be through the conversion of solar energy to electricity by the PV modules. The solar panels convert sunlight into direct current electricity. The electricity is combined, converted to alternating current, and incrementally increased in voltage prior to delivery to the electrical grid through the following systems:

- PV modules are mounted on tracking systems organized in a horizontal (north-south) axis. Drive motors rotate the solar panels from east to west, following the arc of the sun throughout the day.
- Electricity from the PV modules is delivered to power conversion stations that convert the direct current power to alternating current and increase the voltage to 34.5 kilovolts (kV; also referred to as medium voltage). A medium voltage collection system transmits the alternating current power to the project substation via aboveground or underground conductors.
- A project substation steps up the voltage from 34.5 to 525 kVs (also referred to as high voltage), which is the electrical interconnection voltage for the project. From the project substation, electricity is transmitted over a gen-tie line to the point of electrical interconnection to the grid.

2.2.2 Components of the Proposed Action

The primary components of the proposed project include the solar energy generating equipment; battery storage equipment; linear and ancillary facilities, including internal access roads, perimeter security fencing and facilities, and cabling, transformers, and switching gear; O&M facility; drainage basins; and a project substation. Temporary construction-related components would include construction laydown yards, construction trailer and worker parking areas, and drainage basins. A summary of each component type is provided in this subsection and described in more detail in the plan of development (Elisabeth Solar, LLC 2023a), which is available on the project's ePlanning page.[1]

All of these components would occur within the 1,548-acre fence line of the proposed solar and battery energy storage project. Development of the proposed project would directly remove the availability of these lands for other public uses for the life of the project. Fencing for the proposed project may also preclude opportunities for other public uses within the 118 acres of the gen-tie ROW that lie within the SEZ. This is because facility fencing for the proposed project in combination with existing fencing for the Agua Caliente and White Wing Ranch Solar Facilities precludes access on the east, west, and north sides of the ROW. The analysis in this EA thus conservatively assumes that all of the 1,666-acre western SEZ parcel would be unavailable for other public uses.

Figure 2-2 shows the anticipated general layout of Elisabeth Solar Project; a detailed site drawing is included in Appendix A.

[1] https://eplanning.blm.gov/eplanning-ui/project/2025061/570

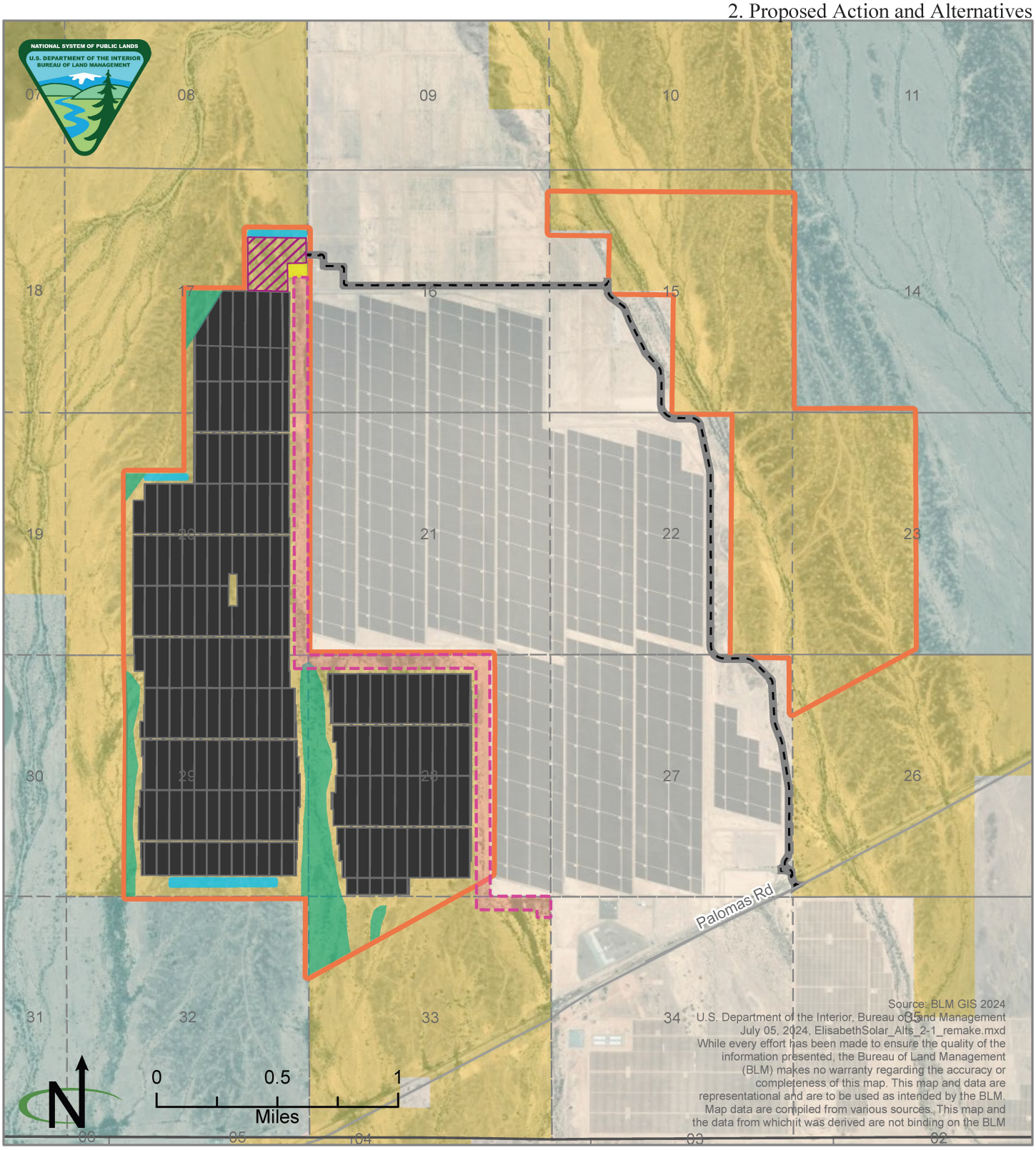

Figure 2-2
Alternative 1 – Proposed Action

- Solar array
- Project substation
- BLM-recommended nondevelopment area
- Permanent access road
- Agua Caliente leased SEZ boundary
- Shared gen-tie line (constructed by others)
- Flexible use area (includes O&M building and BESS)
- Drainage basin
- Bureau of Land Management
- Private
- State

Table 2-2 shows the estimated acreage associated with each component type within the fence line and whether the ground disturbance related to that component type would result in short-term or long-term disturbance of the soils and vegetation. Short-term ground disturbance is defined as disturbance that occurs for 3 years or less (generally during construction). Long-term disturbance is defined as disturbance that occurs for more than 3 years (generally over the life of the project). Short-term disturbance areas would be reclaimed at the end of the construction period per the project's Site Reclamation and Revegetation Plan. Long-term disturbances would be reclaimed upon decommissioning of the project. The proposed action proposes no development within the 137 acres of BLM-recommended nondevelopment area (BLM 2016a); thus, development would only occur within 1,411 acres of the 1,548-acre fenced facility.

Table 2-2. Short-Term and Long-Term Disturbance – Proposed Action

Component	Short-Term Ground Disturbance Acres	Long-Term Ground Disturbance Acres
PV modules and solar arrays	1,081	22[1]
Substation, battery storage, and O&M facility	—	48
Main internal access roads	—	20
Perimeter fencing	—	1
Laydown yard, temporary construction trailers, parking	32	—
Drainage basins – permanent	—	1
Drainage basins – temporary	20	—
Power conversion stations	—	1
Interstitial areas (for example, rows between modules and areas between fence and perimeter road)	185	—
Total Temporary and Permanent Ground Disturbance	1,318	93
Total Acres Developed–Proposed Action	1,411	

[1]Most of the areas beneath the PV modules and solar arrays are considered to be short-term disturbances because they would be subject to post-construction reclamation. However, a subset of these areas may be disturbed over the long term due to the periodic use of internal accessways between rows of modules for maintenance. Vegetation in these areas would be controlled to maintain access and to reduce fire risk.

PV Modules and Solar Arrays

The proposed project would be constructed using thin-film or silicon PV modules with an anti-reflective coating that reduces glare and is theorized to reduce avian and insect attraction. The PV modules convert sunlight into direct current (DC) electricity. Groups of modules are referred to as arrays. The DC electricity from the modules in an array is combined together and converted to alternating current (AC) electricity as described in the subsequent section.

Modules would be mounted to single-axis, horizontal trackers arranged in north-south oriented rows. Drive motors would rotate the solar panels from east to west to follow the sun throughout the day to maximize electrical generation. The highest point for a horizontal tracker would be achieved during the morning and evening hours when the trackers are tilted at their maximum angle. The modules would be a maximum of 13 feet off the ground surface depending on the grade where the posts are installed. When the solar modules are roughly parallel to the ground,

the overall height of the tracker unit would be a maximum of 10 feet off the ground surface depending on the grade where the posts are installed.

Support for the trackers would consist primarily of driven posts (wide flange, steel I-beam) approximately 6 to 8 inches across and 6 to 12 feet in length. If warranted based on site conditions, ground screw or helical piles could be used in place of driven posts. Each tracker unit would be approximately 350 feet long and powered by a low-voltage, electric-drive motor. The motors operate for a few seconds every 5 to 10 minutes during daylight conditions to rotate the panels in approximately 1-degree increments. The panels would be stowed in an upright or slanted position during nighttime hours to eliminate reflection of the moonlight and the potential for avian attraction. High wind events may periodically preclude the ability to stow the panels in this position. Meteorological or "met" stations would monitor wind speed and rotate the trackers to a safe stow position during periods of high winds.

Fencing and Site Security

The solar facility would be secured with chain-link or metal-fabric fencing, or another type of similarly effective security fencing. Controlled access gates would be located at the site entrances. Access gates would be at specific locations along the perimeter road to allow maintenance and security crews access to all portions of the project site. The perimeter fence would be a 7-foot-tall fence per the National Electrical Safety Code, typically consisting of either an approximately 6-foot-high chain-link fence topped with a 1-foot-high section of barbed-wire security strands or a 7-foot stock-wire fence. The perimeter would be made wildlife friendly by raising the fence 3 to 6 inches off the ground or otherwise providing small openings at the base of the fence to allow small animals to move into and across the site.

Fencing would also be installed around the substation. Access gates would be provided to allow maintenance vehicle access to the equipment. Substation fencing would be similar in design to the perimeter fence but would not be wildlife friendly. Security at the facility would be achieved by fencing, lighting, security patrols, and electronic security systems. The facility would be monitored 24 hours per day, 7 days per week. Site security would be provided through a combination of on-site staffing and security patrols, remote monitoring, or electronic security systems.

Electric Collection System

Electricity generated by the solar modules within each array would be collected via an underground, DC collection system of direct current cabling and combiner boxes. This system would connect each solar array to a power conversion station, which includes an inverter to convert DC power to AC power and a medium-voltage transformer to increase the voltage to 34.5 kV. Each power conversion station would be housed in a 12-foot-wide by 45-foot-long by 12-foot-tall shelter. The power conversion station shelter would also enclose an emergency backup power supplied by a small, battery-based, uninterruptible power supply. In the event of a loss of grid power, the battery would enable the tracker motors to safely stow the panels to avoid damage from wind events. The electric equipment enclosures would be either metal or concrete structures. Electric equipment would be constructed on concrete foundations or footings.

The 34.5 kV electric collection system would be installed aboveground or underground in the array areas to deliver the energy from the power conversion stations to the 34.5 kV PV combining switchgear, located in the project substation. Aboveground collection line poles, if used, would be approximately 45 feet tall and spaced approximately 150 feet apart. They would be either directly imbedded wood poles or steel towers secured to a concrete foundation. Overhead 34.5 kV lines would be installed as multiple-circuit lines with post insulators. A grounding rod of 8 to 12 feet would be hammered into the ground adjacent to each pole.

The input to the project substation would pass through one or more step-up transformers to convert it to the 525 kV interconnection voltage. From the transformer, the power would pass through a series of breakers and switches that enable it to be electrically interconnected to the White Wing Ranch substation and then to the White Wing Ranch gen-tie line for delivery to the Hoodoo Wash switchyard and the electric grid. This interconnection between the project substation and the White Wing Ranch substation would be via overhead lines approximately 400 feet long.

Project Substation (Elisabeth Substation)

The Elisabeth project substation would include a 34.5 kV to 525 kV step-up transformer, breakers, buswork, protective relays, an uninhabited control house, and associated substation equipment. A separate, uninhabited communications enclosure, constructed of either metal or pre-cast concrete, would also be located adjacent to the project substation. The communications enclosure would house the site communications and metering equipment. Substation equipment would be constructed on concrete foundations.

Battery Energy Storage System

The proposed 300 MW BESS facility would be adjacent to the Elisabeth substation within the fenced area and would electrically interconnect to the White Wing Ranch substation through the Elisabeth substation, described above, or through its own substation. If a separate BESS substation is required, it would be constructed on either the Elisabeth project site or on neighboring private land adjacent to the existing White Wing Ranch Solar Facility substation. Energy from the BESS facility would be transmitted to the existing Hoodoo Wash switchyard using the White Wing Ranch gen-tie line. The BESS would either be charged by energy from the project PV arrays, or it would be charged from the electric grid, or a combination of both. The BESS may be constructed later in time than the PV solar generating portion of the proposed project.

The BESS would consist of commercially available, self-contained battery storage modules containing multiple batteries (lithium ion or other commercially available batter type) placed in racks. The BESS would also include converters, switchboards, inverters, transformers, controls, and integrated heating, ventilation, and air conditioning units; all would be enclosed in one or more buildings or in prefabricated metal containers approximately 12 feet wide by 60 feet long by 9 feet tall. The BESS facility design, construction, and operation would follow applicable fire and building codes for its safe design, construction, and operation. The enclosures would include fire suppression systems specific to the type and design of the battery systems selected.

Linear and Ancillary Facilities

Meteorological Stations

Up to four temporary and permanent solar meteorological stations would be installed to gather information on air temperature, wind direction and speed, and solar transmissivity. The permanent stations would be mounted on towers that are located at multiple locations around the perimeter of the solar arrays. The towers would be monopole or lattice design and would not exceed 33 feet in height. Each tower would require a small concrete foundation approximately 3 feet by 3 feet that would extend approximately 4 feet below ground.

Supervisory Control and Data Acquisition System

The proposed project would have a Supervisory Control and Data Acquisition system to allow for remote monitoring and control of inverters and other components. This equipment would be in the O&M building. The system would be linked to the inverters, meteorological stations, and relays via fiber optic and copper communications cable. These data links would provide control, monitoring, alarm, and data storage functions via the control operator interface and control technician workstation of the system.

Lighting System

Lighting at the proposed project site would be limited to the minimum lighting required for safe operations. Permanent lighting would be provided at the O&M building and the main site entrance. Night lighting used during construction, operation, and maintenance would be controlled or reduced using directed lighting, shielding, reduced lumen intensity, “warm” white, and/or motion activated. Measures to reduce lighting effects are outlined in the Lighting Plan and Bird and Bat Conservation Strategy.

O&M Area

The proposed project may include an O&M building to house administrative, operation, and maintenance equipment and personnel with offices, toilets, and other features necessary for occupancy on a daily basis. The O&M building would also include communication equipment and a storage and equipment area. The O&M building would be approximately 2,000 square feet, with a maximum height of approximately 18 feet. It would have an adjacent parking area. Additional components of the O&M area would include a laydown and storage area, trash containers, water storage tanks, and a septic field.

Water supply and septic systems, waste management procedures, and aboveground water storage tanks would be within the O&M area and would be designed to meet applicable federal, state, and local requirements. During operational daylight hours, the proposed project would generate its own power for equipment operation. During non-daylight hours, it would require power to keep transformers energized, maintain communications to project equipment, and provide power for heating, ventilation, air conditioning, and lighting in the O&M building. The project proponent could enter into a retail service agreement with APS, the local retail power provider, to purchase power during non-daylight hours.

Interior Access Roads

Interior site access roads would be built to provide vehicle access to the solar equipment (the PV modules, inverters, transformers, and BESS) for O&M activities. These permanent access roads would be approximately 20 feet wide and spaced every 650 to 1,300 feet across the solar field. Depending on soil conditions encountered during construction, the roads may be temporarily wider or will shift in location, and may link with an access road that runs along the project perimeter. Roads would be constructed using graded and compacted native material, if suitable. If needed to achieve design standards, such as allowing all-weather access, some roads could be constructed from imported aggregate or be paved. For construction and operational access, vehicles would also periodically travel between the rows of modules; however, these access ways would not be improved.

A separate gate or other means of entry would be provided to ensure continued access to the existing APS distribution power line ROW (AZA 032125) that crosses the project site.

Construction Laydown Areas

A temporary construction mobilization and laydown area would be identified prior to the start of construction. The mobilization and laydown area would contain construction offices, construction workforce parking, materials receiving, and materials storage. The mobilization and laydown area would be compacted earth. Mobile trailers, modular offices, or an equivalent would be used as construction offices. Power for offices would be supplied from an APS electrical distribution line immediately east of the project site. Electrical generators would be used as an alternative source of electricity if needed. Additional parking and laydown areas could be developed throughout the site as construction proceeds; these areas would be reclaimed upon completion of construction or, if they are located in areas proposed for PV arrays, solar components would be installed in these areas.

Drainage Basins

Most of the project site would be drained by sheet flow to existing on-site and off-site drainages. Temporary drainage basins would be constructed inside the project fence line around the perimeter of the solar facility to control sediment; one or more permanent drainage basins could be maintained after construction.

2.2.3 Project Construction

Construction of the proposed project, from site preparation and grading to commercial operation, is expected to take approximately 15 to 18 months to complete. Construction would include the major phases of mobilization, construction grading and site preparation, installation of drainage and erosion controls and other ancillary services, PV panel and tracker assembly, and solar field construction. Site preparation and the installation of solar equipment are expected to move continuously across the site from one array to the next; the substation and O&M area construction would occur in parallel with construction of the solar arrays. The BESS could be installed concurrently with the solar PV project, or it could be added at a later date. BESS assembly is modular and containerized, and construction activities primarily include installation of foundations for the battery modules and containers, electric interconnection activities, and installation of the battery modules on-site. Construction sequencing and methods are summarized

below; more detail is available in the project's plan of development (Elisabeth Solar, LLC 2023a).

Construction Sequencing

Preconstruction Activities

Preconstruction activities would include environmental clearances in which site activities are reviewed and approved for compliance with resource protection plans and approved construction-compliance documents; preconstruction survey requirements for sensitive species; and the offering of native vegetation for salvage. A licensed professional land surveyor would stake and flag the site boundaries, cut-and-fill zones, and any offsets; this would continue through the initial construction stages as the site is graded and prepared for facility installation, to mark locations of foundations, piers, and other site structures as necessary for construction. Perimeter fencing would be installed, and construction entrance and exit gates, with track-out prevention areas, would be established. Temporary construction parking for workers traveling to the site in their personal vehicles and a construction mobilization and laydown area, described in Section 2.2.2, would be established.

Site Preparation

Site preparation methods within the project site would vary based on the project components to be installed and the site conditions (vegetation cover and terrain) at specific project locations. Table 2-3 describes the vegetation cover on the project site based on the vegetation assessment performed as part of the biological evaluation (WestLand 2024a). As shown in the table, much of the project site is devoid of vegetation. Where vegetation does occur, it is generally concentrated along natural drainage areas such as swales and in lowland areas. Overland travel would be possible over the portions of the site that are barren or sparsely vegetated. Grading would not be required in these areas. Overland travel could remove vegetation but would generally leave soils in place, though with some level of compaction.

Table 2-3. Vegetation Cover

Vegetation Cover	Vegetation Cover Description	Approximate Percentage
Barren	Exposed rock or sand, no vegetation	88
Low cover	Sparsely populated grasses, shrubs, trees, and cacti	11
Medium cover	Mature shrubs and trees, moderately populated by grasses, shrubs, and cacti	<1
High cover	Thick riparian vegetation, densely populated shrubs and trees	0

Portions of the project site have terrain that is too steep to accommodate solar arrays. In these areas, grading would be required to reduce the slope. Grading would also be required for permanent features such as roads, equipment pads and foundation areas, the project substation, some stormwater management features, and parking and construction laydown areas. Grading would remove vegetation and soils either temporarily or permanently depending on the proposed use. Table 2-4 provides a description of and estimated acreages for areas that would be avoided, areas that would be graded, and areas where some reduced level of disturbance would occur.

Table 2-4. Site Preparation Methods – Proposed Action

Area Type	Disturbance Level Description	Approximate Acres[1]
Grading and clearing areas – foundations and infrastructure	These areas would be graded and all vegetation would be removed during construction. These areas include roads, parking and laydown areas, equipment pads and foundation areas, the project substation, areas of steep terrain, and certain stormwater management features, including the drainage basins. Approximately 93 acres would remain permanently disturbed over the life of the project (see Table 2-2). Where possible, the seed-containing topsoil layer would be segregated and set aside during construction and used to reestablish temporarily disturbed areas after construction ground disturbance is completed.	122
Grading and clearing areas – arrays and trenching	These areas would be graded and all existing vegetation would be removed. Some vegetation may be tolerated during operation, but surface disturbance with vegetation removal would be unavoidable during construction. Where possible, the seed-containing topsoil layer would be segregated and set aside during construction and used to reestablish temporarily disturbed areas after construction ground disturbance is completed.	775
Site preparation and vegetation management in other project areas	These are general areas of the project where vegetation, if present, can be tolerated during operation, but the vegetation may need to be managed during construction. In barren areas, no vegetation management would be needed. Elsewhere, vegetation would be managed as determined by several factors, including compatibility with the future use of the area where the vegetation occurs, impediments to construction access, and any hazard it may pose to worker safety. For example, within the solar array, lower-growing vegetation could be left intact or cut closer to the ground, while taller vegetation that could shade or interfere with operation of the solar panels may need to be completely removed. Soil disturbance would be largely avoidable. Seed bank and some vegetation root masses would remain within the soil, but they could be compacted.	514
Avoidance areas	These are BLM-recommended nondevelopment areas (BLM 2016a) where use of vehicles and equipment would be avoided during construction and operation; no temporary or permanent disturbance or structures would occur in these areas. Vegetation would remain in place during project operation.	137
Total	**-**	**1,548**

[1]The acreage amounts provided are estimates only; actual amounts would vary based on multiple factors, including, but not limited to, the vegetation type and density, topography, soils, geology, panel and racking manufacturer, energy storage type, and safety considerations.

O&M Area

Concrete foundations would be poured for a modular, steel O&M building, and an area adjacent to the building would be paved for parking. A 4-inch aggregate base could be installed on all unpaved areas within the O&M area, pending the geotechnical investigation results. Aboveground water tanks would be erected and connected to a service pump. The active and

reserve septic field would be established and connected to the O&M building's waste system. Distribution power would be connected to the O&M building.

PV Equipment Installation

The construction of the solar field would proceed in blocks of arrays. Each array would contain solar panels, a power conversion station, and a step-up transformer. Within each array, materials for each row of PV modules would be staged next to that row. Within each area designated for PV equipment, the construction sequence would follow a generally consecutive order, including preparing trenches; installing underground cable; backfilling trenches; installing posts and table frames for the tracking system; installing PV modules; installing concrete footings for inverters, transformers, and substation equipment; installing inverter and transformer equipment; performing electrical terminations; and inspecting, testing, and commissioning equipment.

Electric Collection and Transmission System

The collector lines would be installed via direct burial techniques in trenches approximately 3 to 5 feet deep; approximately 10 to 15 feet are needed between cables plus 2 feet on either side for trenching and construction. Overhead collector lines, if needed, would follow the process typical for transmission lines, including foundation installation, tower installation, and conductor stringing. Collection line towers would either be embedded directly in native soil, approximately 6 to 8 feet deep, depending on soil conditions, or built on top of concrete foundations. Both methods of tower installation would require excavation, which is typically completed using power drilling equipment. A vehicle-mounted power auger or backhoe would be used to excavate the structure foundations. In rocky areas, the foundation holes would be excavated by drilling.

Project Substation (Elisabeth Substation)

Project substation construction would consist of site grading, forming and pouring the concrete equipment foundation, placing the electric and structural equipment via a crane, installing underground and overhead cabling and cable termination, ground grid trenching and termination, erecting the control building, and installing all associated systems. The substation would be constructed based on applicable electric safety codes. The substation would be separately fenced to provide increased security around the medium- and high-voltage electric equipment. The project substation area could also include a drainage collection area, a microwave tower, a control house, and one or more transformers. The substation area could be excavated to a depth of up to 10 feet. A copper grounding grid would be installed, and the foundations for transformers and metal structures would be prepared. The area would be backfilled, compacted, and leveled followed by the application of 6 inches of aggregate rock base. Equipment installation of the transformers; breakers; buswork; and metal, dead-end structures would follow. A prefabricated control house would be installed to house the electronic components required for the substation equipment.

Battery Energy Storage System

The BESS would be separately fenced and located next to the project substation. The system would either be trucked in as a series of self-contained, prefabricated metal containers or assembled in a building constructed on-site. Concrete foundations would be poured to support any permanent building constructed. Design components would include battery storage modules

placed in racks, switchboards, integrated heating, ventilation, air conditioning units, inverters, transformers, and controls. Each energy storage unit used on-site would be designed in compliance with applicable state and local requirements to minimize the risk of fire and to ensure containment in the event of such an incident.

Construction Workforce, Schedule, and Equipment

The on-site construction workforce would consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The on-site construction workforce is anticipated to be an average of 250 to 300 construction jobs with a peak not expected to exceed 600 jobs at any given time. Based on workforce practices during current construction of the White Wing Ranch Solar Facility, the construction workforce for the Elisabeth Solar Project is anticipated to seek lodging and amenities primarily in the Dateland, Yuma, and Gila Bend areas.

Construction would generally occur between 6:30 a.m. and 3:30 p.m., Monday through Friday. Additional hours could be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it could be necessary to start work earlier to avoid work during high ambient temperatures. Further, construction requirements would require some nighttime activity for installation, service or electric connection, inspection, and testing activities; these activities would be performed with temporary lighting consistent with the approved lighting plan.

Construction materials, such as concrete, pipe, PV modules, wire and cable, fuels, reinforcing steel, and small tools and consumables, would be delivered to the site by truck. Initial grading work would include the use of primarily rubber-tired tractors, tillers, and vibratory rollers. It would also include limited use of track-driven excavators, graders, dump trucks, and end loaders, in addition to the support pickups, water trucks, and cranes. Throughout the construction process, temporary aboveground fuel storage tanks could be located at the site for construction equipment fueling. As the project moves into the next stages of civil work, equipment for foundations and road construction would be brought in, including paving machines (if required), trenching machines, pumps, additional excavators for foundation drilling, tractors, and additional support vehicles.

Project-related construction traffic is forecast to generate approximately 428 morning peak-hour trips and 428 afternoon peak-hour trips, with 928 daily trips overall on a typical weekday. Traffic would include workforce trips, equipment deliveries, and construction truck trips. Prior to construction, the project proponent would prepare a Traffic and Transportation Plan and Site Access Plan for review by the BLM.

Construction Water Use

An estimated 600 acre-feet of water would be required during project construction for construction-related activities, including dust control. Water would be sourced from existing wells on private land on the neighboring White Wing Ranch Solar Facility site and delivered to the project site either by pipeline, truck, or a combination of both. Water would be stored on the project site in an aboveground water tank.

Construction Materials and Waste, including Hazardous Waste

Limited quantities of hazardous materials would be used and stored onsite, and some wastes would be generated. The types and quantities of hazardous materials and wastes are provided in the plan of development (Elisabeth Solar, LLC 2023a). All waste would be properly disposed of or recycled in accordance with the Resource Conservation and Recovery Act, local regulations, and a Hazardous Materials and Waste Management Plan. The Hazardous Materials and Waste Management Plan would describe the storage, transportation, and handling of wastes; emphasize the recycling of construction wastes, where possible; and identify the specific landfills that would receive construction wastes that cannot be recycled.

2.2.4 Project Operations and Maintenance

Periodic routine maintenance would include monthly, quarterly, semiannual, and annual inspections and service. Table 2-5 describes the frequency and type of maintenance by equipment type. During the first year of operation, the frequency of inspections would be increased to address settling and electric termination torque. No heavy equipment would be used during normal plant operation; pickup trucks would be in daily use on the site.

Table 2-5. Routine Maintenance Protocol

Equipment	Maintenance Interval	Task
PV modules	Quarterly	• Visually inspect panels for breakage and secure mounting
		• Visually inspect modules for discoloration
		• Visually inspect wiring for connections and secure mounting
		• Visually inspect mounting structures for rust and erosion around foundations
		• Manually clean localized debris from bird droppings, etc.
	Semiannually	• Clean modules, if determined necessary
Inverters/BESS	Semiannually	• Perform temperature checks on breakers and electric terminations
		• Visually inspect all major components and wiring harnesses for discoloration or damage
		• Measure all low-voltage power supply levels
		• Inspect and remove any dust and debris inside the cabinets
		• Inspect door seals
		• Check proper fan/cooling system operation
		• Inspect and clean (replace if necessary) filters
		• Check electric termination torque
		• Check the operation of all safety devices
	Annually	• Check all nuts, bolts, and connections for torque and heat discoloration
		• Calibrate the control board and sensors
		• Inspect air conditioning units for proper operation

Equipment	Maintenance Interval	Task
Substation transformers	Semiannually	• Perform temperature check
		• Inspect door seals
		• Record all gauge readings
		• Clean any dirt and debris from the low-voltage compartment
	Annually	• Inspect fans for proper operation
		• Calibrate temperature and pressure sensors
		• Pull oil sample for oil screening and dissolved gas analysis
Breakers and switchgear	Semiannually	• Inspect for discoloration of equipment and terminations
		• Inspect door seals
Overhead transmission lines	Annually	• Check open and close operation
	Annually (and after heavy rains)	• Inspect guy wires and the tower angle
		• Visually inspect supports and insulators
		• Visually inspect for discoloration at terminations
Roadways	Annually (and after heavy rains)	• Inspect access ways and roads that cross drainage paths for erosion
Vegetation	Semiannually	• Inspect for localized vegetation control to restrict height to less than 12 inches to address faster-growing vegetation (subject to modification pursuant to commercial fire insurance requirements)
		• Apply herbicides as necessary to control noxious weeds
	Every 3 years or as needed	• Mow as required to reduce vegetation height to 9 inches
O&M building	Semiannually	• Check smoke detectors
	Annually	• Check weather stripping and door and window operation
		• Check emergency lighting
		• Inspect electric service panel
Backup power	Annually	• Visually inspect the backup power system
		• Perform functional test of the backup power system
Fencing	Annually (and after heavy rains)	• Inspect fence for vandalism and erosion at the base

Weed abatement using BLM-approved herbicides or manual and mechanical means would occur in accordance with the approved Integrated Vegetation, Weed, and Pest Management Plan. Vegetation would be maintained onsite through a combination of mowing native species and approved herbicide application.

Operational Workforce, Schedule, and Equipment

The on-site operational workforce would consist of administrative and management personnel, operators, and security and maintenance personnel. The operational workforce is anticipated to include up to five full-time equivalent positions and an estimated maximum of 10 vehicle trips per day. Maintenance and administrative staff typically work 8-hour days, Monday through

Friday. During periods when nonroutine maintenance or major repairs are in progress, the maintenance force would typically work nights or evenings when the project is naturally offline.

O&M would require the use of vehicles and equipment, including trucks for panel washing and crane trucks for minor equipment maintenance. Additional maintenance equipment would include forklifts, manlifts, and chemical application equipment for weed abatement and soil stabilization. Pickup trucks would be in daily use on the site. At designated intervals, approximately every 10 to 15 years, major equipment maintenance would be performed. On occasions, large heavy-haul transport equipment, including cranes, would be brought on-site. No heavy equipment would be used during normal plant operation.

Operational Water Use

Dust management would be required during O&M activities in accordance with the approved Dust Abatement Plan. O&M of the facility are anticipated to require approximately 4 acre-feet of water per year during operations. This water would be trucked in or piped from off-site from existing wells on the adjacent White Wing Ranch Solar Facility, which is on private land.

Operational Materials and Waste, including Hazardous Waste

The primary waste generated during operations would be nonhazardous solid and liquid wastes. Limited quantities of hazardous materials would be used and stored on site; the types and quantities of hazardous materials and wastes are provided in the plan of development (Elisabeth Solar, LLC 2023a). The project proponent would prepare an Emergency Response Plan to address waste and hazardous materials management, including measures related to storage, spill response, transportation, and handling of materials and wastes. Waste management would emphasize the recycling of wastes, where feasible, and would identify the specific landfills that would receive wastes that cannot be recycled.

2.2.5 Decommissioning and Site Reclamation

The project proponent is required to provide financial assurance, typically by posting a reclamation bond as a condition of authorization to ensure the availability of funds for site decommissioning and reclamation in the event of lessee non-performance. The reclamation cost estimate would inform the amount of financial assurance and would be based on the approved Decommissioning Plan, Site Reclamation and Revegetation Plan, and Integrated Vegetation, Weed, and Pest Management Plan. These plans would be based on the BLM's latest guidance and approved by the BLM prior to issuance of the notice to proceed. The life of the project would be at least to the end of the lease in December 2052. While it is possible the lease would be extended and the project repowered, for the purposes of the EA, decommissioning has been analyzed in Chapter 3 for all resources.

Prior to termination of the lease, the project proponent would update the relevant site-specific plans, as needed. These plans would provide detail regarding the procedures for removing all project components; reuse of materials to the extent feasible; site rehabilitation and restoration activities; applicable laws, ordinances, regulations, and standards associated with the reuse, safe storage, or disposal of project materials; and a description of procedures for notifying regulatory agencies. Assuming that decommissioning requires one-third of the workforce, time, and resources as the construction of a project, decommissioning would be expected to occur over 5 to

6 months and require the support of up to 200 workers. Similarly, water use is estimated to require one-third the amount of construction, or 200 acre-feet for the duration of decommissioning activities.

2.2.6 Project Design Features, BMPs, and Environmental Protection Measures

The environmental analysis in Chapter 3 assumes that all applicable design features and BMPs from the RDEP ROD and Approved RMP Amendments (BLM 2013) are incorporated, as are other proposed environmental protection measures (EPMs) to minimize adverse effects from construction and operation of the proposed project. Applicable design features and BMPs were considered to be part of the proposed action and reduced grading alternatives in the environmental analysis of this EA to determine the potential impacts from construction, operation, and decommissioning. Revised language and additional measures will continue to be developed through this NEPA process. These measures, which are included in Appendix B, will be included in the management plans that are submitted as appendices to the final plan of development.

2.3 ALTERNATIVE 2 – REDUCED GRADING ALTERNATIVE

Under Alternative 2, the project proponent would develop an up to 250 MW solar facility and a 300 MW BESS in the western SEZ parcel, as described for the proposed action. The project components described in Section 2.2.2; the construction, O&M, and decommissioning activities described in Sections 2.2.3 through 2.2.5; and the project design features and BMPs described in Section 2.2.6 would generally be the same under Alternative 2, except where described below.

Under Alternative 2, the proposed project would be configured to avoid development within several drainages in the western side of the project site to reduce site grading and retain vegetation in these areas. Limited grading would still be required within the drainages for temporary drainage basins and some project infrastructure, such as roads and collector line trenches. However, the overall level of disturbance would be less than under the proposed action (Table 2-6). Solar arrays or other project features, such as access roads and temporary or permanent drainage basins, could be placed within portions of the BLM-recommended nondevelopment areas.

Table 2-6. Comparison of Reduced Grading Alternative and Proposed Action

Western SEZ Lease Area	Reduced Grazing Alternative (acres)	Proposed Action (acres)
Fenced project site	1,548	1,548
Avoidance areas	160	137
Total approximate acreage proposed for development	1,388	1,4111

This alternative was developed to examine the trade-offs of retaining some higher-value, vegetated habitat in exchange for allowing disturbance and structure placement within portions of the BLM-recommended nondevelopment areas where field surveys have identified a lower resource value compared with what is suggested by the desktop analysis used in the Arizona Regional Mitigation Strategy (BLM 2016a) to define the BLM-recommended nondevelopment areas.

Table 2-7 shows the temporary and permanent acres of disturbance associated with the reduced grading alternative components. Table 2-8 shows the surface disturbance by area type. Figure 2-3 shows the locations of these components; a detailed site drawing is included in Appendix A.

Table 2-7. Permanent and Temporary Disturbance – Reduced Grading Alternative

Component	Temporary Disturbance Acres[1]	Permanent Disturbance Acres[2]
PV modules and solar arrays	1,036	21[3]
Substation, battery storage, and O&M facility	—	48
Main internal access roads	—	22
Perimeter fencing	—	1
Laydown yard, temporary construction trailers, and parking	32	—
Drainage basins – permanent	—	1
Drainage basins – temporary	20	—
Interstitial areas (for example, rows between modules and areas between fence and perimeter road)	206	—
Power conversion stations	—	1
Total Temporary and Permanent Ground Disturbance	1,294	94
Total Acres Developed–Reduced Grading Action	1,388	

[1]Most of the areas beneath the PV modules and solar arrays are considered to be short-term disturbances because they would be subject to post-construction reclamation. However, a subset of these areas may be disturbed over the long term due to the periodic use of internal accessways between rows of modules for maintenance. Vegetation in these areas would be controlled to maintain access and to reduce fire risk.

Table 2-8. Site Preparation Methods – Reduced Grading Alternative

Area Type	Disturbance Level Description and Change over the Proposed Action	Approximate Acres[1]
Grading and clearing areas – foundations and infrastructure	These areas would be graded and all vegetation would be removed. These areas include roads, parking and laydown areas, equipment pads and foundation areas, the project substation, areas of steep terrain, and certain stormwater management features including the drainage basins. Approximately 94 acres would remain permanently disturbed over the life of the project (see Table 2-7). Where possible, the seed-containing topsoil layer would be segregated and set aside during construction and used to reestablish temporarily disturbed areas after construction ground disturbance is completed. Grading acreage for infrastructure would be similar to the 122 acres of grading under the proposed action.	125
Grading and clearing areas – arrays and trenching	These areas would be graded and all existing vegetation would be removed. Some vegetation may be tolerated during operation, but surface disturbance with vegetation removal would be unavoidable during construction. Where possible, the seed-containing topsoil layer would be segregated and set aside during construction and used to reestablish temporarily disturbed areas after construction ground disturbance is completed. With avoidance of the swales, approximately 50 percent fewer acres would be graded for the arrays, compared with the 775 acres under the proposed action.	390

Area Type	Disturbance Level Description and Change over the Proposed Action	Approximate Acres[1]
Site preparation and vegetation management in other project areas	These are general areas of the project where vegetation, if present, can be tolerated during operation, but the vegetation may need to be managed during construction. In barren areas, no vegetation management would be needed. Elsewhere, vegetation would be managed as determined by several factors, including compatibility with the future use of the area where the vegetation occurs, impediments to construction access, and any hazard it may pose to worker safety. For example, within the solar array, lower-growing vegetation could be left intact or cut closer to the ground, while taller vegetation that could shade or interfere with operation of the solar panels may need to be completely removed. Soil disturbance would be largely avoidable. Seed bank and some vegetation root masses would remain within the soil, but they could be compacted. Reducing the amount of grading would enable 70 percent more acres to be managed using these methods compared with the 514 acres under the proposed action.	873
Avoidance areas	These are a combination of applicant-proposed and BLM-recommended nondevelopment areas (BLM 2016a) where use of vehicles and equipment would be avoided during construction and operation; no temporary or permanent disturbance or structures would occur in these areas. Vegetation would remain in place during project operation. Avoidance areas would increase by approximately 17 percent compared with the 137 acres under the proposed action.	160
Total	–	**1,548**

[1]The acreage amounts provided are estimates only; actual amounts would vary based on multiple factors, including, but not limited to, the vegetation type and density, topography, soils, geology, panel and racking manufacturer, energy storage type, and safety considerations.

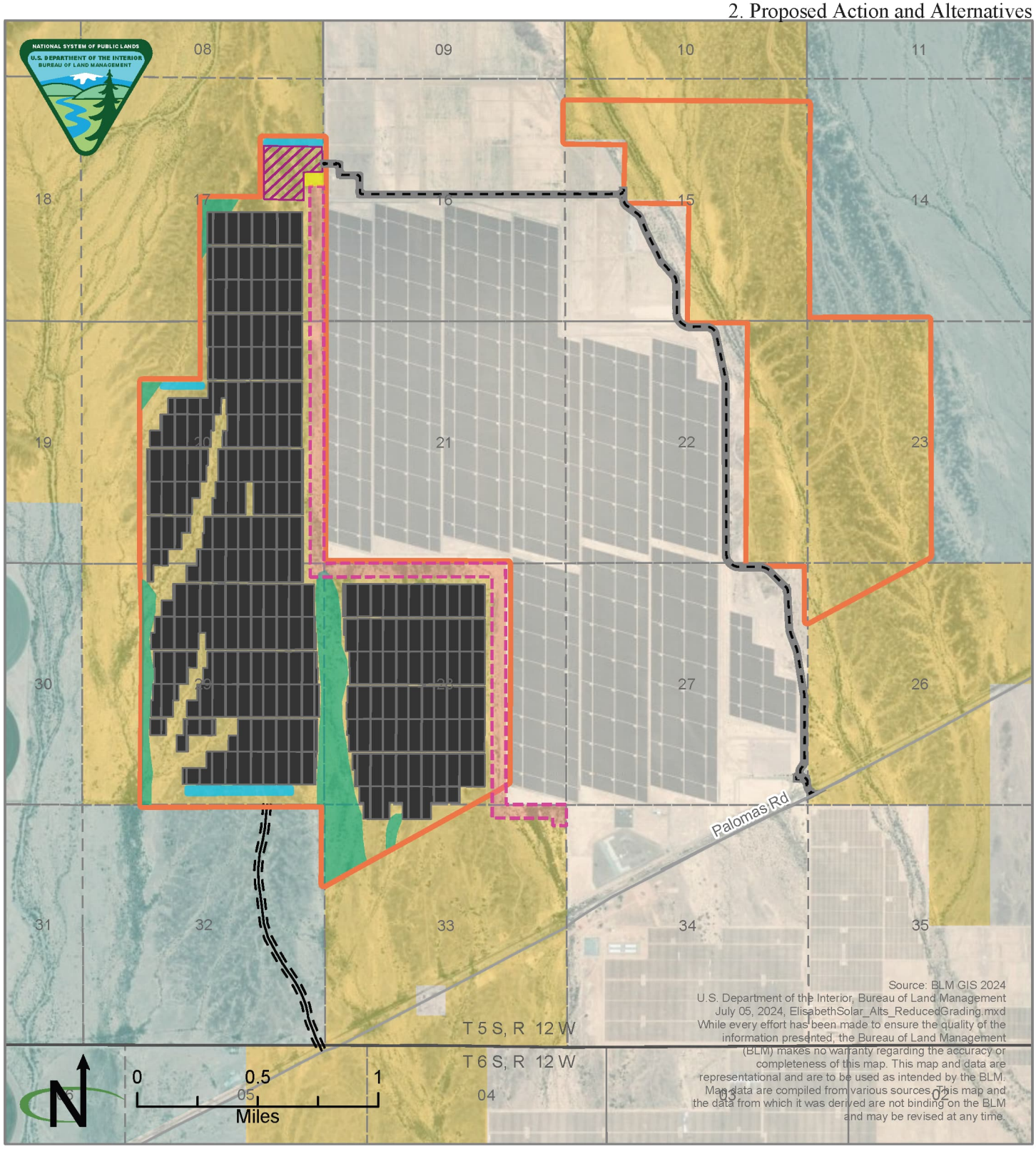

Figure 2-3
Alternative 2 – Reduced Grading Alternative

- Solar array
- Project substation
- BLM-recommended nondevelopment area
- Flexible use area (includes O&M building and BESS)
- Agua Caliente leased SEZ boundary
- Shared gen-tie line (constructed by others)
- Temporary construction access route
- Permanent access road
- Drainage basin
- Bureau of Land Management
- Private
- State

Under Alternative 2, the project proponent would implement enhanced methods to improve the retention of native vegetation, wildlife habitat, soils, seed banks, and soil crusts. In addition to the design features and BMPs described in Section 2.2.6, the project proponent would implement the following conservation strategies:

- The project proponent would analyze enhanced efforts to slow water within the avoided drainages to reduce erosivity and enhance vegetation. This would be accomplished by using stockpiled woody debris to create natural check dams within the avoided drainages. Natural check dams would be constructed from natural debris collected on-site prior to construction; these debris would be staked and secured across the channel flow path to slow the flow of water. This could also result in native plants establishing within the temporary drainage basins and drainage channel from the cut debris.
- The project proponent would test methods to encourage and facilitate the return of desert pavement to the surface of areas temporarily disturbed by construction activities. This would include a combination of testing and/or implementing the following steps:
  - In areas where grading occurs, rock mulch surface materials would be salvaged and stockpiled to be reapplied to the surface after construction.
  - Site contours would be restored in some areas to conform to natural drainage patterns prior to applying rock mulch.
  - Disturbance areas would be watered after applying rock mulch to wash fine particles from the surface, reduce wind erosion, and reestablish the rock surface that may have been present before disturbance. This would be done using water trucks already present on the site for dust suppression.
  - The project proponent would use rotating tined implements to restore damaged desert pavement or distribute rock mulch. This would help lift embedded rock materials from soil surfaces.
- Shrubs and trees that need to be removed prior to project construction would be stockpiled on-site for vertical mulching or for natural check dam construction within drainages. Stockpiling cleared vegetation would provide an opportunity for restoration specialists to apply vertical mulching methods once construction is complete. Vertical mulching is the collection and arrangement of dead and downed plants back into the landscape to promote the following benefits during restoration of desert ecosystems and habitats:
  - Vertical mulching improves soil health by increasing soil organic matter and soil cover. This process emulates the natural growing cycle of the desert and enhances plant growth and natural recruitment.
  - The dead plants act as nurse plants by protecting seed banks from wind, reducing water evaporation, and even restoring natural habitats for various desert-tolerant plants, lizards, birds, and other wildlife.
- If biocrust is found to be present on the project site, the project proponent would offer to host further research of biocrust restoration within solar facilities. For example, collaborators could create reasonable biocrust inoculum in their laboratories from the native soil salvage and support an application plan for post-construction. The site could

also benefit from a study of how biocrust restores naturally after a solar facility is implemented and how exclusionary zones could speed up recovery time.

In addition, the project proponent is proposing temporary use of an alternative route to access the project site during the construction phase. This alternative route would use an existing, unimproved, unnamed road that connects the project site to Palomas Road. Use of this alternative access route would significantly shorten the distance traveled for construction-related traffic, thereby reducing project-related dust and other emissions. Operation-related traffic access would not change under this alternative, and would be as described under the proposed action.

The alternative access route is approximately 1.1 miles long and crosses a combination of state land, administered by the ASLD, private land owned by the Union Pacific Railroad (UPR) and federal land (see Figure 2-3).

- **Arizona State Trust Land**. The existing unnamed road follows the topographic divide across approximately 1.05 miles of State Trust Land, which borders the southern boundary of the project. Use of the alternative access route will require a ROW from the ASLD. The road would be used in its present alignment with improvements only to remove ruts and improve drainage.
- **Union Pacific Railroad**. An approximately 150-foot segment of the alternative access road would cross land owned by UPR, including use of an existing, private crossing of the out-of-service Phoenix-Wellton railroad line. Use of this segment of road would be subject to a private crossing agreement between the project and UPR. No improvements are proposed for this segment of the alternative access route.
- **Federal Land**. An approximately 100-foot segment of the alternative access road would cross federal land. This segment of road, between the UPR property and the county-maintained Palomas Road, crosses a ROW issued to UPR (PHX057980). BLM approval for use of this segment of the road may be necessary. Some or all of this segment of the alternative access road may need to be paved to meet encroachment standards at the intersection of Palomas Road.

2.4 ALTERNATIVE 3 – NO ACTION ALTERNATIVE

Under the no action alternative, Elisabeth Solar, LLC would not develop the Elisabeth Solar Project, and there would be no direct, indirect, or cumulative impacts from construction, O&M, or decommissioning of the project. Because the project would be within a SEZ identified by the BLM as a preferred area for solar energy development, a future competitive leasing process that results in an executed lease and approved project within the SEZ could occur. For this reason, selection of the no action alternative would not preclude the authorization of another solar energy project or projects within the SEZ in the future. Impacts from a future project proposal would depend on factors such as the extent of the SEZ proposed for development; the technology of utility-scale solar energy proposed; the method of proposed interconnection into the local power grid; and, in terms of cumulative impacts, other reasonably foreseeable future actions in the project area at that time.

2.5 ALTERNATIVES CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

2.5.1 Alternative Project Locations or Solar Technologies

Because the proposed Elisabeth Solar Project would be within an approved SEZ for which a lease was granted to Elisabeth Solar, LLC, siting the proposed project in a different location or using an alternative solar technology would not meet the purpose and need to assess the impacts of the project proposed by the leaseholder. Further, the BLM previously evaluated a full range of alternatives for the Agua Caliente SEZ during the RDEP process that designated the SEZ (BLM 2013). As part of the RDEP, six alternatives were evaluated, including an alternative that would have disallowed a SEZ and alternatives that would have established a SEZ encompassing over 20,000 acres.

Through an analysis tiering off the evaluation of multiple solar energy technologies in the 2012 Solar PEIS and consideration of the effects of renewable energy development on various resources, the BLM ultimately chose an alternative that established the 2,550-acre Agua Caliente SEZ. The alternatives analysis contained in the RDEP Final EIS (BLM 2012a) is hereby incorporated by reference in this EA. For these reasons, no alternative project locations or technologies were considered for the Elisabeth Solar Project, and this alternative was dismissed from detailed analysis.

2.5.2 Development of a 350 MW Photovoltaic Solar Facility

As described in Section 1.1, the area leased by Elisabeth Solar, LLC for the Elisabeth Solar Project includes approximately 2,550 acres in two noncontiguous parcels. The BLM's Regional Mitigation Strategy for the Arizona Solar Energy Zones (BLM 2016a) recommended that approximately 615 acres of the Agua Caliente SEZ be treated as nondevelopment areas to avoid impacts on floodplains, culturally sensitive areas, and lands with wilderness characteristics.

Upon executing the lease, Elisabeth Solar, LLC proposed a plan of development for a 350 MW PV solar energy generating facility and a 300 MW BESS on approximately 1,866 acres of the 2,550-acre lease area (Figure 2-4). This proposed project layout maximized development of the solar arrays in the two noncontiguous SEZ parcels while avoiding development in the 615-acre nondevelopment area recommended by the BLM.

During scoping of the initial project design, stakeholders, including the State Historic Preservation Office (SHPO) and sovereign tribal nations, identified numerous and severe concerns pertaining to likely impacts on resources in the eastern SEZ parcel. Specifically, tribal representatives expressed concerns that the recommended 615-acre nondevelopment area within the eastern SEZ parcel was insufficient to adequately avoid impacts on culturally sensitive resources. Stakeholders also shared concerns that development of the eastern SEZ parcel would impede access to recreational opportunities and wildlife management activities on lands north of the SEZ. In consideration of these concerns, Elisabeth Solar, LLC revised its plan of development to confine the project entirely within the western parcel of the SEZ. The initial proposed action is dismissed from detailed analysis because it is no longer supported by Elisabeth Solar, LLC and would likely result in unmitigable impacts on cultural and environmental resources in the eastern SEZ parcel.

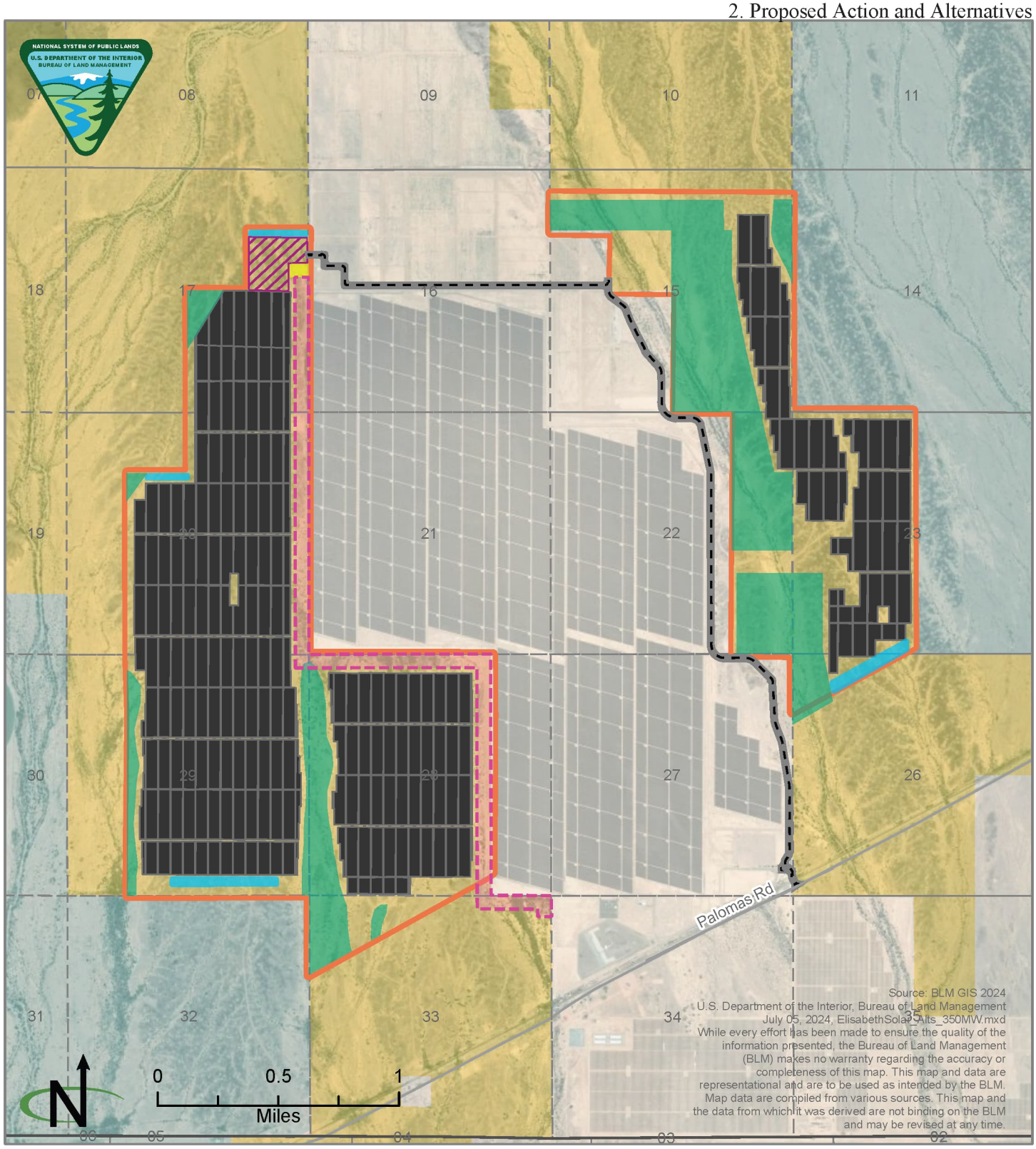

Figure 2-4
350 MW Alternative (Eliminated from Detailed Analysis)

- Solar array
- Project substation
- BLM-recommended nondevelopment area
- Permanent access road
- Agua Caliente leased SEZ boundary
- Shared gen-tie line (constructed by others)
- Flexible use area (includes O&M building and BESS)
- Drainage basin
- Bureau of Land Management
- Private
- State

Chapter 3. Affected Environment and Environmental Consequences

3.1 INTRODUCTION

This chapter describes the existing or baseline conditions relevant to each issue identified during scoping, and provides an analysis of the direct, indirect, and cumulative effects for each issue. These effects are analyzed for the proposed action, a reduced grading alternative, and the no action alternative.

3.1.1 Supplemental Authorities and Resource Areas Considered

The issues identified during internal and external scoping and carried forward for analysis include those elements of the proposed action or reduced grading alternative that would have the potential for environmental effects the BLM determined should be analyzed in detail in this EA. Table 3-1, below, provides a summary of these issues and the indicators used to assess the potential effect; these issues are analyzed in detail in Section 3.3. The issues the BLM identified, considered, and then determined should be analyzed in brief (AIB) are described in Section 3.2. Resources not present in the project area or present but not affected—and therefore dismissed from detailed analysis—are described in Appendix C.

The direct and indirect effects analysis area for each resource is the project site, unless otherwise indicated in the resource section. The temporal analysis is the life of the proposed project, estimated to be at least to the end of the lease in December 2052. A conservative timeframe of 35 years has been used in some analyses to account for post-decommissioning reclamation. Short-term impacts are considered to last 3 years or less; long-term impacts are considered to last greater than 3 years.

Because Palomas Road and the portion of Palomas Harquahala Road that would be utilized are paved roads that require no improvements, use of these roads would have no impact on the natural environment and are not discussed further except as it pertains to potential traffic impacts discussed in Section 3.3.10.

Table 3-1. Issues Analyzed in Detail

Resource	Issue Statement	Indicators
Wildlife – Special Status Species	How would the construction, operation, and decommissioning of the solar facility impact special status species and their habitat?	• Presence of special status species and their habitat • Extent of vegetation removal that would reduce habitat availability for special status species

Resource	Issue Statement	Indicators
Wildlife – Migratory Birds	How would the construction, operation, and decommissioning of the solar facility impact migratory bird species and their habitat?	• Extent of vegetation removal that would reduce habitat availability for migratory birds • Surface disturbance that would destroy or impede nests or burrows
Soil Resources	How would surface disturbance from construction, operation, and decommissioning of the project contribute to soil compaction and erosion?	• Acres of surface disturbance
Surface Water Resources	How would the proposed project affect surface water flow patterns, floodplains, and water quality in the project area?	• Miles of ephemeral drainages • Acres of surface disturbance within Federal Emergency Management Agency floodplains and ephemeral washes
Cultural Resources	How would surface disturbance from construction and operation of the project affect known and undiscovered cultural resources?	• Number of resources affected • Acres of surface disturbance • Visual or auditory changes in proximity to resources
Native American Concerns	How would construction and operation of the project affect tribal cultural properties or sensitive tribal resources?	• Number of resources affected • Acres of surface disturbance • Visual or auditory changes or loss of biological resources in the cultural landscape
Paleontological Resources	How would surface disturbance impact paleontological resources in the project area?	• Acres of surface disturbance on land classified as Potential Fossil Yield Classification (PFYC) 3 or PFYC U (unknown)
Recreation, Access, and Travel Management	How would the solar facility impact recreational opportunities in the project area and access to the Yuma East Special Recreation Management Area? How would development of the solar facility impact travel management routes in the project area?	• Changes in access to recreational opportunities • Viewshed of project site from recreational sites near the project area • Presence of nonmotorized and motorized trails
Visual Resources	What short-term and long-term visual changes to the landscape would result from a solar facility?	• VRM contrast ratings
Traffic and Transportation	How would construction, operation, and decommissioning of the project impact local traffic patterns and travel management?	• Changes in the level of service (LOS) on area roadways • Decreases in access to or availability of BLM-designated routes

Resource	Issue Statement	Indicators
Socioeconomics	How would the project impact local employment, the economy, services, and quality of life for communities?	• Number and type of jobs related to project construction and activities • Predicted population growth related to project construction and activities • Presence and extent of essential services (for example, housing, lodging, and food) in nearby communities
Environmental Justice	What are the potential effects from construction, operation, and decommissioning of the project on environmental justice communities?	• Disproportionately adverse environmental impacts on environmental justice communities that contain a meaningfully greater percentage of low-income and minority populations relative to the state average, and tribal populations (if present)
Public Health and Safety	How would construction, operation, and decommissioning of the solar facility impact public health and safety?	• Distance of solar facility to communities • Presence of hazardous materials on-site • Potential for fire (for example, the BESS or equipment ignition)

3.1.2 Cumulative Effects

As defined in 40 CFR 1508.1, a cumulative effect is an impact on the environment that results from the incremental effect of the action when combined with the effects of other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such actions. Table 3-2 shows past, present, and reasonably foreseeable actions identified by the BLM for the cumulative effects analysis. These projects are ongoing or reasonably foreseeable and could, along with the proposed project, contribute to cumulative effects based on their location along a similar road network corridor as the proposed project. This is because agricultural uses and other existing and proposed solar projects are centered along the I-8/Palomas Road corridor due to the rural and undeveloped nature of the project area. These projects were identified through review of the BLM's NEPA Register and Mineral & Lands Record System, Yuma County's capital improvement project website, ASLD's interactive webmap for ROWs, grazing leases, and minerals leases, and ASLD upcoming auctions.[2] Figure 3-1 shows the location of the cumulative actions presented in Table 3-2.

[2] https://eplanning.blm.gov/eplanning-ui/home; https://mlrs.blm.gov/s/; https://www.yumacountyaz.gov/government/development-services/divisions/engineering/current-cip-projects-update; http://gis.azland.gov/webapps/parcel/; https://land.az.gov/reports-notices

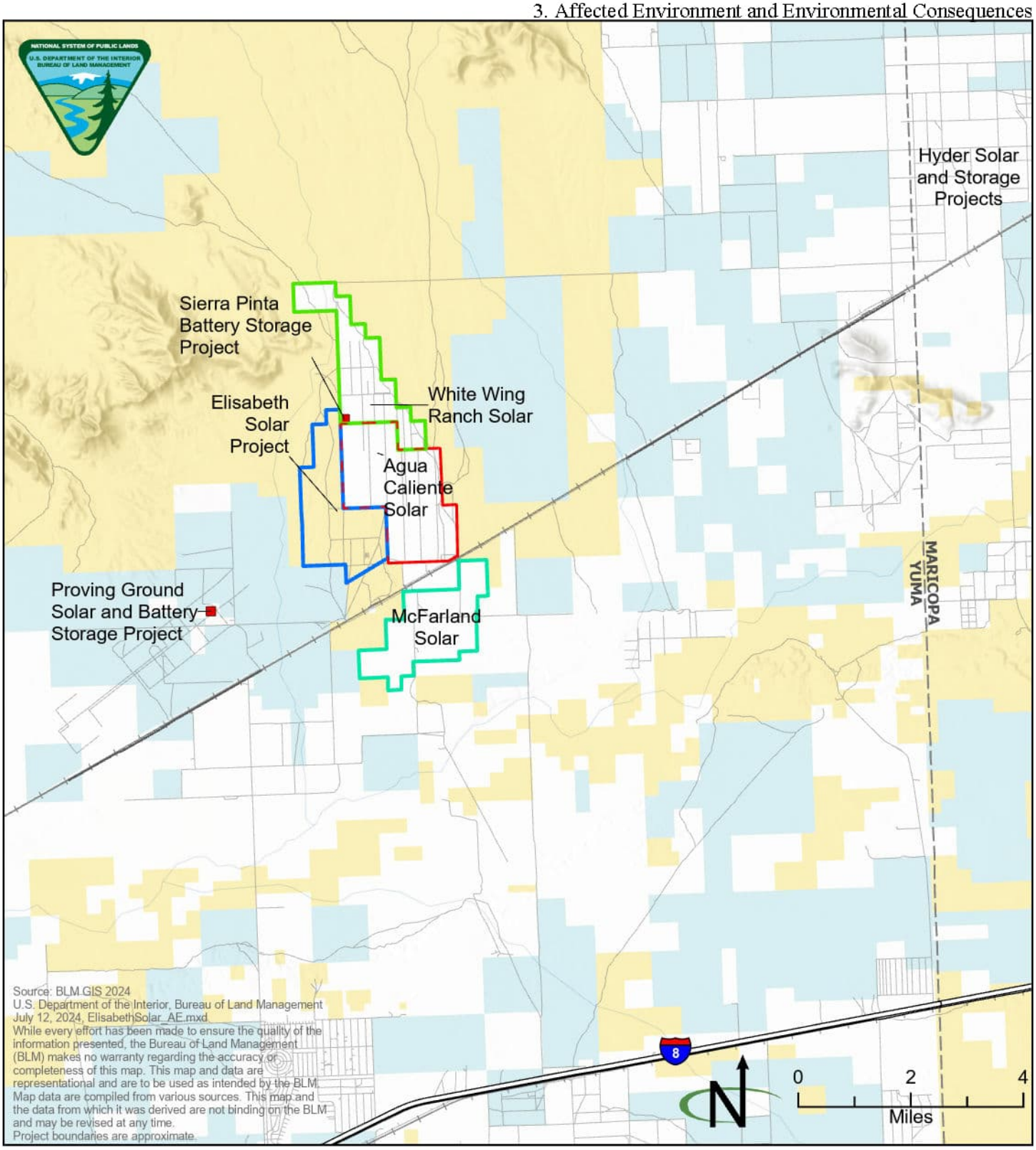

Figure 3-1
Cumulative Projects

- Reasonably foreseeable future action
- Elisabeth Solar Project
- Aqua Caliente Solar Project
- McFarland Solar
- Bureau of Land Management
- Private
- State

Table 3-2. Past, Present, and Reasonably Foreseeable Future Actions

Project Name	Location	Land Ownership	Status	Acres	Project Description
Agua Caliente Solar Project	Adjacent to the Elisabeth Solar Project to the east	Agua Caliente, LLC	Operational	2,400	290 MW PV solar project on private lands
White Wing Ranch Solar and Battery Storage Project and Gen-tie	Adjacent to the Elisabeth Solar Project to the northeast	Renewal, LLC	Estimated completion 2024	1,448	210 MW PV solar and battery storage project on private lands; gen-tie line on private and BLM-administered land
McFarland Solar and Battery Storage Project	Approximately 1 mile southeast of the Elisabeth Solar Project	Orion Renewable Energy Group	Estimated completion 2025	1,760	500 MW PV solar and battery storage project on private lands
Sierra Pinta Battery Storage Project	Approximately 1 mile east of the Elisabeth Solar Project	Renewal, LLC	Estimated completion 2025	8.5	112.5 MW battery storage project on private lands
Agricultural operations	Adjacent to the Elisabeth Solar Project to the west, southwest, and east (within 9 miles)	Private and ASLD lands	Ongoing	—	Irrigated agricultural operations
Proving Ground Solar and Battery Storage Project	Solar facility approximately 3.5 miles southwest and gen-tie and substation south of the Elisabeth Solar Project	APS	Estimated construction 2024	2,050	250 MW PV solar and battery storage project on private land, a 6-mile gen-tie line on BLM-administered and ASLD land, and a substation on BLM-administered land
Hyder I and II Solar Park	Approximately 9 miles east of the Elisabeth Solar Project in Hyder	APS	Operational	400	Approximately 30 MW of PV solar on private land
Hyder Solar and Storage Project	Approximately 9 miles east of the Elisabeth Solar Project in Hyder	APS	Estimated construction starting in 2025	3,700	Approximately 800 MW PV solar and battery storage on private and ASLD lands

Project Name	Location	Land Ownership	Status	Acres	Project Description
Yuma Proving Ground	The Yuma Proving Ground is 7 miles east of the Elisabeth Solar Project	US Army and BLM	Ongoing operations; land withdrawal pending	829,565 acres	The KOFA Range portion of the proving ground is the nearest range to the project site; it is used for munitions testing as well as treatment of unused munitions

In addition to the actions identified in Table 3-2, other past and present uses of the project site and the larger surrounding area have contributed to current resource conditions. The Agua Caliente SEZ is located on the eastern boundary of the historic Camp Horn, part of a 12-million-acre military training area used during World War II. Surveys of the project site and adjacent lands have shown that the project area was used for munitions training (see also Section 3.3.12; Elisabeth Solar, LLC 2023b). Historical satellite imagery since the 1980s as viewed through Google Earth show that lands immediately east and west of the project site have been used for agricultural purposes for at least the last 40 years, with irrigation occurring in varying areas over time. Current land uses contributing to resource conditions include off-highway vehicle (OHV) use, dispersed recreation, and linear ROW developments, including roads, pipelines, and transmission lines, on BLM-administered and ASLD lands. Climate change is an ongoing trend that has and will continue to affect resources in the project area.

3.2 ISSUES ANALYZED IN BRIEF

Following internal and external scoping, the following issues were identified, considered, and analyzed in brief. Each issue outlined below includes a concise discussion of the affected environment for that issue; the potential direct, indirect, and cumulative effects from the proposed action, reduced grading alternative, and no action alternative; and the measures being implemented to avoid or minimize the effect.

3.2.1 AIB-1 Wildlife and Wildlife Connectivity

How would construction, operation, and decommissioning of the project affect general wildlife and wildlife connectivity?

The RDEP Final EIS (BLM 2012b, Section 3.6.2), the Arizona Regional Mitigation Strategy (BLM 2016a), and the Elisabeth Solar Project Biological Evaluation (WestLand 2024a) characterized wildlife and wildlife habitat in the analysis area, which includes the project site and a 1,000-foot buffer around the project site to capture the onsite and offsite effects of dust and noise disturbance during construction, operation, and decommissioning (WestLand 2024a). Wildlife with the potential to occur includes a variety of mammals, reptiles, and birds native to the Sonoran Basin and Range ecoregion (see WestLand 2024a, Section 7.2). Because there are no perennial aquatic systems on the project site, aquatic species are not present (BLM 2012b).

The BLM uses terrestrial intactness developed as part of its rapid ecoregional assessments (BLM 2012c) as a general indicator of habitat quality. Intactness estimates naturalness across the landscape and is assessed by gauging the degree of human influence and density of development. An assessment of terrestrial intactness in the Agua Caliente SEZ indicated that most of the project site has a very low terrestrial intactness (BLM 2016a, Section 2.1.4). A finer-scale analysis of intactness performed as part of the biological evaluation (WestLand 2024a, Section 6.1) indicated that the current intactness is considerably lower than the intactness reported in the Arizona Regional Mitigation Strategy (BLM 2016a). This analysis indicated that the current intactness of the project site is less than the predicted intactness modeled by the BLM for buildout of the full 2,550-acre SEZ. In addition, the RDEP Final EIS characterized lands within the SEZ as having the lowest conservation potential based on data from AGFD (BLM 2012b, Table 4-2).

Proposed Action. Development of the proposed project would fence up to 1,548 acres and clear and grade up to 900 acres under the proposed action. The remaining 118 acres of the western SEZ parcel may also have reduced function for wildlife to the extent that surrounding fencing affects use of this area. This development would reduce habitat availability for wildlife in the short and long terms. Because most of the project site has no vegetation or low vegetation cover (see Table 2-3) and very low terrestrial intactness, this would not represent a loss of high-quality habitat for general wildlife species. Wildlife connectivity in the area would be affected by the development of a fenced solar facility; however, effects on wildlife connectivity were considered during siting of the SEZ and minimized by designating the smallest SEZ boundary, siting the SEZ adjacent to the existing Agua Caliente Solar facility, and avoiding Hoodoo Wash to the west (BLM 2012b). The project proponent would further minimize impacts by avoiding development in the eastern SEZ parcel and installing wildlife-friendly fencing to facilitate movement through the project site.

Other potential impacts on wildlife during construction could include mortality by crushing or collision or site avoidance due to the presence of construction workers, equipment, and noise. Impacts from operation and decommissioning activities would result in similar potential effects but at a much lower scale. While decommissioning would restore wildlife movement to pre-project conditions, current vegetation conditions indicate that wildlife habitat quality would likely remain low post-decommissioning; these conditions would likely be exacerbated by climate trends toward hotter and drier conditions.

Reduced Grading Alternative. Development of the project under the reduced grading alternative would fence up to 1,548 acres and clear and grade up to 515 acres. This would reduce habitat availability for wildlife to a lesser degree than under the proposed action. As described for the proposed action, the 118 acres of the western SEZ parcel may also have reduced function for wildlife. Under this alternative the project proponent would avoid most development in the three drainages on the western side of the project site. By avoiding development within these areas, areas of higher vegetation density would be retained for use by wildlife. The conservation strategies proposed in Section 2.3 include efforts to slow water within the avoided drainages to reduce erosivity and enhance vegetation, which could benefit wildlife through improved habitat conditions in these areas. Using the temporary construction access route across ASLD lands would have no new impacts on wildlife habitat or connectivity. This route is already publicly

used and is generally devoid of any vegetation that would serve as wildlife habitat. Other impacts would be as described for the proposed action.

Impacts on general wildlife under the proposed action and reduced grading alternative would be directly or indirectly minimized by applying the design features, BMPs, and other measures identified in the biological evaluation (WestLand 2024a) and included in Appendix B, including measures that minimize artificial lighting, limit vehicle travel speeds, and address reclamation and revegetation, including through implementation of the Site Reclamation and Revegetation Plan and the Integrated Weed, Vegetation, and Pest Management Plan.

No Action Alternative. Under the no action alternative, impacts on wildlife would continue from recreational uses of the project site, primarily through potential disturbance of vegetation that may provide habitat. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available and prioritized for future solar development under the no action alternative. Potential future solar development would have impacts on wildlife habitat and connectivity similar to those described above, though the magnitude of the effect relative to the proposed action and reduced grading alternative is not known. Because the proposed project avoids the eastern SEZ and uses an existing gen-tie line, it is possible that a future proposal may have impacts that are greater than those described here; however, future projects would be subject to the same design features and BMPs as described for the proposed action and reduced grading alternative. Impacts from development of the entire SEZ were described in the RDEP Final EIS (BLM 2012b, Section 4.2.6) and the Arizona Regional Mitigation Strategy (BLM 2016a).

Cumulative Effects. The proposed action and reduced grading alternative in combination with the other projects described in Table 3-2 have or would continue to remove or disturb habitat in the vicinity of the proposed project. While many of these projects are on already disturbed lands or lands with low-quality habitat for wildlife, the cumulative loss of habitat would reduce breeding, foraging, and sheltering habitat in the project vicinity and contribute to habitat fragmentation. The proposed action and reduced grading alternative would contribute to these effects over the life of the project until the project is decommissioned and the site is reclaimed or restored. In addition, solar projects shown in Table 3-2 all require fencing, contributing to cumulative effects on wildlife connectivity. Avoidance, minimization, and mitigation measures applied at the individual project level, including requirements for wildlife-friendly fencing, would help to reduce this cumulative effect, but habitat loss and fencing from the action alternatives in addition to past, present, and reasonably foreseeable future actions would nevertheless have adverse impacts on general wildlife in the area.

3.2.2 AIB-2 Vegetation

How would surface disturbance from construction, operation, and decommissioning affect vegetation?

The proposed project would be in the Sonoran Basin and Range ecoregion; vegetation in this ecoregion is characterized by large areas of paloverde-cactus shrub and giant saguaro cactus (BLM 2012b). An assessment of vegetation cover conditions at the project site showed that approximately 88 percent of the project site is barren, 11 percent has low vegetation cover, and less than 1 percent has medium vegetation cover (WestLand 2024a, Section 4.3.1). Table 2-3 in

Chapter 2 defines these cover conditions. The primary vegetation types within the vegetated areas of the project site are Sonora-Mojave creosotebush-white bursage desert scrub (95 percent), invasive southwest riparian woodland and shrubland (4 percent), and Sonoran paloverde-mixed cacti desert scrub (less than 1 percent; WestLand 2024a, Section 6.3.2).

There are no listed, candidate, or proposed special status plant species and no BLM sensitive plant species with the potential to occur within 5 miles of the project site (WestLand 2024a); thus, special status plants have been dismissed from detailed analysis (see Appendix C). The following species of Arizona Native Plant Law salvage restricted plants were observed on or near the project site: Arizona barrel cactus (*Ferocactus wislizeni*) saguaro (*Carnegia gigantea*), silver cholla (*Cylindropuntia echinocarpa*), pencil cholla (*Cylindropuntia ramosissima*), clustered barrel cactus (*Echinocactus polycephalus var. polycephalus*), California barrel cactus (*Ferocactus cylindraceus var. cylindraceus),* Night blooming cereus (*Peniocereus greggii*) and ocotillo (*Fouquieria splendens*; WestLand 2024a).

Proposed Action. Under the proposed action, site grading and clearing would remove the topsoil layer and any vegetation present on approximately 900 acres; more limited site preparation methods that leave the topsoil in place and manage vegetation would occur on approximately 514 acres (see Table 2-4). Surface disturbance increases the potential for erosion, soil compaction, and the introduction of invasive species and noxious weeds (see Section 3.2.3, AIB-3 Invasive Plant Species and Noxious Weeds); all of these affect the recovery of native vegetation. As described above, most of the project site has no vegetation or low vegetation cover (see Table 2-3) and very low terrestrial intactness (see Section 3.2.1, AIB-1 Wildlife and Wildlife Connectivity). Therefore, these impacts would be limited.

While development of the project site would not represent a loss of high-quality vegetation resources in the project area, impacts on vegetation have been minimized by avoiding the eastern SEZ parcel, avoiding the BLM-recommended nondevelopment areas, limiting project site access to existing routes, and applying the design features, BMPs, and other measures identified in Appendix B. These include, but are not limited to, implementing an Integrated Vegetation, Weed, and Pest Management Plan to minimize or avoid the spread of noxious weeds and invasive plant species, using the seed-containing topsoil layer to reestablish temporarily disturbed areas where possible, and reclaiming disturbed areas per the Site Reclamation and Revegetation Plan. In addition, per BLM recommendation, the project proponent would ensure all salvage restricted plants identified under the Arizona Native Plant Law would be made available for salvage in a manner consistent with the law and in coordination with the Arizona Department of Agriculture (AZDA), as applicable, if they cannot be avoided during construction.

Over the life of the project, the project proponent would monitor for invasive plants and noxious weeds and comply with annual reporting requirements. Management of noxious weeds and invasive plants would be performed both manually and by use of approved herbicides – each effort would be evaluated on a case-by-case basis and the project would use the most effective means of control that is available and approved. The project proponent would follow the requirements laid out by current or future approved vegetation treatment plans (BLM 2007, 2016b, 2018, 2023a) to avoid adverse impacts on native vegetation. Decommissioning would have similar short-term effects in areas disturbed for removal of solar field infrastructure as

described for construction. After decommissioning, vegetated portions of the project site would be reclaimed as described in the Site Reclamation and Revegetation Plan. It is likely that some ecological function of disturbed areas may be lost over the long term even with reclamation.

Reduced Grading Alternative. Under the reduced grading alternative, site grading and clearing would remove the topsoil layer and any vegetation present on approximately 515 acres; more limited site preparation methods that leave the topsoil in place and manage vegetation would occur on approximately 873 acres (see Table 2-8). Impacts on vegetation would be similar to but lesser in extent than those described for the proposed action. The project proponent would avoid development within three drainages on the western side of the project site in exchange for performing limited grading in some low-resource-quality portions of the BLM-recommended nondevelopment areas. Because these avoided drainages contain denser vegetation than other areas of the project site, avoidance of these areas would retain vegetation to a higher degree than under the proposed action.

In addition, the project proponent would seek to enhance vegetation conditions and improve soil heath using the measures described in Section 2.3. These would potentially improve vegetation conditions more than under current conditions. These measures would also inform the effectiveness of techniques used to reclaim the project site following decommissioning. Impacts related to construction, operation, and decommissioning in disturbed areas would otherwise be as described under the proposed action and the same measures to minimize effects would be applied. No impacts on vegetation from use of the temporary construction access road, primarily on ASLD lands are anticipated due to the lack of vegetation resources along this route. If any salvage restricted plants identified under the Arizona Native Plant Law were discovered and needed to be removed along the access route, the project proponent would comply with the requirements of the Arizona Native Plant Law in coordination with the AZDA.

No Action Alternative. Under the no action alternative, there would be no removal of vegetation from project construction, operation, or decommissioning because these activities would not occur. Impacts on vegetation would continue from recreational uses of the project site. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on vegetation as those described under the proposed action, although impacts could occur to a greater degree if the entire SEZ were to undergo development. The potential impacts from full SEZ development were described in the RDEP Final EIS (BLM 2012b, Section 4.2.21) and the Arizona Regional Mitigation Strategy (BLM 2016a). Future projects would be subject to the same design features and BMPs as described for the proposed action to minimize impacts on vegetation.

Cumulative Effects. When added to the effects of past, present, and reasonably foreseeable future actions, the proposed action and reduced grading alternative would contribute to cumulative ground disturbance and vegetation removal. However, because native vegetation on the project site and surrounding lands is mostly disturbed with barren to low vegetation cover, project activities are not expected to significantly contribute to cumulative effects on vegetation. Past, present, and reasonably foreseeable future actions that would contribute to cumulative

impacts on vegetation communities include solar facilities that are operational and under construction, as described in Table 3-2.

3.2.3 AIB-3 Invasive Plant Species and Noxious Weeds

How would the project contribute to the potential introduction, spread, or proliferation of invasive plant species and noxious weeds?

Noxious weeds are species whose introduction is likely to cause economic or environmental harm or harm to human health, while invasive species are plants that are not native to the location in which they are growing but are not designated as noxious by a state or federal agency. Two AZDA noxious weeds, saltcedar (*Tamarix ramosissima*) and Johnsongrass (*Sorghum halepense*), and two invasive plant species, African sumac (*Searsia lancea*) and Bermuda grass (*Cynodon dactylon*), have been observed at the project site (WestLand 2024a). Adjacent developed and disturbed lands likely contribute to the establishment and spread of invasive plants and noxious weeds in the project area through natural processes (wind and surface water runoff) and human activities.

Proposed Action. Invasive plants and noxious weeds invade disturbed soils, outcompete native vegetation, and contribute to the degradation of soil health by overutilizing soil nutrients. Development of the proposed project would grade and clear up to 900 acres (see Table 2-4). This would increase the potential for invasive plants and noxious weeds to become established on the project site more than under current conditions. Measures outlined in the Integrated Vegetation, Weed, and Pest Management Plan would be applied to minimize or avoid the establishment of noxious weeds and invasive plant species during construction, including cleaning vehicles to avoid the introduction of invasive plants and noxious weeds, using certified weed-free seed and mulching, and educating personnel on invasive plant and noxious weed species, methods of spread, and treatments. Reclamation of disturbed areas would occur as described in the Site Reclamation and Revegetation Plan to reduce the potential for invasive plant and noxious weed establishment and spread.

Over the life of the project, the project proponent would monitor for invasive plants and noxious weeds and comply with annual reporting requirements. Management of noxious weeds and invasive plants would be performed both manually and by use of approved herbicides–each effort would be evaluated on a case-by-case basis and the project would use the most effective means of control that is available and approved The project proponent would follow the requirements laid out by current or future approved vegetation treatment plans (BLM 2007, 2016b, 2023a). Similar impacts and measures to control invasive plants and noxious weeds would occur during decommissioning and site reclamation.

Reduced Grading Alternative. Under the reduced grading alternative, the project proponent would avoid development within three drainages in the western side of the project area, thereby removing the potential for invasive plant and noxious weed establishment in these areas. Approximately 515 acres would be cleared and graded compared with 900 acres under the proposed action. Measures to control, monitor for, and treat invasive plant species and noxious weeds during construction, operation, and decommissioning would be the same as described for the proposed action.

No Action Alternative. Under the no action alternative, ongoing recreational uses of the project site would continue to result in localized ground disturbance that could contribute to invasive plant or noxious weed establishment and spread. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts related to invasive plant species and noxious weeds as described under the proposed action; however, impacts could occur to a greater degree if the entire SEZ were to undergo development. Any future project would be subject to the same design features and BMPs as described for the proposed action.

Cumulative Effects. As described in Table 3-2, past, present, and reasonably foreseeable future actions represent a loss of Sonora-Mojave creosotebush-white bursage desert scrub habitat in the project area. These actions have contributed to cumulative impacts by disturbing soils and creating conditions that could increase invasive plant species and noxious weeds. The proposed action or reduced grading alternative would incrementally contribute to these effects. When minimization efforts are taken into account, the proposed action or reduced grading alternative are not anticipated to contribute significantly to cumulative effects.

3.2.4 AIB-4 Air Quality

How would construction, operation and maintenance, and decommissioning activities affect air quality?

The RDEP Final EIS (BLM 2012b, Section 3.2.2), the Arizona Regional Mitigation Strategy (BLM 2016a), and the Elisabeth Solar Project Air Quality and Climate Change Effects Report (Elisabeth Solar, LLC 2023c) characterized air quality in the project area. The project area is in attainment or unclassified for all of the national ambient air quality standards (EPA 2024). Because the project site is in an attainment area, the Clean Air Act conformity rule would not apply. There are no air monitoring stations near the project site. Air monitoring stations in the region (60 to 90 miles from the project site) are described in the Elisabeth Solar Project Air Quality and Climate Change Report (Elisabeth Solar, LLC 2023c, Table 2) and show concentrations below the national ambient air quality standards for all regulated pollutants. The project is over 62 miles (100 kilometers) from any Class I area[3] for which special protections are afforded under the Clean Air Act and therefore would not affect these areas.

Proposed Action. Air quality impacts from the construction, operation, and decommissioning of solar facilities were characterized in the RDEP Final EIS (BLM 2012b, Section 4.2.1). Construction of the proposed project would have short-term impacts on air quality through the generation of particulate matter (fugitive dust), carbon monoxide, volatile organic compound, nitrogen oxide, and sulfur dioxide emissions. Surface disturbance of the 900 acres subject to clearing and grading during site preparation would result in periodic high levels of particulate matter emissions, with the potential to temporarily exceed air quality standards at the fence line (Elisabeth Solar, LLC 2023c, Section 5.1). The nearest residence is over 2 miles from the project site and therefore would not be affected by particulate matter concentrations in exceedance of the standards. The potential for windborne particulate emissions would continue until soils in

[3] Class I areas include national wilderness areas, national parks, and national memorial parks of specific sizes that are granted special air quality protections under the federal Clean Air Act.

disturbance areas are stabilized through implementation of the Site Reclamation and Revegetation Plan after construction is complete. Operation and maintenance would generate much lower levels of emissions, primarily from vehicle travel to and from the site and travel on unpaved access roads within the project site. Decommissioning would have similar short-term effects as construction, with emissions stabilized once the site is reclaimed.

Criteria and hazardous air pollutant emissions for the Elisabeth Solar Project were estimated in the Air Quality and Climate Change Effects Report (Elisabeth Solar, LLC 2023c; Tables 6 through 9 for construction and Table 10 for operation), and a health risk screening showed that these emissions would result in no exceedances of health-based risk thresholds (Elisabeth Solar, LLC 2023c; Table 11). Impacts on air quality under the proposed action would be minimized through avoidance of development in the eastern SEZ parcel and through application of the design features and BMPs identified in Appendix B, including implementation of a Dust Abatement Plan to minimize fugitive dust emissions during construction and operation.

Reduced Grading Alternative. Construction emissions under the reduced grading alternative would be less than under the proposed action. Because the project proponent would avoid development in three drainages on the western side of the project site, site grading and clearing and generation of associated particulate matter emissions would be limited to 515 acres of the project site. In addition, use of a temporary construction access route across ASLD lands would provide more direct access to the project site, reducing the vehicle miles traveled compared with the proposed action. Reducing vehicle miles traveled reduces fugitive dust emissions from disturbance along roadways and vehicle exhaust-related emissions. Emissions during operation and decommissioning and measures to minimize effects would be as described under the proposed action.

No Action Alternative. Under the no action alternative, ongoing recreational uses of the project site would continue to result in localized ground disturbance and associated impacts on air quality from fugitive dust emissions. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available and prioritized for future solar development under the no action alternative. Potential future solar development would have impacts on air quality similar to those described above, though the magnitude of the effect relative to the proposed action and reduced grading alternative is not known. Because the proposed project would avoid the eastern SEZ and use an existing gen-tie line, it is possible that a future proposal could have impacts that are greater than those described for the proposed action or reduced grading alternative, though future projects would be subject to the same required design features and BMPs.

Cumulative Effects. The proposed project in combination with other projects described in Table 3-2 would contribute incrementally to cumulative impacts on air quality, particularly if projects have overlapping construction periods. While some of the projects have or would occur on already disturbed lands, the cumulative acres of disturbance would contribute to increased dust formation in the project area. Due to the temporary nature of construction, the low operational emissions of solar facilities, the distance from any Class I area, and implementation of design features and BMPs, no cumulatively adverse impacts on air quality are anticipated from the proposed action or reduced grading alternative in combination with other past, present, and reasonably foreseeable future actions.

3.2.5 AIB-5 Greenhouse Gases and Climate Change

How would construction, operation and maintenance, and decommissioning activities contribute to climate change and climate change effects on resources?

The Intergovernmental Panel on Climate Change (IPCC) defines climate change as a long-term change in the state of the climate, identified by changes in its properties such as temperature and precipitation (IPCC 2013). Temperatures in Arizona have risen about 2.5°F since the beginning of the 20th century, and recent upward trends in average temperatures and extreme heat are projected to continue. Annual precipitation has decreased over the last century, with Arizona experiencing drought conditions for more than two decades (NOAA 2022). The Arizona Regional Mitigation Strategy (BLM 2016a) describes Sonora-Mojave creosotebush-white bursage desert scrub as having a very high potential for being affected by climate change.

The IPCC states that human activities, principally through emissions of greenhouse gases (GHG), have unequivocally caused global warming (IPCC 2023). The most common GHGs produced by human activity are carbon dioxide, methane, and nitrous oxide. GHGs trap heat from the sun in the atmosphere and warm up the planet. In 2021, the Arizona statewide GHG emissions totaled approximately 98.5 million metric tons[4] of carbon dioxide equivalent (CO_2e)[5] emissions, representing 1.6 percent of national emissions (6,271.4 million metric tons of CO_2e; EPA 2023).

Proposed Action. Climate change and GHG emissions from construction, operation, and decommissioning of solar facilities were characterized in the RDEP Final EIS (BLM 2012b, Section 4.2.2) and the Air Quality and Climate Change Effects Report (Elisabeth Solar, LLC 2023c). Construction of the proposed project would impact climate change primarily through the generation of GHG emissions from operation of vehicles and heavy equipment. Construction of the proposed project would contribute an estimated 1,235 metric tons of CO_2e. Operational emissions were estimated to contribute less than 1 metric ton of CO_2e annually (Elisabeth Solar, LLC 2023c; Table 12). Total emissions were estimated to contribute 1,248 metric tons of CO_2e over the life of the project, or 0.001 percent of the annual GHG emissions in the state. Decommissioning would also contribute GHGs but to a lesser degree than construction because fewer vehicles and equipment would be required to complete the work. The average annual energy production from the proposed project would meet the daytime electricity needs of approximately 81,000 households, offsetting over 150,000 metric tons of CO_2e emissions that would result from producing an equivalent amount of energy from fossil fuel-generating sources and preventing an estimated $1,051,645 in potential future damage from climate effects based on the social cost of carbon (Elisabeth Solar, LLC 2023c).

Reduced Grading Alternative. Climate change impacts under the reduced grading alternative would likely be reduced compared with the proposed action due the reduction in site grading; impacts from operations and decommissioning would be similar to the proposed action. Under this alternative, the solar power generation capability would be reduced by up to 20 MW compared with the proposed action. The average annual energy production under this alternative

[4] Emissions are expressed using 100-year time horizon global warming potentials of carbon dioxide = 1; methane = 29.8; and nitrous oxide = 273 from the IPCC Sixth Assessment Report (IPCC 2021).
[5] CO_2e is a metric defined on the basis of relative strength of each GHG to carbon dioxide.

would meet the daytime electricity needs of approximately 75,000 households, offsetting approximately 140,000 metric tons of CO_2e emissions that would result from producing an equivalent amount of energy from fossil fuel-generating sources and preventing an estimated $980,000 in potential future damage from climate effects based on the social cost of carbon (based on methodology in Elisabeth Solar, LLC 2023c).

No Action Alternative. Under the no action alternative, low levels of GHG emissions would continue to be produced from recreational use of the project site. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available and prioritized for future solar development. Potential future solar development would have impacts on climate change similar to those described for the proposed action, though the magnitude of the effect relative to the proposed action and reduced grading alternative is not known.

Cumulative Effects. Climate change is cumulative in nature. The proposed action or reduce grading alternative in combination with other projects described in Table 3-2 would contribute incrementally to impacts on climate change through production of GHG emissions during project construction or operation, while potentially offsetting GHG emissions through the production of energy that may otherwise be produced by fossil fuel-generating sources.

3.2.6 AIB-6 Acoustic Environment and Noise

How would construction, operation and maintenance, and decommissioning activities impact the acoustic environment of the project area?

Noise is defined as any undesirable sound that interferes with normal activities or in some way reduces the quality of the environment for the noise receptor. The project site is in a rural environment where background noise levels typically range from 40 to 50 decibels. Existing noise sources on and near the project site include agricultural equipment, off-highway vehicles, traffic along Palomas Road, and equipment use at the adjacent solar facilities. There are no noise ordinances for this area of Yuma County.

Proposed Action. Noise impacts from the construction, operation, and decommissioning of a solar facility were characterized in the RDEP Final EIS (BLM 2012b, Section 4.2.12). Construction of the proposed project would generate a short-term increase in ambient noise levels over the anticipated 15- to 18-month construction period. The type, location, and level of noise would vary over the course of construction, with site grading and pile installation generating the highest levels of noise. Individual equipment used in construction would produce noise levels ranging from 70 to 90 decibels 50 feet from the noise source (BLM 2012b, Table 4-7). The Western Solar PEIS (BLM and DOE 2023, Section 5.1) estimated that construction of a solar facility would result in a maximum noise level of approximately 95 decibels at the site boundary, attenuating to 40 decibels approximately 1.2 miles from the site. The nearest residence is over 2 miles from the project site and therefore would not be impacted by construction-related noise from the project site. Traffic on area roadways used to access the site would not produce a noticeable increase in traffic noise along those routes due to the intermittent nature of this traffic.

Minimal noise would be associated with operation of the proposed project; noise sources during operation would be limited to inverters, transformers, equipment used for vegetation management, vehicles, and some maintenance activities. The Western Solar PEIS (BLM and

DOE 2023, Section 5.1) estimated that inverters would produce noise levels of 35 to 50 decibels that would attenuate to less than 30 decibels within 50 feet and that transformers would produce noise levels of about 51 decibels that attenuated to 40 decibels at 1,800 feet. The BESS would be an additional source of noise, primarily from the heating, ventilation, and air conditioning units associated with the BESS. The sound produced would depend on the number of units needed. Assuming a cumulative noise level of 90 decibels, noise from operations would attenuate to 30 decibels at one-half mile, 25 decibels at 1 mile, and under 20 decibels at 2 miles. Operational noise would thus not be distinguishable from background noise conditions at the nearest residences or at culturally sensitive areas in the eastern SEZ parcel. Decommissioning and reclamation would have impacts similar to those described for the construction of solar facilities. Because of the undeveloped nature of the project site and the lack of nearby sensitive receptors, noise impacts from construction, operation, or decommissioning would be minimal.

Reduced Grading Alternative. Noise impacts under the reduced grading alternative would be as described for the proposed action.

No Action Alternative. Under the no action alternative, ongoing recreational uses of the project site would continue to be an intermittent source of noise. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available and prioritized for future solar development. Potential future solar development would have noise impacts similar to those described above. Because the proposed project would avoid the eastern SEZ parcel and use an existing gen-tie line, it is possible that a future proposal could produce noise over a wider area. Given the lack of sensitive noise receptors in the area, development of a different future project would have impacts similar those described for the proposed action and reduced grading alternative.

Cumulative Effects. Construction of the proposed project under the proposed action or the reduced grading alternative would not overlap with the construction period of the other nearby projects described in Table 3-2. Therefore, no incremental cumulative effects from either alternative would occur during construction. Because the proposed project and the adjacent Agua Caliente and White Wing Ranch Solar Facilities would not be long-term sources of noise and because the nearest sensitive receptors are over 2 miles away, the proposed project would not contribute to cumulative noise impacts in the project area.

3.2.7 AIB-7 Groundwater Resources

How would construction, operation, and decommissioning of the project impact groundwater resources?

Groundwater resources and uses in the project area are described in the Comprehensive Groundwater Basin Analysis (Elisabeth Solar, LLC 2023d) and in the Water Resources Monitoring and Mitigation Plan. The project site is in the Wellton-Mohawk Sub-basin of the Lower Gila Groundwater Basin. The basin provides groundwater for irrigation and residential purposes for many communities, including Ajo, Dateland, Ligurta, Martinez Lake, Hyder, and

others. The project site is not within any of the state's Active Management Areas[6], nor is it within an Irrigation Non-Expansion Area[7] (Elisabeth Solar, LLC 2023d).

Proposed Action. The proposed Elisabeth Solar Project is estimated to require 600 acre-feet of water during the anticipated 15- to 18-month construction period and 5 acre-feet of water per year during operation of the facility under the proposed action and reduced grading alternative. Water demand would be met by groundwater sourced from existing wells on the White Wing Ranch Solar Facility project site. White Wing Ranch is adjacent to the proposed Elisabeth Solar Project on private lands formerly used for irrigated agricultural uses.

The Elisabeth Solar Project Comprehensive Groundwater Basin Analysis (Elisabeth Solar, LLC 2023d) analyzed the impact construction and operational groundwater withdrawals would have on groundwater resources in the project area. The analysis shows that the maximum drawdown due to project water demands would be approximately 7.5 feet at the wellhead of the primary production well at the end of the construction period, and approximately 0.1 feet after 35 years of operation. The maximum projected drawdown would diminish to less than 4 feet at the end of construction within 100 feet of the main production well.

The projected drawdown at historic agricultural rates compared with future pumping rates show that proposed groundwater use would result in a substantially smaller impact on groundwater levels than under historic agricultural uses. These results show a sustainable yield of groundwater would be available for the proposed project and that the water source would be adequate for serving project demands. The groundwater pumping would not impact groundwater-dependent resources due to the existing depth to groundwater at the site (average of approximately 200 feet below land surface), minimal duration of construction, and overall drawdown of groundwater pumping for the project. Additionally, there are no springs, seeps, or wetlands present within the project area and no neighboring wells that could be impacted by the groundwater pumping. Based on the groundwater analysis and adherence to design features in Appendix B, including development of a Groundwater Monitoring and Reporting Plan, no long-term impacts on groundwater resources are anticipated as a result of project construction, operation, or decommissioning.

Reduced Grading Alternative. Because this alternative would have similar water usage requirements during construction, operation, and decommissioning, impacts would be as described for the proposed action.

No Action Alternative. Under the no action alternative, groundwater use for the proposed project would not occur. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available and prioritized for future solar development. Potential future solar development could have impacts similar to those described above, though the magnitude of the effect relative to the proposed action and reduced grading alternative is not known. Future

[6] Areas in Arizona with heavy reliance on groundwater. These areas have management goals and are managed subject to management plans to achieve these goals (ADWR 2024a).
[7] Geographical area which has been designated pursuant to Arizona Revised Statute Title 45, Chapter 2, Article 3 as having insufficient groundwater to provide a reasonable safe supply for the irrigation of the cultivated lands at the current rate of withdrawal (ADWR 2024b).

projects may propose different levels and sources of water for construction and operation. If groundwater use was proposed, future project proponents would be required to perform a groundwater basin analysis and adhere to the same required design features and BMPs as shown in Appendix B.

Cumulative Effects. Groundwater use in the project area has changed over time, with groundwater uses decreasing in the immediate project area as irrigated agricultural uses have been replaced by solar facilities that require much lower levels of groundwater than the historic agricultural uses they replaced. While groundwater withdrawals for current agricultural operations and water requirements of future proposed solar facilities are not known, the proposed project in combination with other projects described in Table 3-2 is not anticipated to have a cumulatively adverse effect on groundwater resources under the proposed action or the reduced grading alternative.

3.3 ISSUES ANALYZED IN DETAIL

3.3.1 Wildlife–Special Status Species

How would the construction, operation, and decommissioning of the solar facility impact special status species and their habitat?

Special status species are animals and plants that require specific management attention because of population or habitat concerns. These include species that are listed as endangered, threatened, proposed for listing, or candidate for listing by the USFWS under the Endangered Species Act (ESA). The BLM is required under the ESA to protect and restore the habitats upon which listed species depend and to take actions that will foster the recovery of listed species.

BLM sensitive species are designated by the State Director and include species listed or proposed for listing under the ESA and species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. In addition, all federal candidate species and delisted species are considered BLM sensitive species in the 5 years following delisting. BLM Manual 6840 provides policy and guidance for the conservation of BLM special status species and the ecosystems within BLM-administered lands upon which they depend (BLM 2008). On the lands it administers, the BLM is directly responsible for managing habitat for special status species and is indirectly responsible for the health of special status species that these habitats support.

3.3.1.1. Affected Environment

Federally Listed and Candidate Species

Based on the biological evaluation prepared for the proposed project (WestLand 2024a), three ESA-listed or candidate species have the potential to occur in the analysis area (Table 3-3). This area includes the project site and a 1,000-foot buffer around the project site to capture the onsite and offsite effects of dust and noise disturbance during construction, operation, and decommissioning. This is the area in which species could be directly or indirectly affected by the proposed action or the reduced grading alternative.

Table 3-3. Threatened or Endangered Species and Potential to Occur

Taxa	Common Name	Scientific Name	Status	Potential to Occur
Mammals	Sonoran pronghorn	*Antilocapra americana sonoriensis*	FE	Possible; the non-essential experimental population could occur
Birds	Yuma Ridgway's rail	*Rallus obsoletus yumanensis*	FE	Unlikely, but may be present during migration
Invertebrates	Monarch butterfly	*Danaus plexippus*	FC	Unlikely; however, the species is known to be widespread, and its presence cannot be completely ruled out

Source: WestLand 2024a
Notes: FE = federally endangered; FC = federal candidate

Of these species, the non-essential experimental population of Sonoran pronghorn has not been observed on the project site or within the analysis area but has been documented within 5 miles of the analysis area. The federally endangered Yuma Ridgway's rail may migrate through the area, but no suitable habitat occurs on the project site or within the analysis area. The candidate monarch butterfly species has not been documented within 5 miles of the analysis area but is known to be widespread and thus could occur in the analysis area. An overview of these species is provided below; detailed information can be found in the Elisabeth Solar Project biological evaluation (Westland 2024a).

Sonoran Pronghorn

The Sonoran pronghorn inhabits the Lower Colorado River Valley and Arizona Upland subdivisions of Sonoran desertscrub (USFWS 2016) between 400 and 1,600 feet (AGFD 2022). In the winter months, Sonoran pronghorn prefer flat and open areas that facilitate the detection and escape from predators. During summer months, they require dense vegetation that provides moist forage and thermal cover to reduce heat stress. They move nomadically to access water and favorable foraging areas, where they feed on a wide variety of plant species.

Sonoran pronghorn in southwestern Arizona are part of a non-essential, experimental population established by the USFWS in 2011 (USFWS 2011). This population is located in an area north of Interstate 8, south of Interstate 10, and bounded by the Colorado River on the west and Interstate 10 on the east. It also includes an area south of Interstate 8 that is bounded by Highway 85 on the west, Interstates 10 and 19 on the east, and the US-Mexico border on the south (USFWS 2011).

The primary threats to Sonoran pronghorn include habitat loss and fragmentation, reduced forage quality, altered habitat structure, extended drought and climate change, reduced access to and availability of water, predation, disease, loss of genetic diversity, human disturbance, and high mortality rates due to accidental death or poaching (USFWS 2016).

Yuma Ridgway's Rail

Yuma Ridgway's rail is federally listed as endangered by the USFWS. The species occurs along the lower Colorado River and in some major tributaries in extreme southwestern Utah, extreme

southern Nevada, southern California, Arizona, and south into extreme northeastern Baja California and extreme northwestern Sonora, Mexico (USFWS 2009). The species inhabits and breeds in freshwater marshes with cattail, giant bulrush, sedges, and some riparian shrubs or trees (Eddleman and Conway 2018, USFWS 2009). While the species was thought to be non-migratory, recent studies have indicated that rails may travel in the fall from their breeding areas in the southwestern United States to the west coast of Sonora and Sinaloa, Mexico (Harrity and Conway 2020). During migration, rails may use desert arroyos, agricultural fields, coastal marshes, and water impoundments as stopover areas (Harrity and Conway 2020). Threats to Yuma Ridgway's rail include the loss of marsh habitat through channelization and dredging and filling activities, salination of habitat, diversion of water sources, and selenium contamination of prey species (USFWS 2009).

Monarch Butterfly

The monarch butterfly is listed as a candidate species under the ESA. Breeding and migratory populations occur throughout Arizona. Monarch caterpillars feed exclusively on milkweed; this species can be found wherever milkweed occurs. Some adults overwinter in the low deserts of Arizona in areas where food resources are abundant, primarily in urban environments (Morris et al. 2015). Overwintering populations use the leaves, branches, and trunks of large trees within forested groves for protection from rain, wind, cold, and heat (USFWS 2020). Monarchs are found at all elevations in Arizona (Morris et al. 2015).

BLM Sensitive Species

Based on the biological evaluation prepared for the proposed project (WestLand 2024a), 10 BLM sensitive species have the potential to occur in the analysis area. Of these, six are bird species and are discussed in Section 3.3.2. The others include the Sonoran desert tortoise and three species of bat (Table 3-4).

The Sonoran desert tortoise has not been observed on the project site or documented within 5 miles of the analysis area; however, the analysis area is within the known range of the species. There is no roosting habitat for bats in the analysis area; however, bats may forage in the area. An overview of these species is provided below; detailed information can be found in the Elisabeth Solar Project biological evaluation and biological assessment (Westland 2024a, 2024b).

Table 3-4. BLM Sensitive Species with Potential to Occur

Taxa	Common Name	Scientific Name	Potential to Occur
Reptiles	Sonoran desert tortoise	*Gopherus morafkai*	Unlikely
Mammals	California leaf-nosed bat	*Macrotus californicus*	Unlikely, but may occur while foraging
Mammals	Cave myotis	*Myotis velifer*	Unlikely, but may occur while foraging
Mammals	Spotted bat	*Euderma maculatum*	Unlikely, but may occur while foraging

Source: WestLand 2024a

Sonoran Desert Tortoise

The Sonoran Desert tortoise is found in the Mojave and Sonoran desertscrub biotic communities. It primarily inhabits rocky slopes and bajadas, but it also may be found in low densities in intermountain valleys (USFWS 2021a). This species burrows in loose soil and beneath rocks and boulders. It also finds shelter under vegetation and in caliche caves, most commonly in association with paloverde and mixed cacti. Forage includes annual and perennial grasses, forbs, succulents, trees and shrubs, and woody vines (AGFD 2022; USFWS 2021a). The project site is within the known range of the species, but there are no records of occurrence within 5 miles of the site.

Bat Species

The project site and larger analysis area contains no suitable roosting habitat for bats. It is within the known range of the California leaf-nose and spotted bat but outside the range of the cave myotis bat. The analysis area may provide foraging habitat for bats.

3.3.1.2. Environmental Consequences

Alternative 1 – Proposed Action

The types of effects described for general wildlife (Section 3.2.1, AIB-1 Wildlife and Connectivity) from constructing, operating, and decommissioning the proposed project would also generally apply to special status species. As also described in Section 3.2.1 and Section 3.2.2, habitat quality in the project area is low, with no or low vegetation cover on the project site and very low terrestrial intactness (BLM 2016a).

Under the proposed action, the project proponent would commit to measures to avoid or minimize impacts on special status species with the potential to occur in the project area. These include design features and BMPs contained in the RDEP ROD (BLM 2013) and measures recommended by USFWS and AGFD. The exact measures the project proponent is proposing to implement are described in Appendix B of this EA and in the biological evaluation and biological assessment prepared for the proposed project (WestLand 2024a, 2024b).

Potential effects on Sonoran pronghorn were evaluated in the USFWS's final conference report and concurrence for the Agua Caliente SEZ (USFWS 2012) and the biological assessment prepared in support of Section 7 consultation for this EA (WestLand Resources 2024b). As described in those reports, habitat quality within the project area is of poor quality for Sonoran pronghorn. As such, the disturbance associated with the proposed project would represent a negligible change in the habitat available for the species in the analysis area and larger region. In addition, the project would avoid major washes, would be situated immediately adjacent to existing disturbance, and would maintain access to areas to the north and south, and to the agricultural fields to the west of the project site, thereby minimizing habitat fragmentation for the species. In consideration of the proposed measures to avoid and minimize effects, including recommendations in the USFWS conference opinion (USFWS 2012), the proposed project would not jeopardize the continued existence of Sonoran pronghorn.

Construction or decommissioning of the proposed project would be unlikely to affect Yuma Ridgway's rail, as no suitable habitat is present on the project site. The project site lies between the breeding and wintering habitat for Yuma Ridgway's rail; however, given the available data

and protection measures described below, the probability of adverse effect on rails, such as mortality or injury due to collisions with solar panels or other project components, is considered to be discountable. As described in the biological evaluation for the Elisabeth Solar Project (WestLand 2024a), the USFWS indicated that two mortalities of Yuma Ridgway's rail occurred at solar facilities in California in 2014 (USFWS 2021b). Recently, the USFWS reported a third mortality, though no details were provided. However, the causes of these mortalities have not been confirmed (USFWS 2021b), and no rail mortalities have been observed at solar facilities in the Southwest since 2014 (Kosciuch et al. 2021). Recent studies indicate that where mortality of other water-associated and water-obligate birds have occurred at solar facilities in the Mojave and Sonoran desert regions, these mortalities were primarily within 60 miles of the Salton Sea (Kosciuch et al. 2020). The Salton Sea is over 120 miles away from the project site, and the nearest potential rail habitat along the Colorado River is over 55 miles away. As described in the biological assessment (WestLand 2014b), panels are now equipped with an anti-reflective coating and use racking systems configured to less closely resemble a body of water, which would minimize the potential for adverse effects on Yuma Ridgway's rail and other migratory bird species.

Based on the distance from rail habitat; the lack of water bodies in the project area to attract migrating birds; the limited number of mortalities observed at other utility-scale solar facilities in the region; and the application of modern module and racking design features that minimize potential impacts on rail and other migrating birds, the proposed project may affect but is not likely to adversely affect Yuma Ridgway's rail. To ensure operation of the project does not affect rails, the project proponent also would commit to post-construction monitoring for rail and other migratory bird species as described in Appendix B and the Bird and Bat Conservation Strategy.

Impacts on monarch butterfly would occur if removal of milkweed species during construction, operation, or decommissioning reduced the amount of larval habitat available in the project area; impacts could also occur through direct mortality. Given the low-quality habitat conditions and the lack of milkweed observed at the project site or in the larger analysis area, no adverse impacts on monarch butterfly are anticipated. Measures described in Appendix B and the biological evaluation (Westland 2024a) would minimize the potential for adverse effect.

Impacts on the Sonoran desert tortoise from construction of the proposed project could include loss of habitat or direct mortality of individuals in areas where site grading or overland travel occurred if the species was present on the project site. While the proposed project would be within the known range of the species, there is no record of occurrence within 5 miles of the project site. In addition, no individual tortoise, signs of the tortoise, or potential den or shelter sites were observed at the project site. While there is no record of desert tortoise occurrence in the analysis area, the project site could potentially be used as dispersal habitat (WestLand 2024a). To avoid potential adverse effects on the Sonoran desert tortoise, the project proponent would conduct pre-construction surveys prior to ground-disturbing activities and establish measures to follow in the event tortoise was encountered during construction. In addition, the project proponent would use wildlife-friendly fencing to assist in habitat connectivity. Implementing these and other measures outlined in Appendix B would fulfill the BLM's commitment to the conservation measures and objectives outlined in the Candidate Conservation

Agreement for Sonoran desert tortoise in Arizona (USFWS and Arizona Interagency Desert Tortoise Team 2015).

Impacts on sensitive bat species would occur if the proposed project were to remove potential roosting or foraging habitat or affect roosting or foraging behaviors. Given the lack of roosting habitat in the analysis area and the measures in place to minimize adverse effects, as described in the Bird and Bat Conservation Strategy, no adverse effects on bat species are anticipated.

Alternative 2 – Reduced Grading Alternative

Impacts on special status species under the reduced grading alternative would be the same as described under the proposed action. While the reduced grading alternative would avoid the drainages and maintain vegetation in the western side of the project site, neither the project site nor the temporary access road support habitat for the ESA-listed or candidate species or the BLM sensitive species described above. Use of the temporary construction access road would have no impact on special status species.

Alternative 3 – No Action Alternative

Under the no action alternative, the project proponent would not construct the Elisabeth Solar Project and no new impacts on special status species from current uses of the project site would occur. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on special status species as those described under the proposed action and reduced grading alternative, although the level of effect could be greater if the entire SEZ underwent development.

Cumulative Effects

Given the low quality of habitat on the project site and the low potential for occurrence of ESA-listed and candidate and BLM sensitive species in the analysis area, the proposed action and reduced grading alternative are not anticipated to have a cumulatively significant adverse impact in combination with the other past, present, and reasonably foreseeable future actions in the vicinity of the project area (Table 3-2). The cumulative effects analysis for wildlife connectivity is incorporated into the assessment of effects described above for Sonoran pronghorn and Sonoran desert tortoise.

3.3.2 Wildlife–Migratory Birds

How would the construction, operation, and decommissioning of the solar facility impact migratory bird species and their habitat?

3.3.2.1. Affected Environment

Migratory bird species are protected under the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 United States Code 703–711). This act makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, any migratory bird, or the parts, nests, or eggs of such a bird, except under the terms of a valid permit issued pursuant to federal regulations. All species native to the US or its territories are protected under the MBTA. The USFWS defines a migratory bird as any species or family of birds that live, reproduce, or

migrate within or across international borders at some point during their annual life cycle. Almost all birds found in the project area are considered migratory birds.

The golden eagle is protected under the MBTA and the Bald and Golden Eagle Act (16 United States Code 668). The project area supports suitable foraging habitat for golden eagles but no suitable nesting habitat. Bald eagles (*Haliaeetus leucocephalus*) are not expected to be present due to the lack of large waterbodies in the greater area. Migratory birds that are also considered BLM sensitive species include the American peregrine falcon, ferruginous hawk, gilded flicker, Bendire's thrasher, Le Conte's thrasher, and western burrowing owl. Table 3-5 describes the potential for these species to occur in the analysis area; detailed information on each species can be found in the Elisabeth Solar Project biological evaluation (Westland 2024a).

Table 3-5. Sensitive Bird Species with Potential to Occur

Common Name	Scientific Name	Potential to Occur
American peregrine falcon	*Falco peregrinus anatum*	Unlikely, but may occur while foraging
Ferruginous hawk	*Buteo regalis*	Unlikely, but may occur while foraging
Gilded flicker	*Colaptes chrysoides*	Possible
Bendire's thrasher	*Toxostoma bendirei*	Possible
Le Conte's thrasher	*Toxostoma lecontei*	Possible
Western burrowing owl	*Athene cunicularia hypugaea*	Possible
Golden Eagle	*Aquila chrysaetos*	Unlikely, but may occur while foraging

Source: WestLand 2024a

3.3.2.2. Environmental Consequences

Alternative 1 – Proposed Action

Construction of the proposed project would affect migratory birds by removing or altering potential bird habitat. Construction activities would also have the potential to cause visual and auditory disturbance, which could result in avoidance of otherwise suitable habitat. This disturbance can indirectly contribute to stress if birds nest or forage in less suitable habitat. Active bird nests in shrubs and on the ground would be affected during construction activities that disturb the ground or remove vegetation, which could result in nest abandonment, nest destruction, and loss of chicks or eggs. Grading of approximately 900 acres would reduce available cover, foraging areas, and nesting and perching structures and result in displacement of bird species. However, as described in Section 3.2.2, vegetation cover on the project site is limited.

Suitable habitat for Le Conte's thrasher, gilded flicker, and Bendire's thrasher may be found in the analysis area. Western burrowing owl also may inhabit the analysis area, though no sign of burrowing owl has been observed at the project site (WestLand 2024a). Measures in Appendix B, the biological evaluation (WestLand 2024a), and the Bird and Bat Conservation Strategy would be implemented to avoid or minimize impacts on these and other migratory bird species during construction. These measures would include conducting pre-construction surveys for Le Conte's thrasher and Bendire's thrasher if ground-disturbing work is proposed during the breeding season, conducting surveys for burrowing owl within all suitable habitat in the project area and a 150-foot-wide buffer, and conducting surveys for migratory birds if ground-disturbing

work is proposed during the breeding or fledgling season. Implementing these measures would avoid or minimize the potential for adverse effects on these BLM sensitive species and other migratory bird species in the analysis area.

The analysis area does not contain suitable nesting habitat for golden eagles; however, there is the potential for golden eagles to forage in the area (WestLand 2024a). During construction, foraging golden eagles may be subject to loss of forage on the project site or visual and noise disturbance that alters foraging behavior on or near the project site. Because eagles are a wide-ranging species, this would represent only a minor impact given the low-quality habitat on the project site and the availability of foraging habitat elsewhere in the analysis area and larger region.

The construction impacts described above would be short term, lasting for the duration of the anticipated 15- to 18-month construction period. While temporary disturbance areas would be reclaimed by implementing the Site Reclamation and Revegetation Plan, some minor loss of potential nesting or foraging habitat for migratory bird species would remain over the life of the proposed project. Given the low quality of habitat on the project site for foraging or nesting and the availability of foraging and breeding habitat elsewhere in the analysis area, this would have only a minor impact on migratory birds.

Under the proposed action, the project proponent would avoid or minimize potential collision impacts on migratory bird species by following Avian Power Line Interaction Committee (APLIC) design parameters, using nonreflective coating on the solar panels to avoid attraction of migratory birds, designing lighting to avoid nighttime bird attraction, and implementing the other measures in Appendix B, the biological evaluation (WestLand 2024a), and the Bird and Bat Conservation Strategy related to BLM sensitive bird species, golden eagles, and other migratory bird species.

Decommissioning activities would have similar short-term effects as those described for construction; these impacts would be minimized using measures similar to those implemented during construction. Some nesting and foraging habitat may return after reclamation.

Alternative 2 – Reduced Grading Alternative

Under the reduced grading alternative, site grading and clearing would disturb approximately 515 acres of the project site. Direct impacts on migratory bird species during construction would be similar to those described under the proposed action but would be avoided in the three drainages on the western portion of the project site. Because these avoided drainages contain denser vegetation than other areas of the project site, avoidance of these areas would retain vegetation that potentially could be used by migratory birds. Impacts from operation and decommissioning would be as described under the proposed action.

Alternative 3 - No Action Alternative

Under the no action alternative, no impacts on migratory birds from development of the Elisabeth Solar Project would occur. Ongoing recreational uses of the project site could affect migratory birds through direct disturbance of soils and vegetation, and visual and auditory disturbances during recreational activities. Because the Elisabeth Solar Project is proposed

within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on migratory birds as those described under the proposed action and reduced grading alternative, although the level of effect could be greater if the entire SEZ underwent development.

Cumulative Effects

When added to the effects of past, present, and reasonably foreseeable future actions, the proposed action and reduced grading alternative would contribute to cumulative ground disturbance and vegetation removal in the project area. However, because habitat on the project site and surrounding lands is mostly disturbed with barren to low vegetation cover, project activities are not expected to significantly contribute to cumulatively adverse effects on migratory birds.

3.3.3 Soil Resources

How would surface disturbance from construction, operation, and decommissioning of the project contribute to soil compaction and erosion?

3.3.3.1. Affected Environment

Approximately 75 percent of soils on the project site consist of the Ligurta-Cristobal series. This soil series consists of very deep, well drained, strongly saline gravelly clay and loam and is found on fan terraces and generally shallow slopes. Between 90 and 95 percent of the soil surface is covered with gravel and a thin coat of desert varnish, which is a thin coating of manganese, iron, and clays that form on surfaces with extensive sun exposure. Soils receive an annual precipitation of about 4 inches (UC Davis Soil Resource Laboratory 2006a; UC Davis Soil Resource Laboratory 2006a, 2006b).

Other soils in the project area are largely characterized by the Harqua-Tremant complex. This series is characterized by very deep, well-drained soils with predominantly gravelly clay and loam content that formed in fan alluvium from mixed sources. They are found on relict basin floors, fan terraces, or stream terraces (UC Davis Soil Resource Laboratory 2006c, 2009). The project site also contains trace amounts (less than 1 percent) of Carrizo very gravelly sand, which consist of very deep, excessively drained soils formed in mixed igneous alluvium (UC Davis Soil Resource Laboratory 2013).

Soils on steep slopes (a gradient of at least 10 percent) may be prone to destabilization and erosion when disturbed by wind, precipitation, or human activity. Because most of the project site is characterized by slope gradients below this gradient, the project site is not vulnerable to slope erosion.

Soil compaction occurs when soil particles are pressed together more closely relative to their original state. Compaction damages prevents water and air from infiltrating and percolating through the soil, hindering soil's ability to hold water. Over the long term, the decreased porosity and permeability lead to increased runoff and consequently increased soil erosion (USDA NRCS 2003). These changes may affect plant growth because they create unfavorable conditions for root penetration and the storage of nutrients, air, and water (USDA NRCS 2024a).

Data related to soil susceptibility to compaction were not available for the project site. However, because soil saturation influences compaction, the estimated soil infiltration rate can be used to approximate susceptibility to compaction in wet conditions. The USDA created hydrologic soil groups based on estimates of runoff potential. Most of the project site consists of group D soils. This means they have a very slow infiltration rate and may be susceptible to compaction following precipitation events (USDA NRCS 2024a, 2024b).

Wind erosion is an important geomorphologic process in desert environments (Belnap et al. 2006). Soils are placed in wind erodibility groups to indicate their susceptibility to erosion by wind. Wind erodibility groups are numbered from 1 to 8, with soils assigned to group 1 being the most susceptible to wind erosion and those assigned to group 8 being the least susceptible. Approximately 75 percent of soils in the project area are classified as wind erodibility group 6, meaning they are mildly vulnerable to wind erosion. The remainder are classified predominantly as wind erodibility group 5, making them slightly more vulnerable to wind erosion. Less than 1 percent of soils in the project area are classified as wind erodibility group 2, making them highly vulnerable to wind erosion (USDA 2002).

3.3.3.2. Environmental Consequences

Alternative 1 – Proposed Action

Under the proposed action, site grading and clearing would remove the topsoil layer and any vegetation present on approximately 900 acres (64 percent) of the project site; topsoil would be segregated, stockpiled, and used onsite for post-construction reclamation activities. In other areas, low-growing vegetation and topsoil would largely be left intact. Grading would disturb soils to depths of up to 12 feet in isolated areas, primarily south of the existing Agua Caliente Solar Facility where the current terrain is unable to accommodate solar arrays and in limited wash areas along the western side of the project site. Surface-disturbing activities would degrade soils through loss of vegetation and topsoil, mixing of soil horizons, and disturbance of the soil crust and seedbanks and make them more vulnerable to wind and water erosion. In addition, compaction of soils through heavy equipment use or development of permanent disturbance features such as access roads would make these areas more susceptible to erosion as they lose their ability to hold water and subsequently experience more runoff.

Impacts on soils during operation and maintenance would be more limited. Using existing roads would minimize new surface disturbance from operational and maintenance equipment and vehicles on undisturbed soils and reduce the potential for increased soil erosion. Impacts on soils during decommissioning would be similar to those described during construction but would be more limited. Temporary disturbances would include limited grading to remove project infrastructure and recontour the site towards a more natural regime.

Under the proposed action, the project proponent would minimize potential soils-related impacts by avoiding development in the eastern SEZ boundary and BLM-recommended nondevelopment areas, and by applying the design features, BMPs, and other measures identified in Appendix B. Beginning reclamation of temporary disturbance areas immediately following construction and permanent disturbance areas as soon as practicable following decommissioning would reduce the impacts of erosion and compaction by stabilizing soils and restoring soil health. Measures described in the Site Reclamation and Revegetation Plan would improve the likelihood of

success of reclamation and revegetation efforts, though impacts would persist until such time that success criteria documented in the plan were met based on annual monitoring. Factors such as climate change or drought may hinder reclamation and revegetation efforts and require adaptive management or development of different success criteria in collaboration with the BLM.

Alternative 2 – Reduced Grading Alternative

Impacts under the reduced grading alternative would be similar in type but lesser in extent than described for the proposed action. Under the reduced grading alternative, site grading and clearing would remove the topsoil layer and any vegetation present on approximately 515 acres (36 percent of the project site). This reduction in surface disturbance would reduce the extent of soil compaction and erosion that would result from project activities compared with the proposed action, including in avoided drainages on the western portion of the project site. Under this alternative, using the temporary construction access road primarily on ASLD lands would increase soil disturbance due to increased levels of use of this route compared with current conditions; this would be a temporary effect that would cease after construction is completed and any required reclamation occurs.

Measures to reduce impacts would be as described under the proposed action. In addition, conservation strategies described in Section 2.3 would further contribute to the avoidance or mitigation of soil compaction and erosion. Efforts to slow water within avoided drainages would reduce soil erosion and facilitate the growth of native vegetation that would help stabilize soils. Vertical mulching would improve soil health by increasing soil organic matter and soil cover, and enhanced restoration of desert pavement in areas temporarily disturbed by construction activities would speed reclamation when compared with the proposed action.

Alternative 3 – No Action Alternative

Under the no action alternative, there would be no removal of topsoil or vegetation from project construction, operation, or decommissioning because these activities would not occur. Any existing patterns of compaction or erosion would continue and could increase under projected hotter and drier conditions. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on soils as those described under the proposed action, although impacts could occur to a greater degree if the entire SEZ underwent development. The potential impacts from full SEZ development were described in the RDEP Final EIS (BLM 2012b, Section 4.2.17) and the Arizona Regional Mitigation Strategy (BLM 2016a). Future projects would be subject to the same RDEP-required design features and BMPs as described for the proposed action to minimize impacts on soils.

Cumulative Effects

Past, present, and reasonably foreseeable future actions shown in Table 3-2 represent almost 12,000 acres of current and proposed development that would contribute to cumulative impacts on soils. The proposed action and reduced grading alternative would represent an approximately 12 percent increase in cumulative disturbance of soils from surface disturbance and vegetation removal (for a total of over 13,000 acres of solar development). Because efforts to stabilize soils are a condition of the proposed project and adjacent solar facility uses, the cumulative impact of

the proposed action or reduced grading alternative in combination with other past, present, and reasonably foreseeable future actions would be minimized.

3.3.4 Surface Water Resources

How would the proposed project affect surface water flow patterns, floodplains, and water quality in the project area?

3.3.4.1. Affected Environment

The western Agua Caliente SEZ parcel lies within a south-facing hillslope landform atop alluvial fan features associated with the Palomas Mountains (BLM 2012b, Section 3.23.2). The larger project area contains braided washes and channels created by ephemeral drainages. Ephemeral surface water flows in a southerly direction through the washes and channels. There are no named washes within the project site; Hoodoo Wash lies to the west, outside of the SEZ.

The primary water features within the project site are the approximately 5 miles of ephemeral drainages, all of which originate on or adjacent to the project site. Ephemeral drainages function as areas of overland flow, collection, and recharge for the surrounding watershed. A watershed divide runs northward through the project site. The ephemeral drainage features in the western portion of the project site are minor tributaries to Hoodoo Wash, and the drainages in the eastern portion drain to Parker Valley-Gila River watershed. These features have limited hydrologic connectivity and generally do not collect or convey runoff from areas outside the project site boundary. Approximately 718 acres of the western SEZ parcel lies within the Hoodoo Wash watershed (0.5 percent of the watershed), while 940 acres are within the Park Valley-Gila River watershed (0.6 percent of the watershed).

An analysis of the project site concluded that numerous ephemeral washes exhibiting an ordinary high water mark are present, but that none of these ephemeral washes can be considered relatively permanent. Thus, none of the drainages on the project site can be considered jurisdictional under the current regulatory framework for waters of the US (Heritage Environmental Consultants 2024). A request for a Jurisdictional Determination was submitted to the US Army Corps of Engineers in June of 2024.

The project site contains approximately 116 acres of Zone A floodplains. A FEMA Zone A flood zone represents a 100-year flood hazard with no defined base flood elevation. Zone A floodplains on the project site were identified as BLM-recommended nondevelopment areas and would be avoided under the proposed action.

The project site does not contain any perennial streams, intermittent streams, impaired waters on the 2022 Clean Water Act Integrated 305(b) Assessment and 303(d) Listing Report (ADEQ 2023), or mapped wetlands (Westwood 2023; Heritage Environmental Consultants 2024).

3.3.4.2. Environmental Consequences

Alternative 1 – Proposed Action

Under the proposed action, the project proponent would clear and grade approximately 900 acres of the project site, including within approximately 2.5 miles of ephemeral drainages. Grading and soil compaction would alter the natural drainage patterns by changing percolation rates and

topography on portions of the project site. Soil disturbance and removal of vegetative cover would increase soil erosion and sedimentation as soil particles are more easily transported off site via stormwater runoff. In addition to erosion-related impacts, soil disturbance can affect water quality due to the transport of sediments; water quality can also be affected by potential spills or releases of fuels, hazardous materials, or herbicides. These impacts would occur to a much lesser degree during operation and maintenance of the proposed project. Development within floodplains could include internal access roads, perimeter security fencing and overhead or buried medium voltage collector lines. The improvements would have negligible effects on surface water flow patterns or water quality.

Dust palliatives and herbicides may be used during construction and operation. Dust palliatives are not anticipated to affect water quality because the components break down and have not been found offsite or downstream from the location of use. The project proponent would follow the requirements laid out by current or future approved vegetation treatment plans (BLM 2007, 2016a, 2023a) to avoid impacts on water resources from herbicide use.

Impacts on water resources under the proposed action would be minimized by avoiding development in the eastern SEZ parcel and the BLM-recommended nondevelopment areas. Impacts related to alteration of flow patterns, sedimentation, and water quality would be minimized or avoided by applying the design features and BMPs described in Appendix B and standard site design practices that manage stormwater flow, including development of retention basins. The project's Stormwater Pollution Prevention Plan (SWPPP) would provide temporary and permanent sediment and erosion control designs and would identify practices to manage stormwater to control erosion and sedimentation. Implementing the project's Spill Prevention and Emergency Response Plan and Hazardous Materials and Waste Management Plan also would ensure that any potential impacts on water resources from inadvertent spills and leaks minimize were avoided or minimized.

Decommissioning would have similar short-term impacts from increased sedimentation and potential for impacts on water quality as described for construction but to a lesser extent because work would occur in previously disturbed areas. Site reclamation as described in the Site Reclamation and Revegetation Plan would reclaim the site to predevelopment contours to the greatest extent possible. Reestablishment of native vegetation would help stabilize soils and prevent future erosion and sedimentation.

Alternative 2 – Reduced Grading Alternative

Under the reduced grading alternative, the project proponent would clear and grade approximately 515 acres of the project site and would largely avoid disturbance of the largest ephemeral drainages on the western side of the project site. This would retain vegetation and the natural drainage patterns to a greater degree than under the proposed action. Impacts on water resources during construction would thus be similar in type but lesser in scale than those described for the proposed action. Impacts on water resources during operation and decommissioning and from reclamation would also be as described for the proposed action. The temporary access route would follow an existing unimproved road that follows the watershed divide, thus avoiding crossing of drainages.

The same design features and BMPs described above would be implemented to avoid or minimize impacts on water resources. Additional conservation strategies implemented under this alternative would further contribute to the avoidance or minimization of surface water resources from erosion and sedimentation. Efforts to slow water within the avoided drainages would facilitate the growth of native vegetation, stabilize soils, and prevent long-term erosion and sedimentation in these areas more than under current conditions. Restoration of desert pavement to the surface of areas temporarily disturbed by construction activities would also improve reclamation efforts more than under the proposed action.

In order to avoid development within the drainages while also achieving project objectives, the project proponent may need to encroach further into Zone A floodplains to develop access roads and the medium voltage collector lines. Overall impacts to surface water flow and habitat associated with ephemeral drainages and floodplains would be reduced compared to the proposed action.

Alternative 3 – No Action Alternative

Under the no action alternative, any existing impacts on water resource from recreational use of the site would continue. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on water resources as those described under the proposed action, although impacts could occur to a greater degree if the entire SEZ underwent development. The potential impacts from full SEZ development were described in the RDEP Final EIS (BLM 2012b, Section 4.2.23) and the Arizona Regional Mitigation Strategy (BLM 2016a). Future projects would be subject to the same RDEP-required design features and BMPs as described for the proposed action to minimize impacts on soils.

Cumulative Effects

Past and present agricultural uses on lands adjacent to the project site and within the cumulative effects analysis area have altered the natural flow regime through the leveling of natural drainages and the creation of features to control the direction and flow of water. The proposed project would contribute to this effect, though to a lesser extent under the reduced grading alternative. SWPPPs for the proposed project and the adjacent or proposed solar facilities would help to limit this overall effect by preventing increases in runoff, erosion, sedimentation, and contamination of surface water resources. Compared with the overall area of the two affected watersheds, the proposed project in combination with the other actions described in Table 3-2 would not result in a noticeable increase in overland flows, sedimentation of waterways, or impacts on water quality. Cumulative projects, in combination with the Elisabeth Solar Project, comprise approximately 2 percent of the Hoodoo Wash watershed and 7 percent of the Parker Valley-Gila River watershed.

3.3.5 Cultural Resources

How would surface disturbance and auditory and visual impacts from construction and operation of the project affect known and undiscovered cultural resources?

Cultural resources include precontact, ethnohistoric, and historic-era archaeological sites, and the locations of important events in the past. These resources are physical phenomena (human-made and natural physical features) associated with past human activities or past and extant cultures; in most cases, these resources are finite, unique, fragile, and nonrenewable. Pursuant to Section 106 of the National Historic Preservation Act (NHPA), the BLM must make a "reasonable and good faith effort" to identify historic properties that may be affected by implementation of the proposed project as a federal undertaking (36 CFR 800.4(b)(1)).

The area of potential effects (APE) is defined in 36 CFR 800.16(d) as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE for the Elisabeth Solar Project includes an area approximately 5 miles around the boundary of proposed construction activity and incorporates the solar facility's footprint, existing private access road easements, the ASLD temporary access road, and an existing gen-tie ROW that would connect the proposed project to the 525 kV Hoodoo Wash switchyard; the buffer is 2.2 miles wide in the northwest section near the Palomas Mountains. The analysis below considers cultural resources within the project site as well as the visual and auditory impacts within the APE.

3.3.5.1. Affected Environment

Over six cultural resource surveys were conducted in the area of the construction footprint between 2011 and 2024 (Bryce 2023a, 2023b; Burgess and Moses 2010; Griset et al. 2013; Hart 2015; Moses et al. 2010; Pitroff 2023; Miller et al. 2023; Jones 2024). A variety of cultural resources were identified, including artifact scatters, thermal rock features, trails, rock rings and cleared areas, roads, and military sites. Cultural resources in the area have been assessed for cultural significance by the BLM in consultation with the SHPO and consulting tribes. The project site has been impacted by past uses, and many of the archaeological sites have been disturbed.

A record search of the Arizona State Museum Files Office and BLM Yuma Field Office site records identified 123 cultural resource sites within the APE, 16 of which are within or intersect the proposed project's construction footprint. Only one site has been determined to be eligible for listing on the National Register of Historic Places (NRHP). The project proponent has committed to avoiding this site and mitigating the adverse effects. The project proponent would avoid impacts on eligible or potentially eligible cultural resources by avoiding development in the eastern SEZ parcel (see Section 2.5).

The project proponent and BLM evaluated a number of key observation points (KOPs) within the APE to assess the change in the viewshed that would result from development of the Elisabeth Solar Project. Visual simulations were prepared for four upland locations in the APE thought to be of potential cultural importance to affiliated tribes. These locations were the Agua Caliente Mountains, Baragan Mountains, Palomas Mountains, and Upper Hoodoo Wash. Based on photography and visual simulations, the project would be visible from all of these upland locations, although in most cases they would be in the far distance (Elisabeth Solar, LLC 2023e,

Table 2 and Table 3). Analyses of other cultural resources within the study area showed that the proposed project would not be visible from these locations due to the distance, topography, or shielding by existing solar facilities.

3.3.5.2. Environmental Consequences

Impacts on cultural resources include direct, indirect, and cumulative effects due to construction, operation, and decommissioning of the proposed project. As defined under 36 CFR 800.5(a)(1), an adverse effect on historic properties occurs when a federal undertaking directly or indirectly alters any characteristics of a historic property that qualify it for the NRHP. An adverse effect on a historic property is not limited to physical destruction or damage but also may include relocation of the property, changes in the character of the property's setting, and the introduction of visual, atmospheric, or audible intrusions. Impacts from a federal undertaking that result in an adverse effect on a historic property may also include reasonably foreseeable effects caused by the undertaking that may occur later in time. Under both the proposed action and reduced grading alternative, a loss of cultural resources that are not NRHP-eligible would occur.

The BLM is developing and consulting on a memorandum of agreement (MOA) that tiers off of the programmatic agreement developed as part of the RDEP planning effort to address potential effects on historic properties. When implemented, the MOA will provide for the resolution of adverse effects identified through baseline studies and consultation with consulting parties. In coordination with the NEPA review (36 CFR 800.8), execution of the MOA will complete the NHPA Section 106 process, meeting the requirements of NHPA Section 106 (36 CFR800.2(d)(3)).

Alternative 1 – Proposed Action

The project site contains one historic property that has been determined eligible for listing on the NRHP under Criterion D.[8] While the project proponent has committed to avoiding this site, the BLM, in consultation with the SHPO and tribes, has determined that the proposed project would adversely affect the setting and context of the site and that treatment measures are warranted to minimize and mitigate the adverse effects on this historic property.

The BLM is developing a Historic Properties Treatment Plan to mitigate the adverse effects on the eligible site and any potential NRHP-eligible properties inadvertently discovered during project construction. The project proponent would commit to the treatment methods contained within this plan to avoid, minimize, and mitigate adverse effects associated with development of the proposed project. These treatments would include protective measures for the eligible site, providing cultural resources awareness training to all construction personnel, and providing archaeological and tribal monitoring in areas subject to site grading. Monitoring would occur to identify any buried cultural deposits or human remains. If such features are discovered during monitoring, the procedures specified under the Archaeological Resources Protection Act and the Native American Graves Protection and Repatriation Act, respectively, would be implemented. The project proponent would also commit to developing a Collaborative Research Study report.

[8] Has yielded or may be likely to yield information important in history or prehistory (36 CFR 60.4).

This study would be a collaborative effort between the BLM Yuma Field Office and participating tribes. This would further mitigate adverse effects.

In addition to direct effects, construction activities would result in indirect effects from increased noise from heavy equipment and an increase in construction-related traffic. These atmospheric and audible impacts would be short term and largely limited to construction; it is not anticipated that these would impact the integrity of cultural resources in the APE.

New ground disturbance would not occur during operation, thereby minimizing the potential for new impacts on cultural resources. The identified eligible site would be treated similarly as during construction, with the area avoided by all project-related activities. Operation and maintenance personnel, contractors, subcontractors, and associated vendors would receive cultural resources awareness training. The presence of the proposed project would introduce changes to the surrounding area that would modify its visual character. This is not expected to significantly diminish the visual integrity of surrounding areas, given the minimal visual contrast with the existing adjacent solar facilities.

No impacts on cultural resources are anticipated during decommissioning of the proposed action; this is because removal of project infrastructure and site reclamation activities would occur in previously disturbed areas. Additionally, the eligible site would be avoided during all decommissioning activities. No auditory or visual impacts on cultural resources would remain after the site is reclaimed.

Alternative 2 – Reduced Grading Alternative

Impacts under the reduced grading alternative would be similar to those described under the proposed action. The NRHP-eligible site would remain in the project footprint, with the same avoidance, minimization, and mitigation measures applied to resolve adverse effects on this historic property during construction, operation, and decommissioning.

Because the project proponent would avoid the three drainages in the western side of the SEZ parcel, the potential for impacting undiscovered resources would be avoided in these areas. The same measures would be applied in disturbed areas to address potential adverse effects related to unanticipated discoveries.

Impacts on cultural resources from atmospheric, auditory, and visual changes would be as described for the proposed action.

Alternative 3 – No Action Alternative

Under the no action alternative, the project proponent would not construct the Elisabeth Solar Project. Any ongoing impacts on cultural resources from recreational use of the project site would continue. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on cultural resources as those described under the proposed action and reduced grading alternative. However, the magnitude of effect would be much higher if development were proposed in the eastern SEZ parcel due to its high cultural

sensitivity, as described in Section 2.5.2. Future projects would be required to undergo consultation to determine potential effects. Also, avoidance, minimization, and mitigation measures would be required to address those effects.

Cumulative Effects

The past, present, and reasonably foreseeable future actions described in Table 3-2 have affected or will affect cultural resources in the APE. Many of these actions, along with the past military use described in Section 3.1.2, have rendered these resources not eligible for listing in the NRHP. Development of the proposed project in combination with other solar projects in the areas would contribute to this cumulative effect; however, the effect would be mitigated at the project level through survey of each project site and application of avoidance, minimization, and mitigation measures to address adverse effects. The proposed project, while representing a weak change to the visual setting from most examined viewpoints, could represent a cumulatively adverse effect on the visual setting when combined with other solar facilities in the APE depending on the sensitivity of the viewer. While existing and proposed projects would represent over 13,000 acres of solar infrastructure (see Figure 3-1), the topography of the area is such that not all of the facilities would be visible from any given viewpoint in the area.

3.3.6 Native American Concerns

How would construction and operation of the project affect tribal cultural properties or sensitive tribal resources?

Regulations, policies, and laws pertaining to Native American cultural and religious concerns include the American Indian Religious Freedom Act, the Native American Graves Protection and Repatriation Act, Executive Order 13007, Executive Order 13175, and Section 106 of the NHPA.

Tribes have not commented specifically on concerns outside of the Section 106 process. However, tribal locations of interest and use can include cultural landscapes, which consist of features and natural and cultural resources within a landscape as defined by a tribe. Although no cultural landscapes have been identified to date, if identified, solar development could impact these landscapes by changing the visual and auditory setting, such as the introduction of manmade features in locations with important views or increased noise. Additionally, physical disturbance from the construction and placement of solar facilities could alter uses of natural or cultural resources, such as change access to areas for hunting or plant collection, or remove important resources from cultural landscapes, such as removing culturally significant vegetation or altering movement patterns of culturally significant wildlife species.

Effects on the auditory environment from the proposed project are described in Section 3.2.6. Effects on vegetation are described in Section 3.2.2. Effects on wildlife and wildlife connectivity are described in Section 3.2.1, while effects on special status species and migratory birds are described in Sections 3.3.1 and 3.3.2, respectively. Measures taken to minimize and avoid impacts on these resources are also described in these sections.

3.3.6.1. Affected Environment

Similar to the cultural resources APE, the analysis area for Native American concerns encompasses the project footprint as well as an approximately 5-mile buffer around the project site. In addition to information provided by tribes, multiple cultural resource surveys (Burgess and Moses 2010; Griset et al. 2013; Hart 2015; Moses et al. 2010; Pitroff 2023; Miller et al. 2023; Jones 2024) and the Elisabeth Solar Project Visual Resources Study (Elisabeth Solar, LLC 2023e) provide information about possible resources that are of interest and significance to Native American communities.

During this project, the BLM has coordinated with the following 14 tribes: the Ak-Chin Indian Community, Tohono O'odham Nation, Salt River Pima-Maricopa Indian Community, Gila River Indian Community, Colorado River Indian Tribes, Cocopah Indian Tribe, the Fort McDowell Yavapai Nation, Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Yavapai Prescott Indian Tribe, Yavapai-Apache Nation, Mescalero Apache Tribe, Hopi Tribe, and Pueblo of Zuni. Several of these tribes have provided feedback and information specific to the proposed project. Many of these tribes have historical and ancestral connections with cultural and natural resources within the area, and several tribes have provided information specific to the project. Other tribes have historical and cultural connections to the area due to historical migrations and socio-political connections to the region, although their traditional ancestral lands are not directly within the analysis area. Government-to-government consultation occurred as part of a programmatic agreement concluded under Section 106 of the NHPA for the RDEP planning effort that established the Agua Caliente SEZ; the BLM reinitiated consultation for this EA.

Ongoing tribal consultation, cultural resource surveys, and other planning efforts have identified resources with significance to tribes that could experience direct or indirect impacts from the proposed project. Under Section 106, Native American consultation and coordination have identified one NRHP-eligible historic property within the project area (see Section 3.3.5, Cultural Resources). Additional cultural resources are also present within the APE.

3.3.6.2. Environmental Consequences

Impacts on Native American concerns can occur through the destruction or degradation of important plant and water resources, the destruction of habitat, or impediments to the movement of culturally important wildlife. Impacts can also occur through the destruction of culturally significant archaeological and historic resources, destruction of or disruption to traditional cultural properties, and alteration of significant spiritual geological formations or geographic locations. The BLM has consulted with tribes to identify their concerns. Through this consultation, tribes identified cultural resources of significant concern in the eastern SEZ parcel, and the project proponent elected to avoid development in this area based on those concerns. Tribes are invited through consultation with the BLM to provide input into the development of the Historic Properties Treatment Plan and MOA, which together will determine the measures the project proponent would take to avoid, minimize, and mitigate adverse impacts on resources of concern.

Alternative 1 – Proposed Action

The proposed action could impact cultural and natural resources important to Tribes, including the archaeological sites and natural features and plants identified above. The known NRHP-

eligible precontact site in the development area would be protected during construction, operation, and decommissioning through the measures in the Historic Properties Treatment Plan described in Section 3.3.5.

The proposed project could have indirect impacts on important locations within the surrounding landscape, particularly due to visual changes in the landscape. Construction activities would introduce short-term impacts on the surrounding area due to changes in the auditory and atmospheric conditions. Operation of the proposed project would represent a change to the visual landscape. This change would represent a weak contrast due to the distance from most potentially sensitive viewpoints and because the proposed project would be masked by the adjacent solar projects (Elisabeth Solar, LLC 2023e). Visual resource analyses and consultation to date have not indicated that sensitive Native American resources would be adversely affected.

Construction of the proposed project would result in the removal of some plant and animal species that could be important to Native Americans or render them inaccessible. As described in Sections 3.2.1 and 3.2.2, much of the project site is barren or only sparsely vegetated, with low-quality habitat available for wildlife. Indirect effects from the establishment and spread of invasive plants and noxious weeds are a concern that would be minimized through the measures described in Section 3.2.3.

At decommissioning, project facilities would be removed and the area would be reclaimed, which would reduce both direct and indirect impacts on Native American concerns.

Alternative 2 – Reduced Grading Alternative

Impacts under the reduced grading alternative would be similar to those described under the proposed action. Impacts on the NRHP-eligible site would remain, with the same minimization and mitigation measures applied to resolve adverse effects during construction, operation, and decommissioning. Impacts on cultural resources from atmospheric, auditory, and visual changes would be as described for the proposed action.

As described in Sections 3.2.1 through 3.2.3, under the reduced grading alternative the project proponent would avoid development in three of the drainages in the western side of the SEZ parcel. Because these drainages contain denser vegetation than other areas of the project site, avoidance of these areas would retain vegetation to a higher degree than under the proposed action. In addition, the project proponent would seek to enhance vegetation conditions and improve soil health using the measures described in Section 2.3, potentially improving wildlife habitat conditions in these areas more than under the proposed action. Because fewer acres would undergo site grading (515 acres compared with 900 acres under the proposed action), the potential for the introduction and spread of invasive plant species and noxious weeds would be less than under the proposed action.

Alternative 3 – No Action Alternative

Under the no action alternative, the project proponent would not construct the Elisabeth Solar Project. Any ongoing impacts to cultural resources from recreational use of the project site would continue. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar

development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on resources of Native American concern as those described under the proposed action and reduced grading alternative, though the magnitude of effect could be much higher if development were proposed in the eastern SEZ parcel due to its high cultural sensitivity, as described in Section 2.5.2. Future projects would be required to undergo consultation to determine potential effects. Also, avoidance, minimization, and mitigation measures would be required to address those effects.

Cumulative Effects

Past, present, and reasonably foreseeable future actions described in Table 3-2 have and will contribute to the potential for cumulative impacts on tribal resources. Development of the proposed project, in combination with other cumulative projects, could affect known and unknown traditional cultural properties, resulting in a cumulative loss of resources considered by consulting tribes to be significant. Many projects in the area, including the proposed action and other solar projects, would result in the cumulative loss of native habitat, ground disturbance, wildlife disruption, and vegetation clearing, resulting in the loss of native vegetation and changes in wildlife communities that are considered important to Native American communities. The proposed project, while representing a weak change to the visual setting from most examined viewpoints, could represent a cumulatively adverse effect on the visual setting when combined with other solar facilities in the APE depending on the sensitivity of the viewer. While existing and proposed projects would represent over 13,000 acres of solar infrastructure (see Figure 3-1), the topography of the area is such that not all of the facilities would be visible from any given viewpoint in the area.

3.3.7 Paleontological Resources

How would surface disturbance impact paleontological resources in the project area?

3.3.7.1. Affected Environment

Paleontological resources are fossilized remains, traces, or imprints of organisms preserved in the earth's crust that are of paleontological interest and that provide information about the history of life on earth (Paleontological Resources Preservation Act of 2009, Section 6301; 16 USC 470aaa). Generally, vertebrate fossils are considered significant resources with high scientific value, though some invertebrate and plant fossils may also be considered significant resources with high scientific value. The BLM manages fossils to promote their use in research, education, and recreation.

The Potential Fossil Yield Classification (PFYC) system is a way of classifying geological units based on the relative abundance of vertebrate or scientifically significant fossils (plants, vertebrates, and invertebrates) and their sensitivity to adverse impacts. The system assigns values between 1 and 5, with a higher class number indicating a higher potential for presence. A PFYC ranking of "U" indicates these geological units cannot receive an informed ranking. A Paleontological Resource Assessment report was developed in support of the RDEP planning process (Sauter et al. 2011). This assessment assigned project site lands as PFYC 2. The report also documented that no fossil resources or localities had previously been documented within the

area, based on database searches and a review of published literature for the area. Areas documented as PFYC 2 in the 2011 assessment are now considered PFYC U.[9]

A review of the BLM database returned no documented localities within or in the vicinity of the project site. Information obtained from the San Bernardino County Museum indicated that the Division of Earth Science's records include paleontological localities in only a few areas in Arizona, with none recorded in or near the project site. This suggests that the museum has not historically engaged in survey or collection efforts in the project area (Zeigler Geologic Consulting, LLC 2023).

As described in the project's Paleontological Resources Management Plan, there is a modest potential for fossil material to be preserved in the sands and gravels in the Palomas Plain. There is also the potential to intersect Miocene-Pliocene sedimentary strata in the subsurface that could lead to the discovery of fossil material during ground-disturbing activities.

3.3.7.2. Environmental Consequences

Alternative 1 – Proposed Action

Surface-disturbing activities involving excavation have the potential for impacting paleontological resources if encountered. Under the proposed action, site grading during construction would occur on approximately 900 acres of the project site, with excavations occurring in more limited areas. Excavations can have direct, destructive impacts on paleontological resources by removing in-place resources. These effects can be mitigated by recovering specimens and collecting data for future interpretation. Surface and near-surface paleontological resources can also be impacted by shallower surface-disturbing activities. Shallowly buried paleontological resources can be exposed by natural erosion, which can be exacerbated by surface-disturbing activities. Surface exposure can lead to discovery of paleontological resources, but fossils can be damaged or lost by the direct action of ground disturbance, subsequent erosion, and unauthorized collection.

Operational activities would have no direct impacts on paleontological resources because there would be no new surface disturbances. Direct impacts related to decommissioning would include the damage or loss of paleontological resources from ground-disturbing activities similar in nature to those described for construction. However, they would be at a much lesser scale since the activities would take place in previously disturbed areas.

Potential impacts on paleontological resources during construction would be minimized by surveying for exposed geologic features prior to surface-disturbing activities. As described in the Paleontological Resources Management Plan, monitoring for paleontological resources would occur during preliminary ground-disturbing activities if warranted based on the results of the survey. In addition, worker training would reduce the potential for indirect impacts from looting or vandalism should a paleontological resource be exposed by project activities or erosion. Implementing these and other measures contained in the Paleontological Resources Management

[9] P. Gensler, BLM regional paleontologist, personal communication in August 2023

Plan would ensure that impacts on paleontological resources were avoided, minimized, or mitigated.

Alternative 2 – Reduced Grading Alternative

Impacts under the reduced grading alternative would be similar to those described under the proposed action. However, because the project proponent would avoid the three drainages on the western side of the project site, the potential for impacting undiscovered resources would be less than under the proposed action. The same measures would be applied to address potential adverse effects on paleontological resources.

Alternative 3 – No Action Alternative

Under the no action alternative, there would be no impacts on paleontological resources from construction, operation, or decommissioning of the proposed project. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on paleontological resources as those described under the proposed action and would be subject to RDEP-required design features to minimize these impacts.

Cumulative Effects

No cumulative impacts on paleontological resources are anticipated because no occurrences of such resources have been recorded in the project area.

3.3.8 Visual Resources

What short-term and long-term visual changes to the landscape would result from development of the solar facility?

3.3.8.1. Affected Environment

The BLM's VRM system guides visual resources management on BLM-administered lands. The visual resource inventory (VRI) process provides BLM managers with an objective means for determining visual values. The process involves a scenic quality evaluation, sensitivity level analysis, and delineation of distance zones. Based on these factors, BLM-administered lands are placed into one of four visual resource inventory classes. These inventory classes represent the relative value of the visual resources, with Classes I and II being the most valued, Class III representing a moderate value, and Class IV being of least value. The project site was identified as VRI Class III (BLM 2012b, Section 3.22).

The visual contrast rating system provides a systematic way to evaluate proposed projects and to determine whether projects conform to the approved VRM objectives. BLM-administered lands on the project site are managed as VRM Class IV (BLM 2013). The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Visual resources consist of landform (topography and soils), vegetation, and human-made structures. These elements of the landscape can be described in terms of their form, line, color, and texture. The analysis area for visual resources includes lands where potential changes to the landscape from the proposed project may be discerned. The analysis area used for visual resources is the area within 15 miles of the project site. This analysis area encompasses the APE for cultural resources and potential Native American concerns (see Sections 3.3.5 and 3.3.6, respectively) and potentially sensitive resources identified in the Arizona Regional Mitigation Strategy (BLM 2016a).

The proposed project is in an area characterized by a broad alluvial basin bounded by mountainous terrain. The alluvial plain consists of desert scrub habitat and agricultural fields extending between the Agua Caliente Mountains to the east, Baragan Mountain to the northeast, Kofa Mountains to the northwest, and Palomas Mountains to the west. The topography of the project area is relatively flat with some moderate variation as ephemeral washes traverse the area.

The project site is surrounded by irrigated and non-irrigated agricultural fields to the west and southwest and developed solar fields to the east and northeast. An out-of-service rail line, the Hoodoo Wash switchyard, and linear features lie to the south and southeast of the project site. These include Palomas Road and a 500 kV transmission line. A number of existing dirt-track routes cross the project site and surrounding BLM-administered and ASLD lands.

The potential viewers of the proposed project include individuals traveling along Palomas Road and recreational users who traverse the area on both developed and existing dirt-track routes. A railroad berm and general topography and vegetation would limit views of the proposed project from portions of Palomas Road. The most prominent views of the project site would be from routes within the Palomas Mountains.

3.3.8.2. Environmental Consequences

Visual resource impacts describe a project's physical characteristics and the extent to which the project would change the perceived visual character and quality of the environment in which it was located. The BLM's VRM system (BLM Manual 8400, Manual H-8410-1, and Manual H-8431) was used to assess the existing landscape setting, identify potential sensitive views, and assess the level of visual contrast that would be introduced through the construction and operation of the project. This analysis is contained within the Elisabeth Solar Project Visual Resources Study (Elisabeth Solar, LLC 2023e), which is available on the project's ePlanning page.[10]

KOPs are locations from which the public could potentially view the project from a stationary or linear perspective. The project proponent worked with the BLM to identify culturally and visually sensitive locations within the viewshed of the proposed project. A viewshed analysis was then performed to determine if the project would be visible from these locations. Sixteen locations were initially considered, and fourteen were determined to potentially have views of the proposed project (Elisabeth Solar, LLC 2023e, Figure 3). Site photography was collected and

[10] https://eplanning.blm.gov/eplanning-ui/project/2025061/570

reviewed, and visual simulations were prepared for seven KOPs. Simulations were not prepared if the topography or the existing Agua Caliente Solar Facility screened the view of the project despite the viewshed analysis indicating potential visibility. Contrast rating analyses were performed for all fourteen KOPs to determine the potential level of change to the visual environment as viewed from that location. Visual simulations and visual contrast rating worksheets may be found in Appendix A of the Elisabeth Solar Project Visual Resources Study (Elisabeth Solar, LLC 2023e).

Alternative 1 – Proposed Action

Under the proposed action, short-term contrasts with the characteristic landscape of the project area would result from activities associated with construction of the proposed project. Removal of vegetation, grading, and installation of project components would result in contrasts to the color, texture, and lines of the landscape over the approximately 15- to 18-month construction period. The presence of construction equipment, vehicles, and materials, dust generated by grading or travel on disturbed surfaces, and artificial lighting would be visible. These would create a weak to moderate contrast depending on the distance from the site. The proposed project would be constructed adjacent to two existing solar facilities, weakening the contrast experienced by those in the project area. While this level of change would be compatible with the project site's VRM Class IV management objective, design features and BMPs described in Appendix B would be applied to minimize the effects of dust and lighting on visual resources.

Development of the proposed project would introduce a 1,548-acre solar facility to a landscape of low scenic quality, assessed as such based on its modification by current solar, transmission, road, and railroad infrastructure. This visual change would last for the duration of time that the project would be operating, estimated to be at least to the end of the lease in December 2052. The visual contrast rating analysis completed for the 14 KOPs determined that while the project would be visible from some nearby and more distance viewpoints, the visual change imparted by the project would represent a weak to moderate contrast. The weakness of the contrast would be because these new structures would be adjacent to two existing solar facilities or would be in the far distance with respect to the viewpoints evaluated. A summary of the KOPs and contrast ratings is provided in Table 3-6. The proposed project would be in conformance with the VRM Class IV management objective.

Table 3-6. Visual Contrast from Key Observation Points

KOP[1]	Location (Distance from the Project Site)	Observer	Degree of Contrast[2]
KOP 2	Gila River and Juan Bautista de Anza National Historic Trail (5 miles)	Recreational users	None
KOP 3 / C-6	Agua Caliente Mountain (9 miles)	Recreational and other users	Weak
KOP 4 / C-5	Palomas Road (5 miles)	Motorists	None
KOP 5 / C-4	Palomas Mountains (1.25 miles)	Recreational and other users	Weak to moderate
KOP 6	Route on BLM lands (0.25 miles)	Recreational motorists	Weak

KOP[1]	Location (Distance from the Project Site)	Observer	Degree of Contrast[2]
KOP 7	Palomas Road (1.8 miles)	Motorists	None
KOP 8	AZ Peace Trail (2 miles)	Recreational motorists	None
KOP 9	Yuma East Undeveloped Special Recreation Management Area (SRMA; 0.25 miles)	Recreational motorists	Weak to moderate
KOP 10	Route on BLM lands (0.1 miles)	Recreational motorists	None
KOP 11	Route on ASLD lands (0.4 miles)	Recreational motorists	Weak
KOP 12 / C-8	Sears Point ACEC Core Area (7.5 miles)	Recreational and other users	None
C-2	Upper Hoodoo Wash (10 miles)	Recreational and other users	Weak
C-3	Baragan Mountains (6.5 miles)	Recreational and other users	Weak
C-7	Gila River Valley Undeveloped SRMA (6 miles)	Recreational and other users	None

[1]KOP-1 (Yuma East Undeveloped SRMA) and C-1 were removed from analysis based on the viewshed analysis (Elisabeth Solar, LLC 2023e, Figure 3). The community of Dateland and Interstate 8 were not included as KOPs because the proposed project was determined to not be visible from those distances.
[2]None: The element contrast is not visible or perceived. Weak: The element contrast can be seen but does not attract attention. Moderate: The element contrast begins to attract attention and begins to dominate the characteristic landscape. Strong: The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

Impacts on visual resources would be minimized by applying the design features and BMPs included in Appendix B. These measures would include minimizing the effects of any lighting that is required for operations, as laid out in the project's Lighting Plan. Impacts have also been minimized by co-utilizing the gen-tie line with the White Wing Ranch Solar Facility.

At the end of project life, all project-related components would be removed and the project site would be reclaimed as outlined in the Site Reclamation and Revegetation Plan. Visual effects during this process would be similar to those described for construction but would occur over a shorter time period and at a lesser scale. As part of decommissioning and site reclamation, land surfaces would be revegetated and reclaimed in accordance with the Site Reclamation and Revegetation Plan and Integrated Vegetation, Weed, and Pest Management Plan. With removal of the solar facility, the visual contrast with the surrounding landscape would largely cease once the site is reclaimed.

Alternative 2 – Reduced Grading Alternative

Under the reduced grading alternative, impacts on visual resources would be as described for the proposed action. While avoidance of the three washes would reduce the amount of grading and fugitive dust generated on the project site during construction, use of the temporary construction access road would result in increased dust generation closer to, and thus more visible from, Palomas Road. Measures to control dust described under the proposed action would also be applied in this area to minimize this effect.

The visual contrast of the project as observed from each KOP would be the same as described in Table 3-6. Like the proposed action, development of the proposed project under this alternative would be in conformance with VRM Class IV management objectives.

Alternative 3 – No Action Alternative

Under the no action alternative, the project proponent would not construct the Elisabeth Solar Project. No changes in visual resources would occur. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on visual resources as those described under the proposed action and reduced grading alternative and would be subject to RDEP-required design features to minimize these impacts. The degree of visual contrast may be greater from some KOPs if development were to occur in the eastern SEZ parcel.

Cumulative Effects

The proposed project, while representing a weak change to the visual setting from most examined viewpoints, could represent a cumulatively adverse effect on the visual setting when combined with other solar facilities in the cumulative effects area depending on the sensitivity of the viewer. While existing and proposed projects would represent over 13,000 acres of solar infrastructure (see Figure 3-1), the topography of the area is such that not all of the facilities would be visible from any given viewpoint in the area.

While the proposed project in combination with the Agua Caliente and White Wing Ranch Solar Facilities would expand the level of solar development to encompass over 5,000 adjacent acres, the SEZ was created specifically to site solar infrastructure in an area already developed with that use.

3.3.9 Recreation, Access, and Travel Management

How would development of the solar facility impact recreational opportunities in the project area and access to the Yuma East Special Recreation Management Area?

How would development of the solar facility impact travel management routes in the project area?

3.3.9.1. Affected Environment

The proposed project is adjacent to the 526,000-acre Yuma East Undeveloped SRMA, which provides dispersed recreation and wildlife-based recreation opportunities through motorized and nonmotorized means. The RDEP Final ROD and Approved RMP Amendments removed the SRMA designation from the SEZ (BLM 2013). Recreational uses within the SRMA include camping, hunting, hiking, horseback riding, OHV riding, and wildlife and wildflower viewing opportunities (BLM 2010, 2012b).

There are no developed recreation facilities or designated OHV routes on the project site (BLM 2010). Undesignated routes may be used by some members of the public to access areas to the north for hunting and OHV riding opportunities. The primary undesignated route is used by some members of the public to access an area north of the site that overlooks Hoodoo Wash and is used for dispersed camping. The project site itself is used by some members of the public for

RV camping. People may use the project site as a base camp, as the undesignated routes to the north cannot accommodate RV or trailer traffic.

The project site is within Arizona Game Management Unit 41 (AGFD 2024). The principal focus of this unit is hunting for bighorn sheep, mule deer, dove, and quail. Hunting does not occur on the project site, but users may transit the site to access opportunities to the north. AGFD and its volunteers transport water for wildlife management purposes to areas throughout the game unit and surrounding areas; undesignated routes within the project site are not used as water haul routes. There are no BLM-designated recreational shooting areas within the project site.

Access to areas north of the project site is available via Palomas Harquahala Road, which runs through the eastern SEZ parcel and is part of the Arizona Peace Trail. This access would remain unaffected by the proposed project.

3.3.9.2. Environmental Consequences

Alternative 1 – Proposed Action

Under the proposed action, the project site would be fenced at the start of construction and unavailable for recreational use and public access over the life of the project. Recreational use and public access on the remaining 118 acres of the western SEZ parcel would also be affected due to the fencing of the proposed project in combination with the fencing on the White Wing Ranch and Agua Caliente Solar Facilities. While this would represent a loss of recreational opportunity for those members of the public who camp on the project site or use the undesignated routes to access areas to the north, the BLM designated the SEZ in 2013 expressly for solar energy use. While the proposed project would remove any recreational opportunities now available in the approximately 1,666 acres of the western SEZ parcel, similar recreational opportunities exist elsewhere in the approximately 526,000-acre Yuma East Undeveloped SRMA. Similarly, access to areas north of the project site would remain via Palomas Harquahala Road, which runs through the eastern SEZ parcel. The proposed project would not impact hunting opportunities or water hauling for game management purposes. Hunters would still be able to use existing routes, as described above. Upon decommissioning and site reclamation, recreational use and access of the area could resume.

Indirect impacts on recreation from the change in the overall character of the project site would be low, as the proposed project is in an area adjacent to existing solar infrastructure and would not represent a large change in the visual setting. The analysis of visual impacts in Section 3.3.8 indicates that the proposed project would not affect the viewshed for recreators as seen from the Juan Batista de Anza National Historic Trail, Sears Point ACEC, or the Gila River Terraces and Lower Gila Historic Trails ACEC.

Alternative 2 – Reduced Grading Alternative

Under the reduced grading alternative, impacts on recreation and access during construction, operation, and decommissioning would be as described for the proposed action. Use of the temporary construction access route would not result in any additional impacts on recreation or access.

Alternative 3 – No Action Alternative

Under the no action alternative, the project proponent would not construct the Elisabeth Solar Project and no changes in recreational use or access through the project site would occur in the short term. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts on recreation and access as those described under the proposed action and reduced grading alternative. Because the Arizona RDEP ROD and Approved RMP Amendments (BLM 2013) requires that Palomas Harquahala Road be left open, development of the eastern SEZ parcel likely would not affect access to a greater degree than described for the proposed action and reduced grading alternative.

Cumulative Effects

The proposed project would have an incremental but not cumulatively significant adverse effect on recreation and access. Most reasonably foreseeable future projects are proposed on private or ASLD lands not currently used for recreation; therefore, this would not result in a cumulatively adverse loss of recreation opportunities or access in the project area.

3.3.10 Traffic and Transportation

How would construction, operation, and decommissioning of the project impact local traffic volumes and conditions?

3.3.10.1. Affected Environment

Access to the project site would be via Interstate 8, Avenue 64E, Palomas Road, and Palomas Harquahala Road and would involve three intersections: Interstate 8 Westbound Ramp/Avenue 64E, Interstate 8 Westbound Ramp/Avenue 64E, and Palomas Road/Palomas Harquahala Road. As described in Section 2.2, construction traffic would use Palomas Harquahala Road for only a short distance and then use private access easements across the Agua Caliente and White Wing Ranch Solar Facilities.

Interstate 8 is a paved, east-west freeway with two lanes in each direction separated by a dirt and vegetated swale; Interstate 8 has a posted speed limit of 75 miles per hour. Avenue 64E is a paved, north-south two-lane roadway with a posted speed limit of 35 miles per hour. Palomas Road is a paved, two-lane undivided road with a posted speed limit of 50 miles per hour. Palomas Harquahala Road is a north-south two-lane roadway that is only paved near the intersection with Palomas Road (Greenlight Traffic Engineering 2023). Palomas Harquahala Road crosses an out-of-service Union Pacific Railroad line via a public crossing.

Existing traffic conditions near the proposed project indicate that AM and PM peak hour turning movement volumes primarily occur from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM at the intersections of Palomas Road/Palomas Harquahala Road, Interstate 8 Westbound Ramp/Avenue 64E, and Interstate 8 Eastbound Ramp/Avenue 64E (Greenlight Traffic Engineering 2023).

Level of service (LOS) is a qualitative measure of the traffic operations at an intersection or on a roadway segment. Level of service is ranked from LOS A, which signifies little or no congestion and is the highest rank, to LOS F, which signifies congested conditions. The LOS at the

intersection of Palomas Road/Palomas Harquahala Road was calculated to be LOS A in the weekday AM and PM weekday peak hours. The LOS at the Interstate 8/Avenue 64E westbound and eastbound intersections were calculated to be LOS A in the weekday AM peak hours and LOS B in the weekday PM peak hours. This is better than the performance criteria of LOS D or better for the Palomas Road/Palomas Harquahala Road intersection and LOS C or better for the Interstate 8/Avenue 64E interchanges (Greenlight Traffic Engineering 2023).

The project area experiences a relatively low frequency of crashes and severe accidents (Greenlight Traffic Engineering 2023).

3.3.10.2. Environmental Consequences

Alternative 1 – Proposed Action

Under the proposed action, construction activities would generate approximately 428 AM peak hour trips, 428 PM peak hour trips, and 928 daily trips on a typical weekday. The number of workers and deliveries would vary over the 15- to 18-month construction period depending on the stage of construction. Based on workforce patterns during recent construction of the White Wing Ranch Solar Facility, workers are likely to travel primarily from the Yuma and Gila Bend areas.

A traffic impact analysis was prepared for the proposed project to assess the potential impact on roadway and intersection LOS during construction and operation of the proposed project (Greenlight Traffic Engineering 2023). Based on this analysis, affected roadways and intersections are expected to perform at LOS C or better during AM and PM peak hours (Greenlight Traffic Engineering 2023, Table 8). This is an acceptable LOS based on the performance criteria described under the affected environment. This indicates that the proposed project's peak construction traffic would not adversely impact local roadway or intersection conditions.

In addition to the LOS analysis, the traffic study included a turning lane analysis. This analysis found that construction traffic levels would warrant dedicated left-turn lanes at the Interstate 8 westbound ramp/Avenue 64E intersection and the Interstate 8 eastbound ramp/Avenue 64E intersection. However, it also concluded that measures would not be reasonable since the impacts would be short term and temporary. The study determined that no impacts from traffic queueing would occur during AM and PM peak hours at any of the studied intersections.

As described above, local roadways and intersections would be able to accommodate construction-related traffic and the proposed project would not have traffic-related impacts. Operation and decommissioning also would not impact local roadway or intersection conditions given that the number of trips generated during these phases would be much less than during construction. Approximately ten AM and PM peak hour trips are anticipated during operation, and 200 AM and PM peak hour trips are estimated during decommissioning. Local roadways and intersections would not experience an unacceptable LOS from operation or decommissioning.

While no adverse traffic-related impacts are anticipated, the project proponent would avoid and minimize adverse effects by implementing design features and BMPs in Appendix B, as laid out in the project's Traffic Management Plan; obtain and adhere to the conditions of any required

encroachment or oversize vehicle permits; and adhere to conditions recommended by the Arizona Department of Transportation in its review of the traffic impact study. Onsite access road development and use would adhere to all BLM requirements as described in Appendix B and the project's Access Road Siting and Management Plan to avoid adverse effects from access road development and use on the project site.

Alternative 2 – Reduced Grading Alternative

Impacts on local roadways and intersections under the reduced grading alternative would be as described under the proposed action for construction, operation, and decommissioning with one exception. Under the reduced grading alternative, the project proponent would access the project site via the intersection of Palomas Road and an existing route primarily on ASLD lands south of the project site (see Figure 2-3). Review of intersection conditions by Greenlight Traffic Engineering indicated that the LOS during construction would be as described for the intersection of Palomas Road/Palomas Harquahala Road. Under this alternative, the project proponent would obtain a temporary private crossing agreement from Union Pacific Railroad and a temporary ROW from ASLD for this use. Measures to avoid and minimize traffic-related impacts would be as described for the proposed action.

Alternative 3 – No Action Alternative

Under the no action alternative, there would be no impacts on travel or transportation from construction, operation, or decommissioning of the proposed project. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed project were not authorized. Future solar development would have similar traffic-related impacts as those described under the proposed action and would be subject to RDEP-required design features and BMPs to minimize these effects.

Cumulative Effects

The proposed project in combination with other reasonably foreseeable future actions identified in Table 3-2 are not anticipated to impact the LOS of area roadways and intersections over the long term. Existing traffic levels in the area are low, and solar facilities, which comprise most of the anticipated future actions, do not require large workforces to operate.

Short-term and temporary cumulative impacts on local roadways and intersections could occur depending on the extent to which the construction period of the proposed project overlapped with the construction period for other proposed solar projects in the area. Of the projects identified, the proposed project and the White Wing Ranch, McFarland, and Proving Ground solar projects would all be likely to use a similar travel route to Palomas Road, though traffic would diverge at that point. Concurrent construction of these projects would add incrementally to traffic on local roads. Based on currently known information, construction of these projects would not have peak overlapping periods, minimizing the potential for adverse cumulative effects. In addition, construction of the McFarland project was underway and trips generated by that project were included in the baseline traffic counts, indicating more roadway and intersection capacity is available than was described by the study (Greenlight Traffic Engineering 2023).

3.3.11 Socioeconomics and Environmental Justice

How would the project impact employment, economy, services, and quality of life for local communities?

How would construction, operation, and decommissioning of the project affect environmental justice populations?

3.3.11.1. Affected Environment

The analysis area for socioeconomics is Yuma County, including Yuma and the rural community of Dateland (Figure 3-2). Gila Bend in eastern Maricopa County is also included in the analysis area because the workforce may draw from or use services within this area. Selected demographics for the analysis area are provided in Table 3-7. Employment data for the analysis area is displayed in Table 3-8. Data for Maricopa County and Arizona are included in each table for comparison.

The unincorporated rural community of Dateland is approximately 10 miles south of the project site near Interstate 8 and Avenue 64E. In 2022, it had a population of 341 people and a housing vacancy rate of 28 percent, 8 percent more than the 20 percent housing vacancy of Yuma County. From 2010 to 2022, the population of Dateland increased by 33.2 percent, 5 times faster than the population increase for Yuma County (Headwaters Economic 2024a, Headwaters Economic 2024b). As of 2022, the median household income in Dateland was $65,313 (in 2022 inflation-adjusted dollars), approximately 16 percent higher than the Yuma County median of $56,439. As shown in Table 3-8, primary occupations include management (27 percent of employment), sales (22 percent), and service (21 percent). Farming, fishing, and forestry make up approximately 8 percent of employment occupations.

Similar to Dateland, Yuma County is distinguished by its rural heritage. As of 2022, the county seat, Yuma, is home to a population of 96,314 people, or slightly under half of the county's population of approximately 204,374. From 2010 to 2022, the 5.6 percent population growth of Yuma was comparable to the population growth of Yuma County (7.3 percent). This was approximately one-third of the population growth of 14.8 percent for Arizona (Headwaters Economic 2024b). Similar to Dateland, the primary occupations in Yuma include management (31 percent), service (24 percent), and sales (21 percent). Construction comprises approximately 4 percent of employment. In 2022, the 12.5 percent unemployment rate in Yuma County was approximately three times the 3.8 percent unemployment rate in Arizona.

The town of Gila Bend, in southwestern Maricopa County, is approximately 50 miles east of the project site just off Interstate 8. Like the rest of the analysis area, it holds a rural character. In 2022, its population was 1,783 people a growth of 8.3 percent since 2010 (Headwaters Economic 2024a). Gila Bend had a housing vacancy rate of 10 percent, which was comparable to the 9 percent and 12 percent housing vacancy rates of Maricopa County and Arizona, respectively. Its major occupations include management (26 percent), production and transportation (20 percent), and service (17 percent). Construction constitutes 5 percent of the workforce. In 2022, the median household income was approximately $52,879, which is approximately 35 percent lower than the $80,675 median household income for Maricopa County. At 3.3 percent unemployment, Maricopa County had an unemployment rate that was comparable to the 3.8 percent unemployment rate in Arizona, while being relatively low compared with the Yuma County unemployment rate of 12.5 percent.

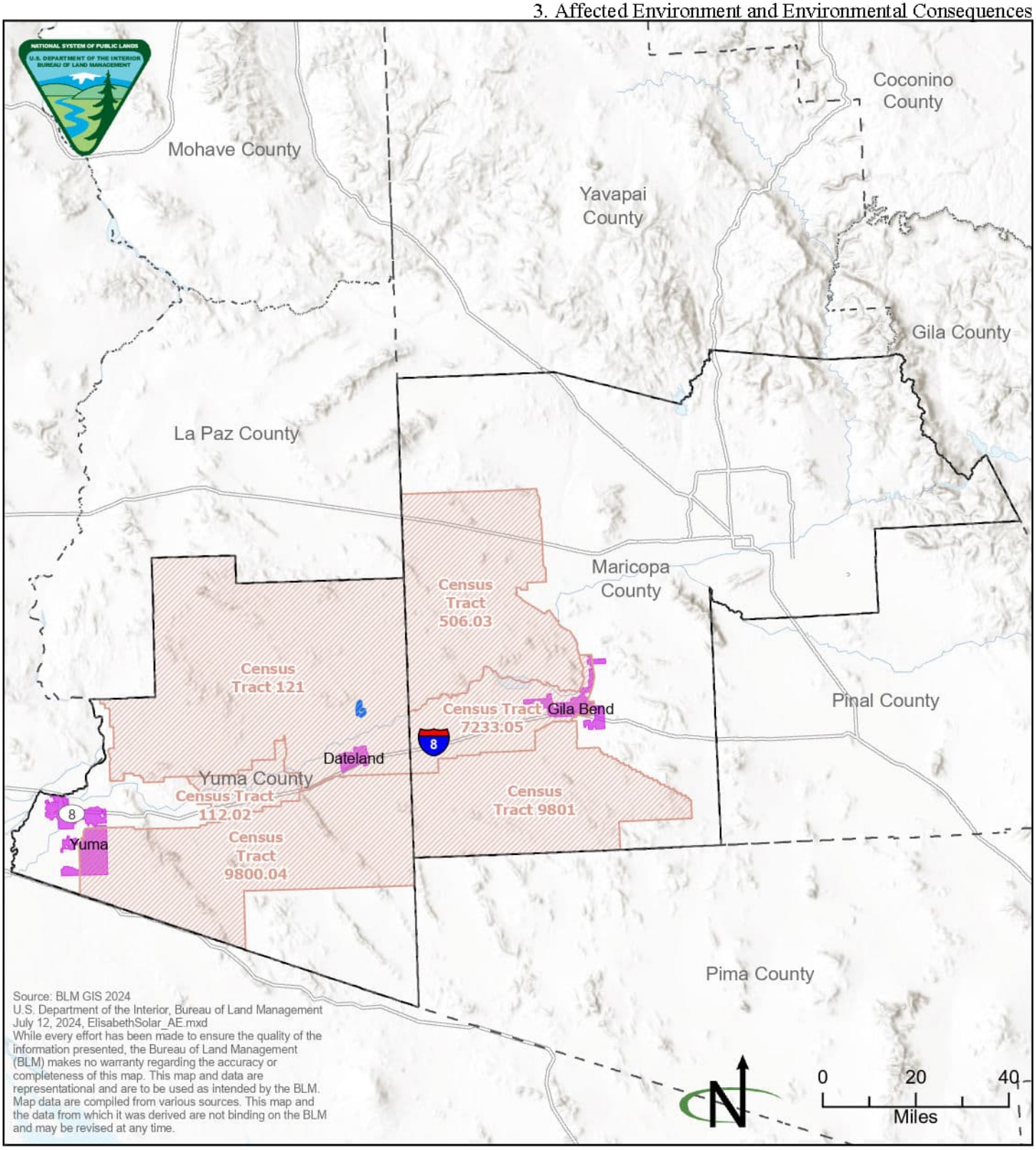

Figure 3-2
Analysis Area Census Tracts

Census Tracts
Communities
Analysis Area Counties
Elisabeth Solar Project

Table 3-7. Selected Demographic Indicators for Analysis Area (2022)

Indicator	Dateland	Yuma	Yuma County	Gila Bend	Maricopa County	Arizona
Population	341	96,314	204,374	1,783	4,430,871	7,172,282
Median household income	$65,313	$59,312	$56,439	$52,879	$80,675	$72,581
Unemployment rate	—	—	12.5%	—	3.3%	3.8%
Housing Units	181	42,718	92,808	792	1,821,463	2,739,136
Housing vacancy rates	28%	15%	20%	10%	9%	12%

Source: Headwaters Economics 2024a, 2024b
— : No data was reported. Unemployment rate is not available below the county level.
Note: Numbers in *italics* are estimates of medium and low reliability.

Table 3-8. Analysis Area Employment Characteristics (2022)

Occupation	Employment by Occupation (% Total Employment)					
	Dateland	Yuma	Yuma County	Gila Bend	Maricopa County	Arizona
Management, professional & related	*46* *27%*	11,779 31%	20,278 27%	*233* *26%*	896,199 41%	1,291,694 39%
Service	*31* *21%*	8,075 21%	15,993 21%	*151* *17%*	351,863 16%	580,583 18%
Sales and office	*27* *22%*	9,215 24%	15,047 20%	*143* 16%	510,195 23%	752,711 23%
Farming, fishing, forestry	*10* *8%*	*876* *2%*	5,177 7%	*123* 14%	5,463 <1%	16,631 <1%
Construction, extraction, maintenance & repair	*0* *0%*	*1,4604* *4%*	3,449 5%	*34* *4%*	108,544 5%	171,643 5%
Production and transportation	*10* *8%*	5,622 15%	11,862 16%	*176* *20%*	236,966 11%	361,244 11%
Total Employment*	***124***	**38,557**	**74,868**	***901***	**2,176,046**	**3,281,189**

Source: Headwaters Economics 2024a, 2024b
* Due to the uncertainty in reported data, total employment may be different than the sum of each occupation.

Environmental Justice

The environmental justice discussion highlights data on minority and low-income populations at the census tract level in Maricopa and Yuma Counties; this is because counties often include multiple communities with different needs and interests. The reference areas for determining the census tracts that identify as environmental justice populations are the respective counties in which each census tract is located.

To identify communities of potential environmental justice concern within the project area, the BLM conducted an environmental justice screen of the counties and census tracts in the analysis area. Due to the small population size, data at the census tract level were not available for all analysis area census tracts for the most recent American Community Survey census data;

therefore, these data were not utilized. The screen consisted of using US Census Bureau data[11] to determine whether the populations in each county met at least one of the following criteria based on guidance in BLM Instruction Memorandum 2022-059:

- A minority[12] community of concern is present if the percentage of the population identified as belonging to a minority group in a study area is: 1) equal to or greater than 50 percent of the population; or 2) meets the "meaningfully greater" threshold (CEQ 1997). Meaningfully greater is calculated by comparing the minority group population percentage with 110 percent of the reference area minority population. Reference areas for the purpose of this analysis are Maricopa and Yuma Counties.
- A low-income community of concern is present if the study area population experiencing income levels at or below 200 percent of the federal poverty threshold is: 1) equal to or greater than 50 percent of the population; or 2) greater than or equal to the population in the reference area experiencing income levels at or below 200 percent of the federal poverty threshold.

Table 3-9 provides the environmental justice screening results for each analysis area census tract. Of all census tracts in the analysis area, only census tract 7233.05 in Maricopa County comprises a minority population percentage greater than that of the county reference population; this census tract includes Gila Bend. Census tract 7233.05 also meets the threshold for having an environmental justice population with respect to low income. Other census tracts that meet the low-income threshold include census tract 506.03, northeast of the project site in Maricopa County, and census tract 112.02, southwest of the project site in Yuma County. Dateland is not included in any of these census tracts.

Table 3-9. Populations for Environmental Justice Consideration

Geography	Environmental Justice Indicators (Race/Ethnicity and Income Status) as a Percentage of Total Population			
	Total Minority Population (%)	**Low-Income Population (%)**	**Tribal Communities**	**Meets One or More Environmental Justice Thresholds**
Analysis Area Counties (Reference Populations)				
Maricopa County	46%	29%	Yes	—
Yuma County	70%	44%	Yes	—
Analysis Area Census Tracts				
Census tract 506.03, Maricopa County	39%	**34%**	**Yes**	Yes

[11] Data were collected directly from the US Census Bureau. The US Environmental Protection Agency also calculates and reports data on minority and low-income populations based on data from the US Census Bureau; however, due to the timing of the reports published by the US Environmental Protection Agency, the data it uses often lags behind the data from the US Census Bureau by 1 year.

[12] Total minority population is defined as the total population minus that portion that is listed in US Census Bureau data as white, of non-Hispanic origin. This method includes all individuals who identify as a racial or ethnic minority, or both, without double counting these populations.

Geography	Environmental Justice Indicators (Race/Ethnicity and Income Status) as a Percentage of Total Population			
	Total Minority Population (%)	Low-Income Population (%)	Tribal Communities	Meets One or More Environmental Justice Thresholds
Census tract 7233.05, Maricopa County	**83%**	**61%**	**Yes**	Yes
Census tract 9801, Maricopa County	N/A	N/A	No	No
Census tract 121, Yuma County	54%	33%	No	No
Census tract 112.02, Yuma County	65%	**56%**	**Yes**	Yes
Census tract 9800.04, Yuma County[1]	N/A	N/A	No	—

Source: US Census Bureau 2021a, 2021b

[1] Due to the small population size, data at the census tract level were not available for all analysis area census tracts for the most recent American Community Survey census data.

3.3.11.2. Environmental Consequences

Alternative 1 – Proposed Action

The proposed action would generate beneficial impacts through increased employment opportunities and direct, indirect, and induced spending in the local and regional economy. As discussed in Section 2.2.3, the proposed action would have an onsite construction workforce of 250 to 300 workers on average with a peak of up to 600 jobs at any given time over the 15- to 18-month construction period.

Most construction staff and workers would be expected to come from the labor pool present within Maricopa and Yuma Counties; given the low unemployment rate in Maricopa County, however, workers may be drawn from other areas and reside temporarily in the analysis area. Given the limited housing stock and infrastructure in Dateland, as well as the temporary nature of construction, this area is unlikely to experience population growth. Workers who relocate to the area temporarily would likely reside in hotel accommodations or short-term rentals and patronize services in population centers such as Yuma, Gila Bend, or other areas of eastern Yuma County and western Maricopa County. Based on the construction workforce for the White Wing Ranch Solar Facility, temporary lodging is anticipated to be adequately accommodated within the analysis area. Such activity would generate short-term economic benefits in these communities.

Because the project would be entirely on undeveloped BLM-administered lands, the proposed project would not displace other sources of employment or revenue in the county.

The proposed action would provide short-term economic and employment benefits to low-income and minority populations in the vicinity of the project site; there may be disproportionate benefits for environmental justice communities if a large portion of employment is drawn from

these populations. Considering the design features and BMPs (Appendix B), including as outlined in the Dust Abatement Plan and Traffic Management Plan, impacts on air quality, transportation, and public health would be minimized and are not expected to disproportionately impact minority or low-income communities.

Over the long term, operation of the proposed project would generate up to five full-time equivalent positions, consisting of operations and administrative, management, security, and maintenance personnel, for the lifetime of the project. This level of employment would not result in notable direct or indirect impacts on local housing markets, social services, and overall income and employment statistics.

Decommissioning is assumed to require one-third of the workforce and time as the construction of the proposed project, supporting approximately 200 construction jobs for 5 to 6 months. Therefore, the direct and indirect impacts of decommissioning of the proposed project on socioeconomic conditions and environmental justice populations would be similar to, though less than, the impacts from construction of the proposed project.

Alternative 2 – Reduced Grading Alternative

Impacts on socioeconomic factors and environmental justice populations under the reduced grading alternative would be the same as described for the proposed action.

Alternative 3 – No Action Alternative

Under the no action alternative, communities would continue to experience existing socioeconomic conditions. There would be no impacts on socioeconomic factors or environmental justice populations identified in the analysis area. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development, and it is possible that some form of solar development could occur in this location if the proposed action were not authorized. Future solar development would have similar impacts as those described under the proposed action and reduced grading alternative.

Cumulative Effects

Cumulative impacts on socioeconomic factors could occur depending on the extent to which the construction period of the proposed project overlapped with the construction period for other proposed solar projects in the analysis area. Cumulative projects can reduce the availability of the local construction workforce. Cumulative impacts can also affect available housing, particularly if workforce size limitations dictate temporary workforce relocation. There would be disproportionate cumulative benefits for members of the environmental justice community who are part of the local construction workforce due to an increase in demand. However, there is a potential for cumulative adverse impacts on housing availability, which may disproportionately affect environmental justice populations who may already experience limited housing availability based on cost.

3.3.12 Public Health and Safety

Issue: How would construction, operation, and decommissioning of the solar facility impact public health and safety?

3.3.12.1. Affected Environment

The analysis area for public health and safety is the project site. As reported in the RDEP Final EIS (BLM 2012b, Section 3.14.2), a search of federal and state records indicated no present or past contamination or presence of underground storage tanks within the Agua Caliente SEZ or within a quarter mile of its boundaries. As undeveloped BLM-administered land, there are no hazardous materials or wastes generated on the project site.

Unexploded Ordnance

The project site is on the eastern boundary of the historic Camp Horn, part of a 12-million-acre military training area used during World War II (US Army Corps of Engineers 2017). Now classified as a Formerly Used Defense Site (FUDS), Camp Horn was in use from 1942 to 1945. Training activities conducted during this time included use of small arms, mortars, grenades, artillery, rockets, booby traps, and land mines (Elisabeth Solar, LLC 2023f). Surveys for unexploded ordnance performed for both the White Wing Ranch gen-tie line and for the project site found evidence of munitions use, including the presence of both exploded and unexploded ordnance.

Valley Fever

Valley Fever is an illness caused by the soil fungus *Coccidioides* that is found in dry regions of the western United States. When soil is disturbed, for example during construction, the fungi can become airborne and infect humans who inhale the spores (CDC 2023). Based on data from Arizona Department of Health Services, Yuma County reported 54 cases of Valley Fever in 2022. This equates to 25.7 cases per 100,000 population. This is higher than the average of 21.1 cases per 100,000 for the preceding 5 years, but it is still the lowest rate among all Arizona counties (Elisabeth Solar, LLC 2023f).

3.3.12.2. Environmental Consequences

Alternative 1 – Proposed Action

There are no nearby sensitive receptors who would be affected by construction, operation, or decommissioning of the proposed project; the nearest residence is over 2 miles from the project site. In addition, the project site would be fenced prior to the start of construction, preventing unauthorized access and exposure to health or safety concerns.

Worker Health and Safety

Under the proposed action, health and safety procedures would be implemented in accordance with Occupational Health and Safety Administration and Arizona Department of Occupational Safety and Health standards to minimize the risk of accidents or injuries. Implementing the worker safety procedures laid out in the Elisabeth Solar Project Safety Assessment (Elisabeth Solar, LLC 2023f, Section 2.3) and the project's Health and Safety Program, including developing a worker safety training program, would avoid, minimize, or mitigate potential risks to worker health and safety during construction, operation, and decommissioning of the proposed

project. In addition, an Emergency Response Plan would be developed and implemented to establish procedures that would be followed in the event of a workplace emergency, including injury, environmental exposure, or fire (Elisabeth Solar, LLC 2023f, Section 2.8). This would further ensure worker safety during construction, operation, and decommissioning of the proposed project.

Unexploded Ordnance

Under the proposed action, unexploded ordnance could pose a risk during ground-disturbing activities such as site grading, potentially resulting in injury to workers. An unexploded ordnance survey was conducted in early 2024 and removed surface-based exploded and unexploded ordnance from the project site. Additional strategies to address the possible presence of unexploded ordnance would be applied according to the project's Hazardous Materials and Waste Management Plan. Worker safety training would include training in the recognition, retreat, and reporting procedures if unexploded ordnance was encountered during construction, operation, or decommissioning. Applying these measures would minimize the risks to worker safety. Because the proposed project would be fenced prior to construction, no impacts on public health and safety from unexploded ordnance would occur.

Valley Fever

Under the proposed action, site grading or overland travel on access roads or other disturbed surfaces during construction, operation, or decommissioning would generate fugitive dust. This would potentially expose workers to the spores that can cause Valley Fever. Implementing dust control measures outlined in the project's Dust Abatement Plan and measures described in the project's Safety Assessment (Elisabeth Solar, LLC 2023f, Section 2.6) would minimize the risk of exposure to Valley Fever for workers and the public.

Hazardous Materials and Waste

Fuels, oils, lubricants, and solvents are the primary hazardous and flammable materials that would be used during construction of the proposed project. Small quantities of additional common hazardous materials would include antifreeze and used coolant, latex and oil-based paint, paint thinners and other solvents, cleaning products, and herbicides. The primary waste generated would be nonhazardous solid waste; however, some liquid and solid hazardous waste also would be generated. The project's Hazardous Materials and Waste Management Plan would manage wastes in accordance with the Resource Conservation and Recovery Act and other applicable state and local regulations to minimize potential impacts on public health and safety from exposure to these materials.

Fire

Construction, operation, and decommissioning can increase the risk for wildfires and site-specific fire hazards. Vegetation can be ignited from activities such as welding sparks, fires from equipment failure, and smoking by workers, posing a potential risk to public health and safety. However, the area lacks dense vegetation or a litter layer that would allow fire spread.

BESS systems have an inherent risk of thermal runaway events due to the chemical composition of the batteries. A thermal runaway event is when a series of processes results in an uncontrollable increase in temperature. This can pose a risk to human safety if appropriate fire

mitigation techniques are not implemented. The proposed BESS would be designed and installed according to the latest National Fire Protection Association standards to include fire detection, suppression, and deflagration management measures. In addition, vegetation would be cleared around and under the BESS containers to prevent fire propagation in the areas among containers. Compliance with NFPA standards would limit potential impacts associated with thermal runaway.

The project proponent would implement the measures in the project's Fire Management Plan to ensure fire prevention and hazard elimination during construction, operation, and decommissioning of the proposed project. Wildfires and site-specific fire hazards associated with project activities would be managed through this plan.

Alternative 2 – Reduced Grading Alternative

Health and safety impacts under the reduced grading alternative would be as described for the proposed action. Because the project proponent would avoid developing the three drainages on the western portion of the project site, potential health and safety impacts from unexploded ordnance and Valley Fever would be reduced. This is because less site grading would be required during both construction and decommissioning of the proposed project, reducing the potential for encountering unexploded ordnance and reducing the amount of dust generated.

Alternative 3 – No Action Alternative

Under the no action alternative, recreational use of the project site would continue to expose the public to unexploded ordnance or exposure to Valley Fever. Because the Elisabeth Solar Project is proposed within a SEZ, the land would remain available for future solar development. It is possible that some form of solar development could occur in this location if the proposed project were not authorized. Future solar development would have similar public health and safety-related impacts as those described under the proposed action. Any future project would be subject to RDEP-required design features and BMPs to minimize these effects.

Cumulative Effects

Given the lack of sensitive receptors near the project site, no cumulative impacts on public health and safety are anticipated from the proposed action in combination with other past, present, and reasonably foreseeable future actions in the project area. Each project would be required to avoid and minimize its potential impacts, including through proper management of hazardous materials and hazardous wastes, similar to what was described for the proposed action.

Chapter 4. Consultation, Coordination, and Public Involvement

4.1 INTRODUCTION

This chapter summarizes the consultation, coordination, and public involvement efforts conducted for the proposed project with interested agencies, organizations, tribes, and individuals.

4.2 PUBLIC INVOLVEMENT

4.2.1 Scoping

Scoping provides an opportunity for members of the public and agencies to learn about a proposed project and share their concerns. Input from the scoping process is used to identify relevant issues, alternatives to the proposed project, and impacts of the proposed project that should be evaluated in the EA. The scoping process also helps identify issues that are not considered relevant and can be eliminated from detailed analysis. The BLM conducted both internal and external scoping to identify relevant issues to be evaluated in the EA.

The BLM initiated the public scoping process for the EA by sending out letters to stakeholders and the interested public requesting public comments concerning identification of potential alternatives, information, and analyses relevant to the proposed action. Comment submissions were accepted during the 30-day scoping period, which was between October 1 and October 30, 2023, via US mail or through direct submission of comments to the ePlanning page.[13,14] During this period, the BLM received 12 written submissions from the public. A summary of the scoping process and comments received is available in the scoping report (BLM 2023b).

The BLM held internal scoping meetings on December 5, 2023, and on March 6, 2024, with an interdisciplinary team of BLM resource specialists to review the proposed project and further scope issues for analysis in the EA. The BLM also held discussions with agencies and interested stakeholders, including AGFD and the Yuma Rod and Gun Club, following the formal scoping process to further refine the issues and alternatives for analysis in this EA. Input received during the internal and external scoping processes, agency and tribal engagement, and public and stakeholder input during development of the Arizona RDEP EIS (BLM 2012a, 2012b) were all considered to help develop the issues identified for detailed analysis in Chapter 3, Affected Environment and Environmental Consequences.

[13] https://eplanning.blm.gov/eplanning-ui/project/2025061/510

[14] Council on Environmental Quality regulations utilized for the purposes of analysis in this EA are those effective prior to July 1, 2024 (CEQ 2020, 2022). New regulations (CEQ 2024) were finalized on May 1, 2024; these become effective on July 1, 2024, and apply to NEPA actions that begin on or after this date.

4.3 CONSULTATION AND COORDINATION WITH AGENCIES, TRIBAL GOVERNMENTS, AND STAKEHOLDERS

The BLM contacted agencies and stakeholders that have jurisdiction or special expertise, or both, in the project area prior to scoping, at the start of scoping, and during preparation of the EA. These efforts will continue through the duration of the NEPA process. The list of agencies, Tribes, and stakeholders contacted included the following:

Bureau of Indian Affairs
Bureau of Reclamation
Department of the Navy
Luke Air Force Base
National Park Service
US Army Corps of Engineers
US Army Yuma Proving Ground
US Environmental Protection Agency
US Fish and Wildlife Service
US Forest Service
US Geological Survey
Arizona Department of Environmental Quality
Arizona Department of Transportation
Arizona Department of Water Services
Arizona Game and Fish Department
Arizona State Historic Preservation Office
Arizona State Land Department
Arizona State Parks and Trails
Central Arizona Project
Yuma County Board of Supervisors
Yuma County Department of Development Services
Yuma County Economic Development Department
Yuma County Environmental Programs Department
Yuma County Flood Control District
Yuma County Public Works Department
Ak-Chin Indian Community
Cocopah Indian Tribe
Colorado River Indian Tribes
Fort McDowell Yavapai Nation
Fort Mojave Indian Tribe
Fort Yuma Quechan Indian Tribe
Gila River Indian Community
Hopi Tribe
Mescalero Apache Tribe
Pueblo of Zuni
Salt River Pima-Maricopa Indian Community
Tohono O'odham Nation
Yavapai Prescott Indian Tribe
Yavapai-Apache Nation
Arizona Peace Trail Committee
Arizona Sportsmen for Wildlife
Southwest Wildlife Foundation and Yuma Road and Gun Club

4.3.1 Section 106 and Tribal Consultation

Section 106 (54 United States Code 306108) of the NHPA requires federal agencies to consider the effects of their undertakings. The regulations also specify the need for meaningful consultation with SHPOs, Tribal Historic Preservation Offices, Native American tribes, and other interested parties during all phases of Section 106 compliance. The BLM initiated Section 106 consultation through a letter to the SHPO and Native American tribes on October 26, 2022, and will finalize consultation prior to issuance of a decision.

4.3.2 US Fish and Wildlife Coordination

The BLM has initiated consultation with USFWS under the ESA for potential effects on Yuma Ridgway's rail and Sonoran pronghorn. Consultation will be completed prior to the BLM's issuance of a decision.

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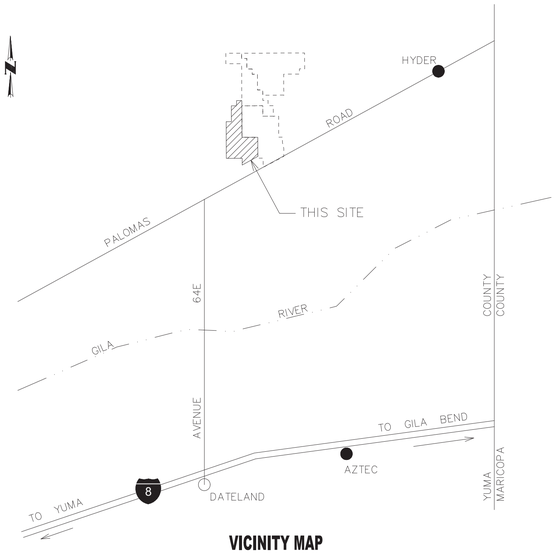
Appendix A

Site Layout Drawings

Proposed Action



VICINITY MAP

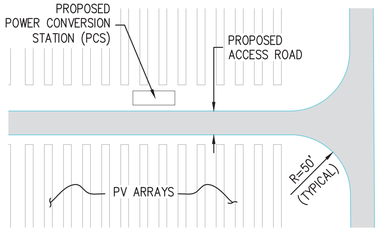
SCALE: N.T.S

LEGEND

- PROJECT BOUNDARY (SEE NOTE 2)
- PROPOSED BUILDING SETBACK FROM PROJECT BOUNDARY
- PROPOSED PERIMETER FENCE
- PROPOSED INTERNAL ACCESS ROAD
- PROPOSED ACCESS GRANTED BY WHITE WING RANCH SOLAR
- PROPOSED SHARED ACCESS
- PROPOSED 34.5kV COLLECTION LINE
- EXISTING EASEMENT/RIGHT-OF-WAY
- SECTION LINE
- WHITE WING RANCH SOLAR
- AGUA CALIENTE SEZ
- AGUA CALIENTE SOLAR (ACS)
- BLM LAND
- FLEXIBLE USE AREA (SEE NOTE 6)
- NON-DEVELOPMENT AREA

NOTES:

1. BOUNDARY PER ARIZONA BLM SOLAR ENERGY ZONE (SEZ) AND PUBLIC LAND SURVEY SYSTEM (PLSS) GIS DATA.
2. APPROXIMATE SITE FOOTPRINT IS 1,529 ACRES (SEZ BOUNDARY–2,517 ACRES, LESS NON–DEVELOPMENT AREAS–516 ACRES, AND LESS EAST SIDE DEVELOPMENT AREA–472 ACRES).
3. ARRAY, COLLECTION SYSTEM, O&M BUILDING, SUBSTATION AND GEN–TIE CONFIGURATION SUBJECT TO CHANGE DURING DETAIL DESIGN.
4. EXACT FENCE ALIGNMENT TO BE DETERMINED DURING DETAIL DESIGN.
5. DRAINAGE STRUCTURES ARE PRELIMINARY AND SUBJECT TO CHANGE DURING DETAIL DESIGN.
6. FLEXIBLE USE AREAS MAY BE USED FOR SUBSTATION, BATTERY ENERGY STORAGE SYSTEM (BESS), AND/OR PV PANELS.



TYPICAL ACCESS ROAD
NOT TO SCALE

PROPOSED DRAINAGE BASIN
PROPOSED WHITE WING RANCH SOLAR PLANT (BY OTHERS)
PROPOSED SITE ACCESS
PROPOSED SOLE ACCESS GRANTED BY WHITE WING RANCH SOLAR (PRIVATE LAND)
SEC 17
SEC 16
SEC 15
SEC 14
PROPOSED INTERCONNECTION TO WHITE WING RANCH SUBSTATION (ALTERNATIVE)
PROPOSED OPERATION & MAINTENANCE (O&M) AREA
300 FT. GEN–TIE RIGHT–OF–WAY AZA 036884
PROPOSED DRAINAGE BASIN
SHARED GEN–TIE INTERCONNECTION TO EXISTING ARIZONA PUBLIC SERVICE (APS), SAN DIEGO GAS & ELECTRIC CO. (SDGE) & IMPERIAL IRRIGATION DISTRICT (IID) HOODOO WASH 500kV SWITCHYARD
PROPOSED SHARED ACCESS WITH WHITE WING RANCH SOLAR (PRIVATE LAND)
PROPOSED ACCESS ROAD (TYPICAL)
PROPOSED ACCESS ROAD (TYPICAL)
SEC 20
SEC 21
SEC 22
SEC 23
PROPOSED PHOTOVOLTAIC (PV) ARRAY (TYPICAL)
PROPOSED COLLECTION LINE TO PROPOSED SHARED SUBSTATION
EXISTING AGUA CALIENTE SOLAR (ACS) PLANT
ENVIRONMENTALLY SENSITIVE AREA NOT TO BE DISTURBED
TOWNSHIP 5 SOUTH RANGE 12 WEST, GILA & SALT RIVER MERIDIAN, ARIZONA
SHARED GEN–TIE INTERCONNECTION TO EXISTNG ARIZONA PUBLIC SERVICE (APS), SAN DIEGO GAS & ELECTRIC CO. (SDGE) & IMPERIAL IRRIGATION DISTRICT (IID) HOODOO WASH 500kV SWITCHYARD
PROPOSED SHARED ACCESS ON PRIVATE LAND
PALOMAS HARQUAHALA ROAD
SEC 29
SEC 28
SEC 27
SEC 26
PROPOSED POWER CONVERSION STATION (PCS) (TYPICAL)
300 FT. GEN–TIE RIGHT–OF–WAY AZA 036884
UNION PACIFIC RAILROAD
PROPOSED DRAINAGE BASIN
PROPOSED SITE ACCESS
APPROXIMATE LOCATION EXISTING APS 15 FT. POWER LINE RIGHT–OF–WAY AZA 007881
PROPOSED TEMPORARY CONSTRUCTION LAYDOWN AREA
APPROXIMATE LOCATION EXISTING APS & SDG&E 200 FT. TRANSMISSION LINE RIGHT–OF–WAY (AZA 011639)
PALOMAS ROAD
APPROXIMATE LOCATION EXISTING 175 FT. SOUTHERN PACIFIC RAILROAD RIGHT–OF–WAY (AZPHX 0057980)
PROPOSED 50 FT. SITE ACCESS EASEMENT
APPROXIMATE LOCATION EXISTING APS 15 FT. POWER LINE RIGHT–OF–WAY AZA 032125
SEC 33
SEC 34
SEC 36
SEC 32
APPROXIMATE LOCATION EXISTNG ARIZONA PUBLIC SERVICE (APS), SAN DIEGO GAS & ELECTRIC CO. (SDGE) & IMPERIAL IRRIGATION DISTRICT (IID) HOODOO WASH 500kV SWITCHYARD
UNION PACIFIC RAILROAD
NORTH
2000' 1000' 0 2000'
TOWNSHIP 5 SOUTH, RANGE 12 WEST, GILA & SALT RIVER BASE AND MERIDIAN, YUMA COUNTY, AZ
TOWNSHIP 6 SOUTH, RANGE 12 WEST, GILA & SALT RIVER BASE AND MERIDIAN, YUMA COUNTY, AZ

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PHONE: (415) 935-2500
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AGUA CALIENTE SEZ
ELISABETH SOLAR, LLC -
ALTERNATIVE SITE PLAN A

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP.

JOB #:
PROJ. DEVT. ENGR: A. SOSA
PROJ. MGR:
SCALE: 1"=1000' @ 24x36" SHEET
COPYRIGHT BY: LEEWARD RENEWABLE ENERGY, LLC

SHEET TITLE
ALTERNATIVE A – PRELIMINARY SITE PLAN

FIGURE 2

SHEET 1 OF 1

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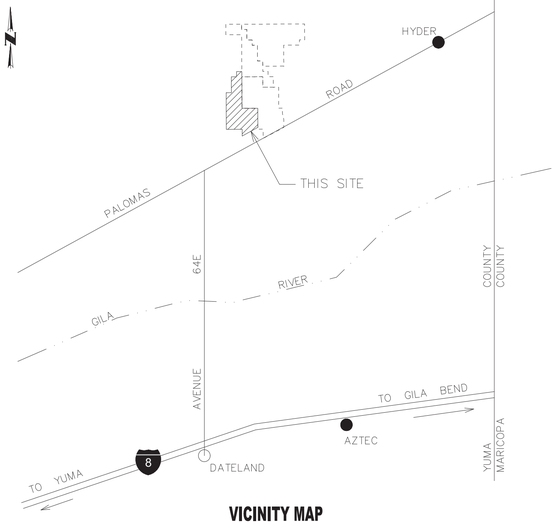
Reduced Grading Alternative



VICINITY MAP

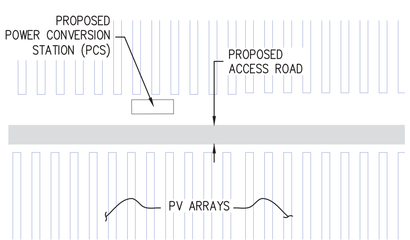
SCALE: N.T.S

LEGEND

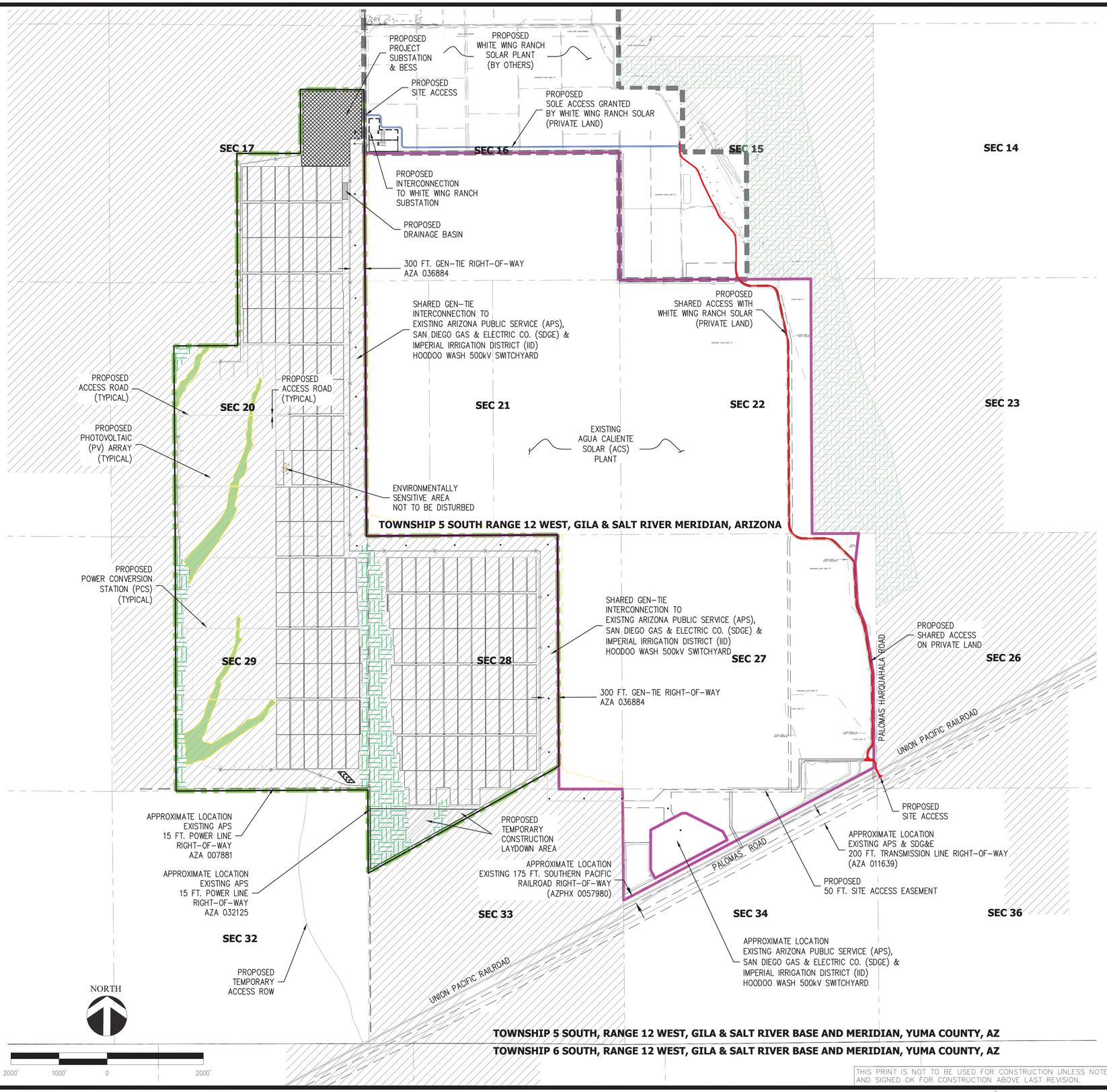
- PROJECT BOUNDARY (SEE NOTE 2)
- PROPOSED BUILDING SETBACK FROM PROJECT BOUNDARY
- PROPOSED PERIMETER FENCE
- PROPOSED INTERNAL ACCESS ROAD
- PROPOSED ACCESS GRANTED BY WHITE WING RANCH SOLAR
- PROPOSED SHARED ACCESS
- EXISTING EASEMENT/RIGHT-OF-WAY
- SECTION LINE
- WHITE WING RANCH SOLAR
- AGUA CALIENTE SEZ
- AGUA CALIENTE SOLAR (ACS)
- BLM LAND
- FLEXIBLE USE AREA
- BLM RECOMMENDED NON-DEVELOPMENT AREA
- DRAINAGE AVOIDANCE AREA

NOTES:

1. BOUNDARY PER ARIZONA BLM SOLAR ENERGY ZONE (SEZ) AND PUBLIC LAND SURVEY SYSTEM (PLSS) GIS DATA.
2. ARRAY, COLLECTION SYSTEM, O&M BUILDING, SUBSTATION AND GEN-TIE CONFIGURATION SUBJECT TO CHANGE DURING DETAIL DESIGN.
3. EXACT FENCE ALIGNMENT TO BE DETERMINED DURING DETAIL DESIGN.
4. DRAINAGE STRUCTURES ARE PRELIMINARY AND SUBJECT TO CHANGE DURING DETAIL DESIGN.



TYPICAL ACCESS ROAD
NOT TO SCALE



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AGUA CALIENTE SEZ
ELISABETH SOLAR, LLC

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

JOB #:

PROJ. DEVT. ENGR: A. SOSA

PROJ. MGR:

SCALE: 1"=1000' @ 24x36" SHEET

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SHEET TITLE

PRELIMINARY
PROJECT ALTERNATIVE
SITE PLAN

FIGURE 2

SHEET 1 OF 1

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Appendix B

Design Features, BMPs, and Other Environmental Protection Measures

Elisabeth Solar Project Proposed Design Features (from Table B-1 of RDEP)

Resource	Topic	Description of Design Feature	Location
Cultural Resources	Cultural surveys	A phased sampling strategy, beginning with a Class II inventory to assess various alternative development areas, is recommended prior to the selection of individual project locations. Class II inventory shall meet the standards set forth in the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716), BLM Handbook H-8110: Guidelines for Identifying Cultural Resources (BLM 2002), and revised BLM Manual 8110 (BLM 2004).	Class I Cultural Report for Final APE
Cultural Resources	Cultural surveys	Develop and implement a survey plan to conduct a Class III inventory in accordance with BLM and SHPO standards. Levels of inventory will be sufficient to identify and evaluate resources that could be directly or indirectly affected by the proposed project, associated facilities, and access roads.	Class III Report
Cultural Resources	Cultural surveys	Following field surveys ensure the survey report documents previously unrecorded and newly discovered resources information. Provide information necessary for evaluating each newly discovered resource's eligibility for the NRHP. Ensure the cultural resources specialist completes a technical report detailing the records search results, each survey's methods and results, including identified resources evaluations, and recommendations for resource evaluations based on the NRHP eligibility criteria. The reports should meet the lead agency's or agencies' published standards.	Class I Cultural Report for Final APE
Cultural Resources	Cultural surveys	Retain the services of a geoarchaeologist, when appropriate, to investigate and complete a geomorphology technical report. Include the following elements: • Reconstruct the historical geomorphology of the project's Area of Potential Effects (APE); • Map and date the sediments of the landforms in that area; • Assess whether buried archaeological deposits may be present and subject to project impacts.	Geomorphology Technical Report

Resource	Topic	Description of Design Feature	Location
Cultural Resources	Monitoring and Mitigation	Retain a qualified cultural resources specialist to write and carry out a monitoring and mitigation plan or agreement, when applicable, and to be available if cultural resources are encountered during construction. Avoidance of known cultural resources is generally the preferred resolution option; include in the plan measures to protect avoided resources during construction and to prevent looting/vandalism and erosion. If project impacts to known NRHP-eligible cultural resources are unavoidable, data recovery may be approved as a mitigation measure; include a data recovery strategy in the plan. The project developer may also be asked by the appropriate lead agency to include additional measures for addressing the discovery of previously unknown cultural resources during construction. Consider the following measures, at a minimum: • Hire a qualified archaeological monitor to oversee project excavations and to monitor resources that will be protected from disturbance by construction-related activities. • Develop and use a cultural resources construction personnel training program to promote cultural resources identification and lawful and appropriate response to discoveries. • Notify involved agencies of unexpected cultural or historical resources discoveries during construction. The project developer may be asked or ordered to cease construction in the vicinity of the discovery to allow evaluation by an agency archaeologist and formulation of appropriate mitigation measures. • If human remains are discovered, cease construction and consult with the lead agencies. It is advisable to prepare a Plan of Action to address anticipated or unanticipated discoveries of materials protected under the Native American Graves Protection and Repatriation Act (NAGPRA), even if such discoveries appear to be unlikely on the basis of the survey results. • Where project construction would directly and adversely affect NRHP eligible properties, scientific data recovery may be selected as an appropriate mitigation measure. Data recovery procedures shall be conducted in accordance with an agency-approved Data Recovery Plan including a detailed research design and methodology. • Have the cultural resources specialist prepare a report documenting archaeological monitoring and data recovery activities.	Historic Properties Treatment Plan/MOA/Data Recovery Plan
Cultural Resources	Treatment plans	In accordance with applicable Section 106 agreement documents and NEPA analyses, prepare and implement cultural resource management plans (including Historic Properties Treatment Plans) to avoid, mitigate, or otherwise resolve adverse effects in consultation with the SHPO, Indian tribes, project applicant, and other consulting parties. Treatment plans will guide:	Historic Properties Treatment Plan/MOA/Data Recovery Plan
Designated Areas with Wilderness Characteristics	Unique/ important areas	Locating renewable energy facilities in areas of unique or important cultural, recreation, wildlife, or visual resources shall be avoided, even if they do not possess a special area designation.	Plan of Development

Resource	Topic	Description of Design Feature	Location
Ecological	Trenches	Because open trenches could impede the seasonal movements of large game animals and alter their distribution, they shall be backfilled as quickly as is possible. Open trenches could also entrap smaller animals; therefore, escape ramps shall be installed at regular intervals along open-trench segments at distances identified in the applicable land use plan or best available information and science. Additionally, an appropriate number of qualified biological monitors (as determined by the federal authorizing agency and the USFWS) shall be on-site to monitor, capture, and relocate animals that become entrapped in trenches and are unable to escape on their own.	Ecological Resources Mitigation & Monitoring Plan
Ecological	Habitat	A habitat restoration plan shall be developed to avoid, minimize, or mitigate negative impacts on vulnerable wildlife while maintaining or enhancing habitat values for other species. The plan shall identify reclamation, soil stabilization, and erosion reduction measures that shall be implemented to ensure that all temporary use areas are restored. The plan shall require that restoration occur as soon as possible after completion of activities, provided such revegetation will not compromise the function of any buried utilities, to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats. Species salvaged during construction could be transplanted into these areas at a density similar to pre-construction conditions. Revegetation shall focus on the establishment of native plant communities similar to those present in the vicinity of the project site. Species used shall consist of native species dominant within the plant communities existing in adjacent areas having similar soil conditions. Certified weed-free seed mixes of native shrubs, grasses, and forbs of local origin shall be used. In areas where suitable native species are unavailable, other plant species approved by BLM could be used. The restoration plan shall include adaptive management and a monitoring plan. The monitoring plan will establish success thresholds.	Site Rehabilitation and Re-Vegetation Plan (SRRP)

Resource	Topic	Description of Design Feature	Location
Ecological	Monitoring	Designate a qualified biologist (approved by the BLM) responsible for overseeing compliance with biological resources BMPs and project-specific mitigation measures during mobilization, ground disturbance, grading, construction, operation, and closure/decommissioning, or project abandonment, particularly in areas containing or known to have contained sensitive biological resources, such as special status species and unique plant assemblages. Additional qualified biological monitors may be required on-site during all project phases as determined by the authorizing federal agency. It is suggested that the qualified biologist be responsible for actions including, but not limited to, the following: • Clearly marking sensitive biological resource areas and inspecting the areas at appropriate intervals for meeting regulatory terms and conditions. • Inspecting, daily, active construction areas where wildlife may have become trapped (for example, trenches, bores, and other excavation sites that constitute wildlife pitfalls outside the permanently fenced area) before beginning construction. At the end of the day, conducting wildlife inspections of installed structures that would entrap or not allow escape during periods of construction inactivity. Periodically inspecting areas with high vehicle activity (such as parking lots) for wildlife in harm's way. • Overseeing cactus, agave, and yucca salvage operations. • Immediately recording and reporting hazardous spills immediately as directed in the project hazardous materials management plan. • Coordinating directly and regularly with permitting agency representatives regarding biological resources issues, including biological resource BMP implementation. • Maintaining written records regarding implementation of biological resource BMPs and providing a summary of these records periodically in a report to the appropriate agencies. • Notifying the project owner and appropriate agencies of non-compliance with biological resources BMPs.	Ecological Resources Mitigation & Monitoring Plan

Resource	Topic	Description of Design Feature	Location
Ecological	Reclamation	A Decommissioning and Site Reclamation Plan specific to the project shall be developed and implemented. Baseline data shall be collected in each project area as a benchmark for measuring the success of reclamation efforts. The plan shall contain an adaptive management component that allows for the incorporation of lessons learned from monitoring data. The plan shall require that land surfaces be returned to pre-development contours to the greatest extent feasible immediately following decommissioning. The plan shall focus on the establishment of native plant communities similar to those present in the vicinity of the project site. The plan shall be designed to expedite the re-establishment of vegetation and require restoration to be completed as soon as practicable. To ensure rapid and successful re-establishment efforts, the plan shall specify site-specific measurable success criteria, including target dates, which shall be developed in coordination with the BLM and which shall be required to be met by the operator. Vegetation re-establishment efforts shall continue until all success criteria have been met. Bonding to cover the full cost of vegetation re-establishment shall be required. Species used for vegetation re-establishment shall consist of native species dominant within the plant communities existing in adjacent areas having similar soil conditions. The plan shall require the use of weed-free seed mixes of native shrubs, grasses, and forbs of local sources where available. When available, seed of known origin as labeled by state seed certification programs shall be used. Local native genotypes shall be used. If cultivars of native species are used, certified seed (i.e., blue tag) shall be used. “Source identified” seed (i.e., yellow tag) shall be used when native seed is collected from wildland sites. The cover, species composition, and diversity of the re-established plant community shall be similar to those in the vicinity of the site. In areas where suitable native species are unavailable, other plant species approved by the BLM could be used. If non-natives are necessary they shall be non-invasive, non-competitive, and ideally are short-lived, have low reproductive capabilities, or be self-pollinating to prevent gene flow into the native community. Non-natives used shall not exchange genetic material with common native plant species. The plan shall also include site-specific, measurable success criteria that must be met. The plan shall be developed in coordination with appropriate federal and state agencies.	Site Rehabilitation and Re-Vegetation Plan and Decommissioning Plan
Ecological	Reclamation	Post-decommissioning protocols shall include monitoring for native vegetation recovery; invasive species colonization and spread; wildlife use; and special status species use. Monitoring data shall be used to determine the success of reclamation activities and the need for changes in ongoing management or for additional reclamation measures. Ongoing visual inspections for a minimum of 5 years following decommissioning activities shall be required to ensure adequate restoration and minimal environmental degradation. This period shall be extended until satisfactory results are obtained.	Site Rehabilitation and Re-Vegetation Plan

Resource	Topic	Description of Design Feature	Location
Ecological	Mitigation/ monitoring	Prepare a project specific mitigation and monitoring plan in cooperation with and that meets the approval of permitting agencies and AGFD where applicable. Carry out the plan during all phases of the project to avoid, minimize, or mitigate adverse direct, indirect, and cumulative impacts, including habitat, special status plant, and wildlife species losses. Address at a minimum:· • Biological resource mitigation, monitoring, and compliance measures required by federal, state, and local applicable permitting agencies. • Documentation (based on surveys) of sensitive plant and wildlife expected to be affected by all phases of the project (project construction, operation, abandonment, and decommissioning). Agencies may request additional surveying, based on the documentation or past experience working with the resources. Include measures to avoid or minimize impacts to species and habitat. • A detailed description of measures, including revegetation, soil stabilization, and erosion reduction measures, to minimize or mitigate permanent and temporary disturbances on vegetation, wildlife, and special status plants and animals from construction activities. The plan shall require that restoration occur as soon as possible after completion of activities to reduce the amount of habitat converted at any one time and to hasten the recovery to natural habitats. • Mitigation and monitoring unavoidable impacts on waters of the US, including wetlands. • Demonstration of compliance of the project with the regulatory requirements of the Bald and Golden Eagle Protection Act. The plan shall be developed in coordination with and permitted by the USFWS.· • Measures to protect birds (including migratory species protected under the Migratory Bird Treaty Act) developed in coordination with and permitted by the appropriate federal and state agencies (e.g. BLM, USFWS, and state resource management agencies). • Measures to mitigate and monitor impacts on special status species developed in coordination with and permitted by the appropriate federal and state agencies (e.g. BLM, USFWS, and state resource management agencies). • Monitoring the potential for increase in predation of special status species (especially desert tortoise) from ravens and other species that are attracted to developed areas and opportunistically use tall structures to spot vulnerable prey. • Clearing and translocation of special status species, including the steps to implement the translocation as well as the follow-up monitoring of populations in the receptor locations, as determined in coordination with the appropriate federal and state agencies. The need for a Special Status Species Clearance and Translocation Plan shall be determined on a project-specific basis. • All locations on a map, at an approved scale, of sensitive plant and wildlife areas subject to disturbance and areas requiring temporary protection and avoidance during construction.· • Aerial photographs or images, at an approved scale, of areas to be disturbed during project construction activities.·	Ecological Resources Mitigation & Monitoring Plan

Resource	Topic	Description of Design Feature	Location
Ecological *(continued)*	Mitigation/ monitoring *(continued)*	• Duration for each type of monitoring and a description of monitoring methodologies and frequency.· • Performance standards, thresholds, monitoring, and criteria to be used to determine if/when proposed mitigation is or is not successful.· • All standards and remedial measures to be implemented if performance standards and criteria are not met.· • Adaptive management strategies.· • A closure/decommissioning or abandonment plan, including a description of funding mechanism(s).	*(see above)*
Ecological	Training	Develop a project-specific worker environmental awareness program (WEAP) that meets the approval of the permitting agencies and is carried out during all phases of the project (site mobilization, ground disturbance, grading, construction, operation, closure/decommissioning, or project abandonment, and restoration/reclamation activities). Identify in the WEAP biological resources and BMPs for minimizing impacts to resources. Provide interpretation for non-English speaking workers, and provide the same instruction for new workers prior to their working onsite. Keep in project field construction office files the names of onsite personnel (for example, surveyors, construction engineers, employees, contractors, contractor's employees, subcontractors) who have participated in the education program. At a minimum, include the following in the program: • Photos and habitat descriptions for special status species that may occur on the project site and information on their distribution, general behavior, and ecology. • Species sensitivity to human activities. • Legal protections afforded the species. • Project BMPs for protecting species. • State and federal law violation penalties. • Worker responsibilities for trash disposal and safe/humane treatment of wildlife and special status species found on the project site, associated reporting requirements, and specific required measures to prevent taking of threatened or endangered species. • Handout materials summarizing the contractual obligations and protective requirements specified in project permits and approvals. • Project site speed limit requirements and penalties.	Worker Education and Awareness Plan
Ecological	Wildlife timing	Activities shall be timed to avoid, minimize, or mitigate impacts on wildlife. For example, crucial winter ranges for elk, deer, pronghorn, and other species shall be avoided especially during their periods of use.	Ecological Resources Mitigation & Monitoring Plan

Resource	Topic	Description of Design Feature	Location
Ecological	Traffic	Any vehicle-wildlife collisions or carrion shall be immediately reported to security or the on-site biological monitor. Observations of potential wildlife problems, including wildlife mortality, shall be immediately reported to the BLM or other appropriate agency authorized officer. Procedures for removal of wildlife carcasses on-site and along access roads shall be addressed in the Animal, Pest, and Vegetation Control Plan, to avoid vehicle-related mortality of carrion-eaters.	Ecological Resources Mitigation & Monitoring Plan
Ecological	Road construction	If the need for using surfacing, road sealant, soil bonding, and stabilizing agents on non-paved surfaces is determined use agents that have been shown to be non-toxic to wildlife and plants.	Ecological Resources Mitigation & Monitoring Plan
Ecological	Wildlife	Meteorological towers and solar sensors shall be located to avoid sensitive habitats or areas where wildlife are known to be sensitive to human activities (e.g., sage grouse; refer to applicable land use plan or best available information and science to determine avoidance distances). Installation of these components shall be scheduled to avoid disruption of wildlife reproductive activities, migratory behaviors, or other important behaviors. The area disturbed by installation of meteorological towers (i.e., footprint) shall be kept to a minimum.	Construction, Operation, and Maintenance Plan
Ecological	Birds/bats	Avian and bat use surveys consistent with current methodologies and standards shall be conducted; the amount and extent of ecological baseline data required shall be determined on a project basis.	Bird and Bat Conservation Strategy
Ecological	Eagles	At the project level, recommendations contained in the Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocol; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance (Pagel et al. 2010) shall be considered in project planning, as appropriate. Additionally, the Bald and Golden Eagle Protection Act–Golden Eagle National Environmental Policy Act and Avian Protection Plan Guidance for Renewable Energy (Instruction Memorandum No. 2010-156) will need to be adhered to until programmatic permits from the USFWS are available. This memorandum requires that consideration of golden eagles and their habitat be incorporated into site-specific NEPA analysis for all renewable energy projects and determine whether the project has the potential to affect golden eagles or their habitat. It must be determined whether breeding territories/nests, feeding areas, roosts, or other important golden eagle use areas are located within the analysis area. The analysis shall be made in coordination with the USFWS and AGFD. If the proposed project has the potential to affect golden eagles or their habitat, an analysis shall be completed that includes: (1) direct and indirect effects analysis; (2) cumulative effects analysis; (3) BMPs; (3) avian protection plans; (4) interagency coordination; and (5) record of decision, decision record, and notice to proceed.	Bird and Bat Conservation Strategy

Resource	Topic	Description of Design Feature	Location
Ecological	Raptors	Operators shall determine the presence of active raptor nests (i.e., raptor nests used during the breeding season) and design the project to provide for spatial buffers and timing restrictions for surface disturbing activities. Operators shall coordinate with AGFD to help determine the appropriate survey methods. Measures to reduce raptor and/or raptor prey species use at a project site (e.g., minimize road cuts, maintain either no vegetation or plant species that are unattractive to raptors around the turbines) shall also be identified.	Bird and Bat Conservation Strategy
Ecological	Special status species	The capability of local surface water or groundwater supplies to provide adequate water for operation of proposed solar facilities shall be considered early during project siting and design. Technologies that result in large withdrawals that affect water bodies that support ESA-listed species shall not be considered.	Comprehensive Groundwater Basin Analysis
Ecological	Desert tortoise	Ensure the biologist inspects construction pipes, culverts, or similar structures: (a) with a diameter greater than 3 inches, (b) stored for one or more nights, (c) less than 8 inches aboveground, and (d) within desert tortoise habitat (such as outside the permanently fenced area), before the materials are moved, buried, or capped. As an alternative, cap such materials before storing outside the fenced area or placing on pipe racks. Avoid inspection or capping if the materials are stored within the permanently fenced area after completing desert tortoise clearance surveys.	Ecological Resources Mitigation & Monitoring Plan
Ecological	Cactus	As directed by the local BLM field office, Joshua trees (Yucca brevifolia), other Yucca species, and most agave and cactus species, shall be salvaged prior to land clearing, and transplanted, held for use in revegetating temporarily disturbed areas, or otherwise protected as prescribed by state or local BLM requirements. **Modified by proponent:** As directed by the local BLM field office, Joshua trees (Yucca brevifolia), other Yucca species, and most agave and cactus species, shall be made available for salvage under the applicable AZDGF native plant salvage program prior to land clearing, and transplanted, held for use in revegetating temporarily disturbed areas, or otherwise protected as prescribed by state or local BLM requirements.	Integrated Vegetation, Weed, and Pest Management Plan
Ecological	Pesticide use	If pesticides are used on the site, an integrated pest management plan shall be developed to ensure that applications will be conducted within the framework of BLM and DOI policies and entail only the use of EPA-registered pesticides. Pesticide use shall be limited to nonpersistent, immobile pesticides and shall only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. Any applications of herbicides will be subject to BLM herbicide treatment standard operating procedures. Only herbicides on the list of approved herbicide formulations (updated annually) will be used on public lands.	Integrated Vegetation, Weed, and Pest Management Plan
Hazardous Materials	Hazardous materials	All hazardous materials and vehicle/equipment fuels shall be transported, stored, managed, and disposed in accordance with accepted BMPs and in compliance with all applicable regulations and the requirements of approved plans, including, where applicable, a Stormwater Management Plan, a Spill Prevention and Emergency Response Plan, and a Hazardous Materials and Waste Management Plan.	Hazardous Materials and Waste Management Plan

Resource	Topic	Description of Design Feature	Location
Hazardous Materials	Hazardous materials/ waste plan	A Construction and Operation Waste Management Plan shall identify the waste streams that are expected to be generated at the site and addresses hazardous waste determination procedures, waste storage locations, waste-specific management and disposal requirements, inspection procedures, and waste minimization procedures. The plan shall address all solid and liquid wastes that may be generated at the site in compliance with the CWA requirements to obtain the project's NPDES permit.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Health	If operation of the solar and/or wind facility and associated transmission lines and substations is expected to cause potential adverse impacts on nearby residences and occupied buildings from noise, sun reflection, flicker, or electromagnetic fields, recommendations for addressing these concerns shall be incorporated into the project design (e.g., establishing a sufficient setback from transmission lines).	Plan of Development
Hazardous Materials	Phase I surveys	For projects proposed on previously disturbed or developed lands, conduct a Phase I site assessment (American Society for Testing and Materials Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E1527) or other equivalent assessment method deemed acceptable by the appropriate regulatory oversight agency) for the project site and linear appurtenances. If Phase I identifies environmental conditions, concerns, or data gaps requiring additional site assessment to adequately characterize the site, conduct additional site assessment work (such as Phase 2) with appropriate regulatory agency oversight. Provide the Phase I, and if conducted, the Phase 2 site assessment with applications to appropriate lead agencies.	Phase I ESA
Hazardous Materials	Hazardous materials	Systems containing hazardous materials shall be designed and operated in a manner that limits the potential for hazardous materials release, constructed of compatible materials, and in good condition (as verified by periodic inspections), including provision of secondary containment features (to the extent practical); installation of sensors or other devices to monitor system integrity; installation of strategically placed valves to isolate damaged portions and limit the amount of hazardous materials in jeopardy of release; and robust inspection and repair procedures.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Hazardous materials storage	Secondary containment shall be provided for all onsite hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) shall be a temporary activity occurring only for as long as is needed to support construction activities.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Herbicide/ pesticide use	An Animal, Pest, and Vegetation Control Plan shall be developed to ensure that applications are conducted within the framework of BLM and DOI policies and standard operating procedures and entail only the use of EPA-registered pesticides/herbicides that also comply with state and local regulations.	Integrated Vegetation, Weed, and Pest Management Plan
Hazardous Materials	Herbicide/ pesticide use	Use appropriate herbicide-free/pesticide-free buffer zones for herbicides not labeled for aquatic use, based on permitting agency or BLM/U.S. Forest Service risk assessment guidance. The federal guidance suggests minimum widths of 100 feet for aerial applications, 25 feet for applications dispersed by vehicle and 10 feet for hand spray applications.	Integrated Vegetation, Weed, and Pest Management Plan

Resource	Topic	Description of Design Feature	Location
Hazardous Materials	Fire	A Fire Management and Protection Plan shall be developed to implement measures to minimize the potential for fires associated with substances used and stored at the site. The flammability of the specific heat transfer fluid (HTF) used at the facility shall be considered.	Fire Management Plan
Hazardous Materials	Contaminated soils	If any newly found potentially contaminated soils are discovered, contractors will stop work immediately in that area and notify the project proponent, BLM, and Arizona Department Environmental Quality of the discovery and coordinate for any excavation and disposal of the soil.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Health and safety	A health and safety program shall be developed to protect workers during site characterization, construction, operation, and decommissioning of a renewable energy project. The program shall identify all applicable federal and state occupational safety standards and establish safe work practices addressing all hazards, including requirements for developing the following plans: general injury prevention; personal protective equipment (PPE) requirements and training; respiratory protection; hearing conservation; electrical safety; hazardous materials safety and communication; housekeeping and material handling; confined space entry; hand and portable power tool use; gas-filled equipment use; and rescue response and emergency medical support, including on-site first-aid capability.	Health and Safety Program
Hazardous Materials	Safety	The health and safety program shall address OSHA standard practices for the safe use of explosives and blasting agents (e.g., if used to construct foundations for power tower facilities); measures for reducing occupational EMF exposures; the establishment of fire safety evacuation procedures; and required safety performance standards (e.g., electrical system standards and lighting protection standards). The program shall include training requirements for applicable tasks for workers and establish procedures for providing required training to all workers. Documentation of training and a mechanism for reporting serious accidents to appropriate agencies shall be established.	Health and Safety Program
Hazardous Materials	Traffic	A Traffic Management Plan shall be prepared for the site access roads to control hazards that could result from increased truck traffic (most likely during construction or decommissioning), to ensure that traffic flow will not be adversely affected and that specific issues of concern (e.g., the locations of school bus routes and stops) are identified and addressed. This plan shall incorporate measures such as informational signs, flaggers when equipment may result in blocked throughways, and traffic cones to identify any necessary changes in temporary lane configuration. The plan shall be developed in coordination with local planning authorities.	Traffic Management Plan

Resource	Topic	Description of Design Feature	Location
Hazardous Materials	Spills	A comprehensive Spill Prevention and Emergency Response Plan shall be developed for the facility that meets the following criteria: is written, periodically updated, and made available to the entire workforce; contains procedures for timely notification of appropriate authorities, including the designated BLM land manager; provides spill/emergency contingency planning for each type of hazardous material present, including abatement or stabilizing of release, recovery of spilled product, and remediation of impacted environmental media; is supported by the strategic deployment of appropriate spill response materials and equipment, including PPE for individuals with spill or emergency response assignments; provides for prompt response to spills and timely delivery of recovered spill materials and contaminated environmental media to appropriately permitted off-site treatment or disposal facilities; formally assigns spill and emergency response duties to specified individuals; provides and documents appropriate training to individuals with spill or emergency response assignments; provides for the prompt response to spills and timely delivery of recovered spill materials and contaminated environmental media to appropriately permitted off-site treatment or disposal facilities; provides general awareness training to remaining facility personnel; and provides for written documentation of each event, including root cause analysis, corrective actions taken, and a characterization of the resulting environmental or health and safety impacts.	Spill Prevention and Emergency Response Plan
Native American Concerns	Burial sites	Tribal burial sites shall be avoided. If avoidance is not possible, consultation with the lineal descendants or Tribal affiliates of the deceased shall be undertaken before removing a known burial. Remains and objects s shall be protected and their treatment and disposition determined according to NAGPRA statutory procedures and regulations. A contingency plan for encountering unanticipated burials and funerary goods during construction, maintenance, or operation of a renewable energy facility shall be developed as part of a formalized agreement to address management and mitigation options for significant cultural resources (see Cultural Resources) in consultation with the appropriate Tribal governments and cultural authorities well in advance of any ground disturbances.	Historic Properties Treatment Plan/MOA/Data Recovery Plan
Native American Concerns	Archaeology	Archaeological sites created by ancestral Native American populations shall be avoided whenever possible. However, when archaeological excavations are necessary, affiliated Tribe(s) shall be consulted in developing research designs and data recovery plans. Possible mitigations include scientific excavation; monitoring or participation in excavations by Tribal representatives; or approved curation of collections in tribal facilities that meet government standards to ensure appropriate preservation and management.	Historic Properties Treatment Plan/MOA/Data Recovery Plan
Paleontology	Mitigation	The Paleontological Resources Management Plan shall include a mitigation plan; mitigation may include avoidance, removal of fossils (data recovery), stabilization, monitoring, protective barriers and signs, or other physical or administrative protection measures. The Paleontological Resources Management Plan also shall identify measures to prevent potential looting, vandalism, or erosion impacts and address the education of workers and the public to make them aware of the consequences of unauthorized collection of fossils on public land.	Paleontological Resource Management Plan

Resource	Topic	Description of Design Feature	Location
Soils	Roads	Temporary roads shall be designed with eventual reclamation in mind.	Access Road Siting and Management Plan
Soils	Geotechnical	Ground-disturbing geotechnical studies (e.g., geotechnical drilling) shall adhere to the permitting requirements specified by the BLM in 43 CFR 2920.	Plan of Development
Transportation	Design	Existing roads shall be used, but only if in safe and environmentally sound locations. If new roads are necessary, they shall be designed and constructed to the appropriate BLM road design standards and be no higher than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Excessive grades on roads, road embankments, ditches, and drainages shall be avoided, especially in areas with erodible soils. Special construction techniques shall be used, where applicable. Abandoned roads and roads that are no longer needed shall be recontoured and revegetated.	Access Road Siting and Management Plan
Transportation	Easements/ encroachments	Obtain encroachment permits from appropriate agencies.	Traffic Management Plan
Visual Resources	Design	Project developers shall exhaust opportunities of projects to be sited outside the viewsheds of KOPs, or if facilities must be sited within view of KOPs then they shall be sited as far away as possible, since visual impacts generally diminish as viewing distance increases.	Visual Resource Study
Visual Resources	Glare	A study to assess accurately and to quantify potential glinting and glare effects and to determine potential health, safety, and visual impacts associated with glinting and glare effects shall be conducted by qualified individuals using appropriate and commonly accepted software and procedures. The study results must be made available to the BLM in advance of project approval. If the project design is changed during the siting and design process such that substantial changes to glinting and glare effects may occur, glinting and glare effects shall be recalculated, and the study results made available to the BLM.	Glare Study
Visual Resources	Lighting	A Lighting Plan shall be prepared that documents how lighting will be designed and installed to minimize night-sky impacts during facility construction and operations phases. Lighting for facilities shall not exceed the minimum number of lights and brightness required for safety and security and shall not cause excessive reflected glare. Full cut-off luminaires shall be utilized to minimize uplighting. Lights shall be directed downward or toward the area to be illuminated. Light fixtures shall not spill light beyond the project boundary. Lights in high-illumination areas not occupied on a continuous basis shall have switches, timer switches, or motion detectors so that the lights operate only when the area is occupied. Where feasible, vehicle-mounted lights shall be used for night maintenance activities. Wherever feasible, consistent with safety and security, lighting shall be kept off when not in use. The Lighting Plan shall include a process for promptly addressing and mitigating complaints about potential lighting impacts.	Lighting Plan
Visual Resources	Glare	Commercial symbols or signs and associated lighting on buildings or other structures shall be prohibited.	Glare Study

Resource	Topic	Description of Design Feature	Location
Water Resources	Water quality	No project and/or project related activities shall degrade, negatively effect, and/or contribute to impairment of existing surface water quality conditions for waterbodies that are Federally designated on the CWA section 303(d) list of impaired surface waters and existing water quality shall be maintained and protected in a surface water that is classified as an Outstanding Arizona Water (OAW) under Arizona Administrative Code R18-11-112 or designated Arizona's Outstanding Natural Resource Waters.	Stormwater Pollution Prevention Plan
Water Resources	Groundwater	If groundwater use is proposed, project developers shall ensure that a comprehensive analysis of the groundwater basin is provided and that the following potential significant impacts are evaluated: • Creation or exacerbation of overdraft conditions and their potential to cause subsidence and loss of aquifer storage capacity; • Use that cause injury to other water rights claims in the basin; • Estimates of the total cone of depression considering cumulative drawdown from all potential pumping in the basin, including the project, for the life of the project through the decommissioning phase; • Changes in water quality that affect other beneficial use; and • Effects on groundwater dependent ecosystems such as springs, seeps, and wetlands that provide water for plants and animals. • Groundwater wells constructed during any stage of the project will conform to state and local standards and records shall include: o Legal description (township, range, section, and quarter section); o Project map with proposed and existing well locations; o Well design characteristics: casing diameter, screened interval(s), well depth, and static water level; o Results of groundwater pumping tests or other tests done in the well; and o Anticipated pumping capacity and peak pumping rates.	Comprehensive Groundwater Basin Analysis

Resource	Topic	Description of Design Feature	Location
Water Resources	Hydrology	Developers shall be required to conduct a detailed hydrologic study demonstrating a clear understanding of the local surface water and groundwater hydrology. At a minimum this hydrologic study shall include: • Quantification of physical characteristics describing surface water features, such as streamflow rates, stream cross-sections, channel routings, seasonal flow rates (intermittent streams), peak flow rates (ephemeral washes/drainages), sediment characteristics and transport rates, lake depths, and surface areas of lakes, wetlands, and floodplains; • Hydrologic analysis and modeling to define the 100-yr, 24-hour rainfall event for the project area and calculation of projected runoff from this storm at site; • Hydrologic analysis and modeling to identify 100-yr floodplain boundaries of any surface water feature on the site; • Quantification of physical characteristics describing the groundwater aquifer, such as physical dimensions of the aquifer, sediment characteristics, confined/unconfined conditions, hydraulic conductivity and transmissivity distribution of the aquifer, groundwater surface elevations, and groundwater flow processes (direction, recharge/discharge, current basin extractions, and surface water-groundwater connectivity); • Quantification of regional climate including seasonal and long-term information on temperatures, precipitation, evaporation, and evapotranspiration; and • Quantification of the sustainable yield of surface waters and groundwater available to the project. Project developers shall evaluate the water sources in terms of existing water rights and management plans for adequacy to serve project demands while maintaining aquatic, riparian, and other water-dependent resources.	Detailed hydrologic study
Water Resources	Water quality	When an herbicide/pesticide is used to control vegetation, the climate, soil type, slope, and vegetation type shall be considered in determining the risk of herbicide/pesticide contamination. Additionally, an Animal, Pest, and Vegetation Control Plan shall be developed to ensure that applications are conducted within the framework of BLM and DOI policies and standard operating procedures and entail only the use of EPA-registered pesticides/herbicides that also comply with state and local regulations.	Integrated Vegetation, Weed, and Pest Management Plan
Water Resources	Groundwater	Project developers who plan to use groundwater shall develop and implement a groundwater Water Resources Monitoring and Mitigation Plan, which includes monitoring the effects of groundwater withdrawal for project uses, vegetation restoration and dust control uses during decommissioning and aquifer recovery after project decommissioning. Monitoring frequency shall be decided on a site-specific basis and in coordination with federal, state, and local agencies managing groundwater resources of the region.	Groundwater Monitoring & Reporting Plan

Resource	Topic	Description of Design Feature	Location
Water Resources	Flooding	Projects developers shall maintain the pre-development flood hydrograph for all storms up to and including the 100-yr rainfall event. All stormwater retention and/or infiltration and treatment systems shall also be designed for all storms up to and including the 100-yr storm event. As part of a Spill Prevention and Emergency Response Plan, measures to prevent potential groundwater and surface water contamination shall be identified.	Spill Prevention and Emergency Response Plan
Water Resources	Stormwater	The facility shall obtain and comply with a construction stormwater permit through the EPA or state-run NPDES program (whichever applies within the state). Additionally, the EPA requires any development larger than 20 acres (0/08 km^2) begun after August 2011 to comply with a requirement to monitor construction discharges for turbidity concentrations.	Stormwater Pollution Prevention Plan

Elisabeth Solar Project Proposed Best Management Practices (Table B-4 of RDEP)

Resource	Topic	Description of BMP	Location
Air Quality	Emissions	On-site vehicle use shall be reduced to the extent feasible.	Dust Abatement Plan
Air Quality	Emissions	Idling of diesel equipment shall be limited to no more than 10 minutes unless idling must be maintained for proper operation (e.g., drilling, hoisting, and trenching).	Compliance Management Plan
Air Quality	Emissions	Consider using electric vehicles, biodiesel, or alternative fuels during construction and operation phases to reduce the project's criteria and GHG pollutant emissions.	Compliance Management Plan
Air Quality	Fugitive dust	Workers shall be trained to comply with the speed limit, use good engineering practices, minimize drop height of materials, and minimize disturbed areas.	Dust Abatement Plan
Air Quality	Fugitive dust	Construction shall be staged to limit the exposed area at any time, whenever practical.	Dust Abatement Plan
Air Quality	Fugitive dust	Access to the construction site and staging areas shall be limited to authorized vehicles only through the designated treated roads.	Dust Abatement Plan
Air Quality	Fugitive dust	Access roads, on-site roads, and parking lots shall be surfaced with or aggregate with hardness sufficient to prevent vehicles from crushing the aggregate and thus causing dust or compacted soil conditions. Paving could also be used on access roads and parking lots. Alternatively, chemical dust suppressants or durable polymeric soil stabilizers shall be used on these locations. If the need for using surfacing, road sealant, soil bonding, and stabilizing agents on non-paved surfaces is determined use agents that have been shown to be non-toxic to wildlife and plants. **Modified by Project Proponent:** Access roads, on-site roads, and parking lots shall be surfaced with compacted native soil or aggregate with hardness sufficient to prevent vehicles from crushing the aggregate and thus causing dust or compacted soil conditions. Paving could also be used on access roads and parking lots. Alternatively, chemical dust suppressants or durable polymeric soil stabilizers shall be used on these locations. If the need for using surfacing, road sealant, soil bonding, and stabilizing agents on non-paved surfaces is determined use agents that have been shown to be non-toxic to wildlife and plants.	Compliance Management Plan
Air Quality	Fugitive dust	All unpaved roads, disturbed areas (e.g., areas of scraping, excavation, backfilling, grading, and compacting), and loose materials generated during project activities shall be watered as frequently as necessary to minimize fugitive dust generation. In water-deprived locations, water spraying shall be limited to active disturbance areas only and non-water-based dust control measures shall be implemented in areas with intermittent or non-heavy use, such as stockpiles or access roads.	Dust Abatement Plan
Air Quality	Fugitive dust	Speed limits (e.g., 10 mph [16 km/h]) within the construction site shall be posted with visible signs and enforced to minimize airborne fugitive dust.	Dust Abatement Plan

Resource	Topic	Description of BMP	Location
Air Quality	Fugitive dust	All vehicles transporting loose materials traveling on public roads shall be covered, and loads shall be sufficiently wet and kept below the freeboard of the truck.	Dust Abatement Plan
Air Quality	Fugitive dust	Tires of all construction-related vehicles shall be inspected and cleaned as necessary to be free of dirt prior to entering paved public roadways.	Dust Abatement Plan
Air Quality	Fugitive dust	Visible trackout or runoff dirt on public roadways from the construction site shall be cleaned (e.g., through street vacuum sweeping).	Dust Abatement Plan
Air Quality	Fugitive dust	Topsoil from all excavations and construction activities shall be salvaged and reapplied during reclamation or, where feasible, used for interim reclamation by being reapplied to construction areas not needed for facility operation as soon as activities in that area have ceased. Unused topsoil and other erosion-susceptible material shall be removed from the site via covered trucks. Vegetation removal shall be minimized to the extent possible (e.g., avoid grading the project or removing topsoil from the project site and trim vegetation instead of removing it.	Site Rehabilitation and Revegetation Plan
Air Quality	Fugitive dust	Use wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) where soils are disturbed in construction, access and maintenance routes, and materials stock pile areas. Keep related windbreaks in place until the soil is stabilized or permanently covered with vegetation. Wind fences shall be installed around disturbed areas that could affect the area beyond the site boundaries (e.g., nearby residences).	Dust Abatement Plan
Air Quality	Fugitive dust	All soil disturbance activities shall be minimized and travel on unpaved roads shall be conducted during periods of low winds and stable conditions typical of early morning hours from late fall to early spring, to the extent practicable, which could significantly lower potential impacts on ambient air quality. **Modified by Project Proponent:** All soil disturbance activities and travel on unpaved roads shall be suspended during periods of high winds if dust cannot be controlled per applicable regulatory requirements. A critical site-specific wind speed shall be established based on soil properties determined during site characterization, and wind speed monitoring is required at the site during construction, operation, and reclamation.	Dust Abatement Plan
Air Quality	Fugitive dust	Any stockpiles created shall be kept on-site, with an upslope barrier in place to divert runoff. Stockpiles shall be sprayed with water, covered with tarpaulins, and/or treated with appropriate dust suppressants, especially in preparation for high wind or storm conditions. Compatible native vegetative plantings may also be used to limit dust generation for stockpiles that will be inactive for a relatively long period. Chemical dust suppressants that emit volatile organic compounds (VOCs) shall be avoided within or near O3 nonattainment areas.	Dust Abatement Plan

Resource	Topic	Description of BMP	Location
Ecological	Staging areas	As practical, staging and parking areas shall be located within the site of the utility-scale renewable energy facility to minimize habitat disturbance in areas adjacent to the site.	Plan of Development
Ecological	Construction activities	Before beginning construction, delineate the boundaries of areas to be disturbed using temporary construction fencing and/or flagging, and confine disturbances, project vehicles, and equipment to the delineated project areas.	Mitigation and Monitoring Plan
Ecological	Construction	To the extent practicable, work personnel shall stay within the ROW and/or easements.	Mitigation and Monitoring Plan
Ecological	Fugitive dust	If the application of water is needed to abate dust in construction areas and on dirt roads, use the least amount needed to meet safety and air quality standards and prevent the formation of puddles, which could attract wildlife to construction sites.	Dust Abatement Plan
Ecological	Traffic	Existing access roads, utility corridors, and other infrastructure shall be used to the maximum extent feasible.	Traffic Management Plan
Ecological	Traffic	Road closures shall be considered during crucial periods (e.g., extreme winter conditions, calving/fawning seasons). Personnel shall be advised to minimize stopping and exiting their vehicles in the winter ranges of large game while there is snow on the ground.	Traffic Management Plan
Ecological	Noise	Noise reduction devices (e.g., mufflers) shall be employed to minimize the impacts on wildlife and special status species populations. Explosives shall be used only within specified times and at specified distances from sensitive wildlife or surface waters as established by the designated lead agency or other federal and state agencies. Operators shall ensure that all equipment is adequately muffled and maintained in order to minimize disturbance to wildlife	Mitigation and Monitoring Plan
Ecological	Noise	Minimize construction and operation related noise levels to minimize impacts to wildlife.	Mitigation and Monitoring Plan
Ecological	Power lines	Place low and medium voltage connecting power lines underground whenever possible. In certain circumstances, burial of the lines may be prohibitively expensive (for example in shallow bedrock areas) or may cause unacceptable impacts to wetland habitats and dependent species. Overhead lines may be acceptable: • If sited away from high bird crossing locations, such as between roosting and feeding areas or between lakes, rivers, and nesting areas; and/or • When the structures parallel tree lines or are otherwise screened so that collision risk is reduced.	Plan of Development
Ecological	Aquatic habitat	Low-water crossings (fords) shall be used only as a last resort and then during the driest time of the year. Rocked approaches to fords shall be used. The pre-existing stream channel, including bed and banks, shall be restored after the need for a low-water ford has passed.	Plan of Development

Resource	Topic	Description of BMP	Location
Ecological	Habitat	To reduce the extent of habitat disturbance during construction and operation, existing access roads, utility corridors, and other infrastructure shall be used to the maximum extent feasible and foot and vehicle traffic through undisturbed areas shall be minimized.	Plan of Development
Ecological	Habitat	Areas left in a natural condition during construction (e.g., wildlife crossings) shall be maintained in as natural a condition as possible within safety and operational constraints.	Ecological Resources Mitigation & Monitoring Plan
Ecological	Habitat	Projects shall be planned to avoid, minimize, or mitigate impacts on aquatic habitats, wetland habitats, waters of the United States, other special aquatic sties, unique biological communities, crucial wildlife habitats, breeding areas, and special status species locations and habitats, including designated critical habitat. Project planning shall be coordinated with the appropriate federal and state resource management agencies.	Plan of Development
Ecological	Habitat	Habitat loss, habitat fragmentation, and resulting edge habitat due to project development shall be minimized to the extent practicable. Habitat fragmentation could be reduced by consolidating facilities (e.g., access roads and utilities could share common ROWs, where feasible), reducing the number of access roads to the minimum amount required, minimizing the number of stream crossings within a particular stream or watershed, and, locating facilities in areas where habitat disturbance has already occurred. Individual project facilities shall be located and designed to minimize disruption of animal movement patterns and connectivity of habitats.	Plan of Development
Ecological	Habitat	The number of areas where wildlife could hide or be trapped (e.g., open sheds, pits, uncovered basins, and laydown areas) shall be minimized. All pits shall contain wildlife escape ramps. For example, an uncovered pipe that has been placed in a trench shall be capped at the end of each workday to prevent animals from entering the pipe. If a special status species is discovered inside a component, that component must not be moved or, if necessary, moved only to remove the animal from the path of activity, until the animal has escaped. **Added by Proponent:** In addition, because open trenches could impede the seasonal movements of large game animals and alter their distribution, they shall be backfilled as quickly as is possible. Open trenches could also entrap smaller animals; therefore, escape ramps shall be installed at regular intervals along open-trench segments at distances identified in the applicable land use plan or best available information and science. Additionally, an appropriate number of qualified biological monitors (as determined by the federal authorizing agency and the USFWS) shall be on-site to monitor, capture, and relocate animals that become entrapped in trenches and are unable to escape on their own.	Ecological Resources Mitigation & Monitoring Plan

Resource	Topic	Description of BMP	Location
Ecological	Birds/bats	Tall structures shall be located to avoid known flight paths of birds and bats.	Bird and Bat Conservation Strategy
Ecological	Birds/ raptors	Project proponents should establish buffer zones and protection, mitigation, and monitoring plans for active nests detected during surveys.	Ecological Resources Mitigation & Monitoring Plan
Ecological	Special status habitat	Prior to any ground-disturbing activity, seasonally appropriate walkthroughs shall be conducted by a qualified biologist or team of biologists to ensure that important or sensitive species or habitats are not present in or near project areas. Attendees at the walkthrough shall include appropriate federal agency representatives, state natural resource agencies, and construction contractors, as appropriate. Habitats or locations to be avoided (with appropriately sized buffers) shall be clearly marked.	Ecological Resources Mitigation & Monitoring Plan
Ecological	Vegetation	Project-specific vegetation management plans shall investigate possibilities of revegetating parts of the renewable energy project area. Where revegetation is accomplished, fire breaks are required, such that vegetated areas would not result in increased fire hazard.	Site Rehabilitation and Revegetation Plan
Ecological	Noxious weeds	The establishment and spread of invasive species and noxious weeds within the ROW and in associated areas of ground surface disturbance or vegetation cutting shall be prevented. The area shall be monitored regularly and invasive species should be eradicated immediately.	Integrated Vegetation, Weed, and Pest Management Plan
Ecological	Herbicide use	Herbicide use shall be limited to nonpersistent, immobile substances. Only herbicides with low toxicity to wildlife and nontarget native plant species shall be used, as determined in consultation with the USFWS. The typical herbicide application rate shall be used rather than the maximum application rate, where effective. All herbicides shall be applied in a manner consistent with their label requirements and in accordance with guidance provided in the Final PEIS on vegetation treatments using herbicides (BLM 2007c). No herbicides shall be used near or in surface water, streams (including ephemeral, intermittent, or perennial), riparian areas, or wetlands. Setback distances shall be determined through coordination with federal and state resource management agencies. Before herbicide treatments are begun, the designated lead agency or an authorized contractor shall conduct nest searches in and around treatment areas to minimize impacts on migratory birds.	Integrated Vegetation, Weed, and Pest Management Plan
Ecological	Reclamation	Access roads shall be reclaimed when they are no longer needed. However, seasonal restrictions (e.g., nest and brood rearing) shall be considered, as appropriate (e.g., identified in the land use plan or substantiated by best available information or science).	Site Rehabilitation and Revegetation Plan
Ecological	Reclamation	All holes and ruts created by removal of structures and access roads shall be filled or graded.	Site Rehabilitation and Revegetation Plan

Resource	Topic	Description of BMP	Location
Ecological	Reclamation	While structures are being dismantled, care shall be taken to avoid leaving debris on the ground in areas in which wildlife regularly move.	Site Rehabilitation and Revegetation Plan
Ecological	Reclamation	The facility fence shall remain in place for several years to help reclamation (e.g., would preclude large mammals and vehicles from disturbing revegetation efforts).	Site Rehabilitation and Revegetation Plan
Hazardous Materials	Training	Ensure that on-site workers are fully trained to properly handle and are informed about each of the hazardous materials to be used on-site.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Hazardous materials	Pollution prevention opportunities shall be identified and implemented, including material substitution of less hazardous alternatives, recycling, and waste minimization.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Hazardous materials	Written procedures for the storage, use, and transportation of each type of hazardous material present shall be provided, including all vehicle and equipment fuels.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Hazardous materials	Authorized users for each type of hazardous material shall be identified.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Hazardous materials	Hazardous materials and waste storage areas or facilities shall be formally designated and access restricted to authorized personnel. Construction debris, especially treated wood, shall not be disposed of or stored in areas where it could come in contact with aquatic habitats.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Hazardous materials	Hazardous materials and waste storage areas must be consistent with accepted industry practices as well as applicable federal, state, and local regulations and that include, at a minimum, containers constructed of compatible materials, properly labeled, and in good condition; secondary containment features for liquid hazardous materials and wastes; physical separation of incompatible chemicals; and fire-fighting capabilities when warranted.	Hazardous Materials and Waste Management Plan

Resource	Topic	Description of BMP	Location
Hazardous Materials	Hazardous materials	Procedures shall be established for fuel storage and dispensing, including shutting off vehicle (equipment) engines; using only authorized hoses, pumps, and other equipment in good working order; maintaining appropriate fire and spill response materials at equipment-fueling stations; providing emergency shutoffs for fuel pumps; ensuring that fueling stations are paved; ensuring that both aboveground fuel tanks and fueling areas have adequate secondary containment; prohibiting smoking, welding, or open flames in fuel storage and dispensing areas; equipping the area with fire suppression devices, as appropriate; conducting routine inspections of fuel storage and dispensing areas; requiring prompt recovery and remediation of all spills, and providing for the prompt removal of all fuel and fuel tanks used to support construction vehicles and equipment at the completion of facility construction and decommissioning phases.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Hazardous materials	Good waste management practices shall be adopted for handling, storing, and disposing of wastes generated by a construction project to prevent the release of waste materials into stormwater discharges; waste management includes the following: spill prevention and control, construction debris and litter management, concrete waste management, and liquid waste management.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Hazardous materials storage	To the greatest extent practical and considering the remoteness of a given facility, "just-in-time" ordering procedures shall be employed that are designed to limit the amounts of hazardous materials present on the site to quantities minimally necessary to support continued operations; excess hazardous materials shall receive prompt disposition.	
Hazardous Materials	Herbicide/ pesticide use	Avoid rinsing herbicide/pesticide spray tanks in or near water bodies.	Integrated Vegetation, Weed, and Pest Management Plan
Hazardous Materials	Spills	Berms and other controls shall be used at facilities to prevent off-site migration of any leaked or spilled HTF, TES fluids, or any other chemicals stored or used at the site.	Spill Prevention and Emergency Response Plan
Hazardous Materials	Spills	Remediate hazardous product leaks and chemical releases that constitute a Recognized Environmental Condition before completing decommissioning.	Spill Prevention and Emergency Response Plan
Hazardous Materials	Transporting hazardous materials	Dedicated areas with secondary containment shall be established for off-loading hazardous materials transport vehicles.	Spill Prevention and Emergency Response Plan
Hazardous Materials	Refueling	Refueling areas shall be located away from surface water locations and drainages and on paved surfaces; features shall be added to direct spilled materials to sumps or safe storage areas where they can be subsequently recovered.	Spill Prevention and Emergency Response Plan

Resource	Topic	Description of BMP	Location
Hazardous Materials	Vehicles	All vehicles and equipment shall be in proper working condition to ensure that there is no potential for leaks of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials.	Spill Prevention and Emergency Response Plan
Hazardous Materials	Inspections	Written procedures shall be established for inspecting hazardous materials and waste storage areas and for plant systems containing hazardous materials; identified deficiencies and their resolution shall be documented.	Hazardous Materials and Waste Management Plan
Hazardous Materials	Waste removal	Schedules shall be established for the regular removal of wastes (including sanitary wastewater generated in temporary, portable sanitary facilities) for delivery by licensed haulers to appropriate off-site treatment or disposal facilities.	Mitigation and Monitoring Plan
Hazardous Materials	Decommissioning	During facility decommissioning, the following shall occur: emergency response capabilities shall be maintained throughout the decommissioning period as long as hazardous materials and wastes remain on-site, and emergency response planning shall be extended to any temporary material and equipment storage areas that may have been established; temporary waste storage areas shall be properly designated, designed, and equipped; hazardous materials removed from systems shall be properly containerized and characterized, and recycling options shall be identified and pursued; off-site transportation of recovered hazardous materials and wastes resulting from decommissioning activities shall be conducted by authorized carriers; all hazardous materials and waste shall be removed from on-site storage and management areas (including surface impoundments), and the areas shall be surveyed for contamination and remediated as necessary.	Decommissioning Plan
Health and Safety	Health	A health risk assessment shall evaluate potential cancer and noncancer risks to workers from exposure to facility emission sources during construction and operations. If potential risks are found to exceed applicable threshold levels, measures shall be taken to decrease emissions from the source.	Air Quality/GHG Study/Health Risk Assessment
Health and Safety	Safety	A safety assessment shall be conducted to describe potential safety issues and the means that would be taken to mitigate them, including issues such as site access; construction; safe work practices; glare exposure from mirrors, heliostats, and/or power towers; security; heavy equipment transportation; traffic management; emergency procedures; and fire control.	Air Quality/GHG Study/Health Risk Assessment
Health and Safety	Traffic	Operators shall consult with local planning authorities regarding increased traffic during the construction phase, including an assessment of the number of vehicles per day, their size, and type. Specific issues of concern (e.g., location of school bus routes and stops) shall be identified and addressed in the traffic management plan.	Traffic Management Plan
Health and Safety	Firearms	Prohibit workers or visitors, with the exception of law enforcement personnel, from bringing firearms or weapons to the project site.	Health and Safety Program

Resource	Topic	Description of BMP	Location
Health and Safety	Wastewater	Any wastewater generated in association with temporary, portable sanitary facilities shall be periodically removed by a licensed hauler and introduced into an existing municipal sewage treatment facility. Portable sanitary facilities provided for construction crews shall be adequate to support expected on-site personnel.	Mitigation and Monitoring Plan
Lands and Realty	Land use	To plan for efficient use of the land, necessary infrastructure requirements shall be consolidated wherever possible, and current transmission and market access shall be evaluated carefully.	Transmission interconnection study
Native American Concerns	Visual	Visual intrusion on sacred areas and places of traditional importance shall be avoided to the extent practical through the selection of renewable energy facility location and technology. When avoidance is not possible, timely and meaningful consultation with the affected Tribe(s) shall be conducted to formulate a mutually acceptable plan to minimize or mitigate the adverse effect.	Visual Resource Study
Noise-Vibration	Equipment	All equipment shall be maintained in good working order in accordance with manufacturers' specifications. For example, suitable mufflers and/or air-inlet silencers shall be installed on all internal combustion engines (ICEs) and certain compressor components.	Noise Monitoring and Mitigation Plan
Noise-Vibration	Equipment	All equipment shall have sound-control devices no less effective than those provided on the original equipment. All construction equipment used shall be adequately muffled and maintained. Properly maintain mufflers, brakes, and loose items on construction and operation related vehicles to minimize noise and ensure safe operations. Operate trucks as quietly as possible, while considering local conditions. Advise about downshifting and vehicle operations in residential communities to keep truck noise to a minimum.	Mitigation and Monitoring Plan
Noise-Vibration	Vehicles	Construction and decommissioning activities and construction traffic shall be scheduled to minimize disruption to nearby residents and existing operations surrounding the project areas.	Traffic Management Plan
Noise-Vibration	Monitoring/ mitigation	Project developers shall realize that complaints about noise may still occur, even when the noise levels from the facility do not exceed regulatory levels. Accordingly, a noise complaint process and hotline for the surrounding communities shall be implemented, including documentation, investigation, evaluation, and resolution of all legitimate project-related noise complaints.	Noise Monitoring and Mitigation Plan
Noise-Vibration	Monitoring/ mitigation	If noisy activities, such as blasting or pile driving, are required during the construction or decommissioning period, nearby residents shall be notified in advance.	Noise Monitoring and Mitigation Plan
Noise-Vibration	Monitoring/ mitigation	Employ engineering controls, including sound-insulated equipment and control rooms, to reduce the average noise level to appropriate levels in normal work areas.	Noise Monitoring and Mitigation Plan
Soils	Construction	Construction shall be conducted in stages to limit the areas of exposed soil at any given time. For example, only land that will be actively under construction in the near term (e.g., within the next 6 to 12 months) should be cleared of vegetation.	Mitigation and Monitoring Plan

Resource	Topic	Description of BMP	Location
Soils	Construction	Water or other stabilizing agents shall be used to wet roads in active construction areas and laydown areas to minimize the windblown erosion of soil.	Dust Abatement Plan
Soils	Clearing	The clearing and disturbing of sensitive areas (e.g., steep slopes and natural drainages) and other areas shall be avoided outside the construction zone.	Plan of Development
Soils	Disturbance area	The area disturbed by operation of a renewable energy project shall be minimized (e.g., by using existing roads).	Plan of Development
Soils	Disturbance area	The footprint of disturbed areas, including the number and size/length of roads, fences, borrow areas, and laydown and staging areas, shall be minimized.	Plan of Development
Soils	Disturbance area	Electrical lines from solar collectors and/or wind turbines shall be buried along existing features (e.g., roads or other paths of disturbance) to minimize the overall area of surface disturbance whenever possible.	Plan of Development
Soils	Disturbance area	Permanent stabilization of disturbed areas shall occur during final grading and landscaping of the site.	Site Rehabilitation and Revegetation Plan
Soils	Slopes/ grades	Areas with unstable slopes shall be avoided, and local factors that can cause slope instability (e.g., groundwater conditions, precipitation, earthquake activity, slope angles, and the dip angles of geologic strata) shall be identified.	Plan of Development
Soils	Slopes/ grades	The creation of excessive slopes shall be avoided during site preparation and construction. Special construction techniques are to be used, where applicable, in areas of steep slopes, erodible soil, and drainage ways.	Plan of Development
Soils	Drainages	Drainage crossings shall be stabilized as quickly as possible, and channel erosion shall be minimized from runoff caused by the project.	Stormwater Pollution Prevention Plan
Soils	Fill	Borrow materials shall be obtained only from authorized and permitted sites; existing sites shall be used in preference to new sites.	Plan of Development
Soils	Erosion control	Potential soil erosion shall be controlled at culvert outlets with appropriate structures.	Site Drainage Plan
Soils	Erosion control	Catch basins, roadway ditches, and culverts shall be cleaned and maintained regularly.	Site Drainage Plan
Soils	Erosion control	Runoff from slope tops shall be controlled and directed to settling or rapid infiltration basins, and disturbed slopes shall be stabilized as quickly as possible.	Site Drainage Plan
Soils	Erosion control	Barriers and sedimentation devices shall be placed around drainages and wetlands to minimize contamination by sediment-laden water.	Stormwater Pollution Prevention Plan
Soils	Erosion control	Sediment from barriers and sedimentation devices shall be removed to restore sediment control capacity	Stormwater Pollution Prevention Plan
Soils	Erosion control	Routine site inspections shall be conducted to assess the effectiveness and maintenance requirements for erosion and sediment control systems.	Stormwater Pollution Prevention Plan

Resource	Topic	Description of BMP	Location
Transportation	Transportation plans	The project shall be planned to utilize existing roads and utility corridors to the maximum extent feasible and to minimize the number and length/size of new roads, lay-down areas, and borrow areas.	Plan of Development
Transportation	Design	Access roads and on-site roads shall be surfaced with aggregate materials, wherever appropriate.	Plan of Development
Transportation	Design	Access roads shall be located to follow natural contours and minimize side hill cuts.	Plan of Development
Transportation	Design	Roads shall be located away from drainage bottoms and avoid wetlands, if practicable.	Plan of Development
Transportation	Design	Roads shall be designed so that changes to surface water runoff are avoided and erosion is not initiated.	Plan of Development
Transportation	Construction traffic	To mitigate impacts related to the daily commutes of construction workers, the operator may be required to implement local road improvements, provide multiple site access locations and routes, stagger work schedules, and implement a ride-sharing or shuttle program.	Traffic Management Plan
Transportation	Oversize vehicles	Obtain vehicle oversize and overweight permits, as appropriate.	Traffic Management Plan
Transportation	Traffic	Traffic shall be restricted to the roads developed for the project. Use of other unimproved roads shall be restricted to emergency situations.	Traffic Management Plan
Transportation	Traffic	Signs shall be placed along construction roads to identify speed limits, travel restrictions, and other standard traffic control information. To minimize impacts on local commuters, consideration shall be given to limiting construction vehicles traveling on public roadways during the morning and late afternoon commute time. Consideration shall also be given to opportunities for busing of construction workers to the job site to reduce traffic volumes.	Traffic Management Plan
Transportation	Operation	To reduce hazards for incoming and outgoing traffic, as well as to expedite traffic flow, the operator may be required to implement traffic control measures, such as intersection realignment coupled with speed limit reduction; the installation of traffic lights and/or other signage; and the addition of acceleration, deceleration, and turn lanes on routes with site entrances.	Traffic Management Plan
Transportation	Monitoring	Ongoing ground transportation planning shall be conducted to evaluate road use, minimize traffic volume, and ensure that roads are maintained adequately to minimize associated impacts.	Traffic Management Plan
Visual Resources	Design	Visual information shall be included as a part of the critical due diligence information when determining and selecting development sites and ROW boundaries.	Visual Resource Study
Visual Resources	Design	Consider proposed facility and transmission line visual impacts from relevant viewing angles when selecting building sites and locations. Consider visual impacts from frequent water vapor plumes if cooling towers are proposed.	Visual Resource Study

Resource	Topic	Description of BMP	Location
Visual Resources	Design	ROW location, size, and boundary determinations shall consider terrain characteristics and opportunities for full or partial project concealment.	Visual Resource Study
Visual Resources	Design	Structures and roads shall be designed and located to minimize and balance cuts and fills. Retaining walls, binwalls, half bridges, and tunnels shall be used to reduce cut and fill.	Plan of Development
Visual Resources	Design	Low-profile structures shall be chosen whenever possible to reduce their visibility.	Plan of Development
Visual Resources	Design	Openings in vegetation for facilities, structures, roads, and the like shall mimic the size, shape, and characteristics of naturally occurring openings to the extent possible.	Plan of Development
Visual Resources	Design	Materials and surface treatments shall repeat and/or blend with the existing form, line, color, and texture of the landscape.	Plan of Development
Visual Resources	Construction	All stakes and flagging will be removed from the construction area and disposed of in an approved facility.	Mitigation and Monitoring Plan
Visual Resources	Surface disturbance	Existing rocks, vegetation, and drainage patterns shall be preserved to the maximum extent possible.	Plan of Development
Visual Resources	Surface disturbance	Brush-beating or mowing, or using protective surface matting rather than vegetation removal shall be done where feasible.	Mitigation and Monitoring Plan
Visual Resources	Surface disturbance	Slash from vegetation removal shall be mulched and spread to cover fresh soil disturbances as part of the revegetation plan. Slash piles shall not be left in sensitive viewing areas.	Mitigation and Monitoring Plan
Visual Resources	Surface disturbance	Visual impacts are lessened when vegetation and ground disturbances are minimized, siting shall take advantage of existing clearings to reduce vegetation clearing and ground disturbance. Linear development (transmission lines, pipelines, roads, etc.) shall follow the edges of clearings (where they would be less conspicuous) rather than passing through the center of clearings.	Plan of Development
Visual Resources	Surface disturbance	Road-cut slopes shall be rounded, and the cut-and-fill pitch shall be varied to reduce contrasts in form and line; the slope shall be varied to preserve specimen trees and nonhazardous rock outcroppings.	Plan of Development
Visual Resources	Surface treatments	Gravel and other surface treatments shall be removed or buried.	Decommissioning Plan
Visual Resources	Facilities	Minimize the number of structures. Combine and carry out activities in one structure, or co-locate structures to share pads, fences, access roads, lighting, and other facilities.	Plan of Development
Visual Resources	Color	Appropriately colored materials shall be selected for structures, or appropriate stains/coatings shall be applied to blend with the project's backdrop.	Plan of Development
Visual Resources	Color	Materials, coatings, or paints having little or no reflectivity shall be used whenever possible.	Plan of Development

Resource	Topic	Description of BMP	Location
Visual Resources	Color	Grouped structures shall all be painted the same color to reduce visual complexity and color contrast.	Plan of Development
Visual Resources	Color	Aboveground pipelines shall be painted or coated to match their surroundings.	Plan of Development
Visual Resources	Color	No paint or permanent discoloring agents will be applied to rocks or vegetation to indicate surveyor construction activity limits.	Mitigation and Monitoring Plan
Visual Resources	Color	Reduce graveled surfaces visual color contrast with approved color treatment practices.	Plan of Development
Visual Resources	Glare	Minimize the use of signs and project construction signs; necessary signs shall be made of nonglare materials and utilize unobtrusive colors; reverse sides of signs and mounts shall be painted or coated using the most suitable color selected from the BLM Standard Environmental Color Chart to reduce color contrasts with the existing landscape; however, placement and design of any signs required by safety regulations must conform to these regulations.	Plan of Development
Visual Resources	Transmission	All electrical collector lines shall be buried where possible. All electrical collector lines shall be buried in a manner that minimizes additional surface disturbance (e.g., along roads or other paths of surface disturbance).	Plan of Development
Visual Resources	Transmission	Communication and other local utility cables shall be buried where feasible.	Plan of Development
Visual Resources	Waste removal	Establish a regular litter pick-up procedure within and around the perimeter of the project site.	Hazardous Materials and Waste Management Plan
Visual Resources	Waste removal	“Good housekeeping” procedures shall be developed to ensure that the site is kept clean of debris, garbage, fugitive trash or waste, and graffiti; to prohibit scrap heaps and dumps; and to minimize storage yards. Mitigation measures regarding waste management (Section 5.20.3) shall be applied.	Hazardous Materials and Waste Management Plan
Visual Resources	Maintenance	Road maintenance activities shall avoid blading existing forbs and grasses in ditches and adjacent to roads.	Mitigation and Monitoring Plan
Visual Resources	Revegetation	Cut slopes shall be randomly scarified and roughened to reduce texture contrasts with existing landscapes and aid in revegetation.	Plan of Development
Visual Resources	Screening	Where screening topography and vegetation are absent, natural-looking earthwork landforms and vegetative or architectural screening shall be used to minimize visual impacts. Vegetative screening can be particularly effective along roadways.	Plan of Development

Resource	Topic	Description of BMP	Location
Visual Resources	Reclamation	Interim restoration shall be undertaken during the operating life of the project as soon as possible after disturbances.	Site Rehabilitation and Revegetation Plan
Water Resources	Water supply	Water use shall be minimized by implementing conservation practices, such as treating spent wash water and storing it for reuse.	Mitigation and Monitoring Plan
Water Resources	Water quality	If drilling activities are required as part of site characterization, any drilling fluids or cuttings shall be maintained so that cuttings, fluids, or runoff from storage areas will not come in contact with aquatic habitats. Temporary impoundments for storing drilling fluids and cuttings shall be lined to minimize infiltration of runoff into groundwater or surface water.	N/A
Water Resources	Water quality	Washing equipment or vehicles in streams and wetlands shall be avoided.	Stormwater Pollution Prevention Plan
Water Resources	Water quality	Project developers shall avoid or minimize and mitigate the degradation of water quality (e.g., chemical contamination, increased salinity, increased temperature, decreased dissolved oxygen, and increased sediment loads) that could result from construction activities. Water quality in areas adjacent to or downstream of development areas shall be monitored during the life of the project to ensure that water quality is protected.	Surface Water Quality Management Plan
Water Resources	Stormwater	Construction activities shall avoid land disturbance in ephemeral washes and dry lakebeds; any unavoidable disturbance will be minimized. Stormwater facilities will be designed to route flow around the facility and maintain pre-project hydrographs.	Plan of Development
Water Resources	Stormwater	When stream or wash crossings are constructed, culverts or water conveyances for temporary and permanent roads shall be designed to comply with county standards or to accommodate the runoff of a 100-year storm, whichever is larger.	Site Drainage Plan
Water Resources	Stormwater	Geotextile mats shall be used to stabilize disturbed channels and stream banks. Earth dikes, swales, and lined ditches shall be used to divert work-site runoff that would otherwise enter a disturbed stream.	Site Drainage Plan
Water Resources	Stormwater	Special construction techniques shall be used, where applicable, in areas of erodible soil, alluvial fans, and stream channel/wash crossings.	Stormwater Pollution Prevention Plan
Wildfire	Safety	The effectiveness of developing and adhering to a hazardous materials and waste management plan and a fire safety plan, requiring a facility design to include isolation valves to limit HTF releases (where applicable), and providing worker training shall be considered in reducing fire risks.	Fire Management Plan

Elisabeth Solar Project Additional Environmental Protection Measures

Resource	Topic	Description of EPM	Location of Information
Ecological	Yuma Ridgway's rail	One year of systematic post-construction fatality monitoring will be conducted. Monitoring will be conducted in a manner consistent with the requirements outlined in the Desert Renewable Energy Conservation Plan (Bureau of Land Management 2016a) and using the USGS' standardized protocol Mortality Monitoring Design for Utility-Scale Solar Power Facilities (Huso, Dietsch, and Nicolai 2016). Monitoring will be conducted during the Fall or Spring months to account for migration periods, and surveys will be conducted near dawn to account for birds that migrate during the evening and nighttime hours (e.g., Yuma Ridgway's rail). The USGS' Generalized Estimator Program (Juniper Simonis 2018) will be used to statistically analyze the mortality monitoring results. In the highly unlikely event of a rail injury or fatality USFWS and the BLM will be contacted within 24 hours and any additional actions related to rail would be done in coordination with USFWS and BLM	Biological Assessment
Ecological	Yuma Ridgway's rail	As presented in Observations of Bird Interactions with PV Solar Facilities Using Video Recordings (Hamada et al. 2024), the Project Proponent may incorporate camera systems to detect bird collisions. The Project Proponent will consider the deployment of such systems after they have been further evaluated by the technology developer and are ready for large-scale development and data processing. The Project Proponent may voluntarily participate in a research study on camera technology at the Project Proponent's discretion.	Bird and Bat Conservation Strategy (BBCS), Biological Evaluation, Biological Assessment
Ecological	Yuma Ridgway's rail/Design	The Project will place collector powerlines underground where practicable. Overhead lines will be designed and installed in conformance with APLIC standards for electrocution-reducing techniques as outlined in "Suggested Practices for Avian Protection of Power Lines: The State of Art in 2006" (APLIC 2006), and for collision-reducing techniques as outlined in "Reducing Avian Collisions with Power Lines: The State of the Art in 2012" (APLIC 2012), or any superseding document issued by APLIC	BBCS, Biological Evaluation, Biological Assessment
Ecological	Traffic	Where practicable, human activities and roads will be concentrated on the inside of the Project footprint (i.e., fenced-in area) and away from movement corridors to minimize human disturbance effects to Sonoran pronghorn outside of the Project boundaries. The number and width of roads will be minimized to the amount needed to accommodate the Project. Access roads will be improved/maintained where necessary to prevent further ecological damage (e.g., erosion)..	Biological Evaluation, Biological Assessment
Ecological	Soils/Vegetation	Native vegetation will be retained (e.g., grading, topsoil removal, and mowing will be avoided), as allowed by the final Project design, to avoid potential loss of Sonoran pronghorn habitat and other ecological damage (e.g., erosion, weed establishment).	Biological Evaluation, Biological Assessment

Resource	Topic	Description of EPM	Location of Information
Ecological	Lighting	Nighttime lighting during operations will be avoided where practicable. If nighttime lighting is necessary for operations, lighting will be motion-sensitive, hooded and down-shielded, and at a minimum intensity to eliminate constant nighttime illumination and prevent upward and outward shining light while still allowing for safe nighttime access to the site. Bright white light such as metal halide, halogen, fluorescent, mercury vapor, and incandescent lamps will not be used for permanent nighttime operations-related lighting. The color wavelength of LED lighting will be selected for the lowest color possible (Kelvin temperature closest to 2200k) and "warm white" or filtered LEDs will be selected to minimize the amount of blue light emission.	Lighting Plan, Biological Evaluation, Biological Assessment, BBCS
Ecological	Sonoran Pronghorn	The Project was designed to protect movement corridors for wildlife, including Sonoran pronghorn, during the creation of the SEZ, by incorporating recommendations from AZGFD, USFWS, and the BLM on wildlife movement in the area. The SEZ design included appropriate buffers surrounding the known corridors such that Sonoran pronghorn can use them without interference from human disturbance .	Biological Evaluation and Biological Assessment
Ecological	Sonoran Pronghorn	Exclusion fencing will be installed to keep Sonoran pronghorn out of the Project boundary. Fencing will follow AZGFD Wildlife Compatible Fencing Guidelines (AZGFD 2023b), as applicable and practicable. Fencing will allow for natural hydrological processes, including sheet flow, to occur.	Biological Evaluation and Biological Assessment
Water Resources	Design/Surface Water	Ensure project fencing/barriers and footprint allows for natural hydrological processes, including sheet flow, to occur, where practicable.	Biological Evaluation and Biological Assessment
Ecological	Traffic/Sonoran Pronghorn	A 15-MPH speed limit will be enforced within unfenced portions of the project area. If a Sonoran pronghorn is observed by a driver of a motorized vehicle and the Sonoran pronghorn is standing still, the driver will reduce speed to 10 MPH or slower, as needed until the Sonoran pronghorn is at least 0.25 mile away. If the Sonoran pronghorn is running, the driver will stop the vehicle until the Sonoran pronghorn is out of sight. The number of vehicles in the area will be reduced as practicable if Sonoran pronghorn are observed to be present.	Biological Evaluation and Biological Assessment
Ecological	Ecological	Overland travel will be implemented in barren and low cover areas and where grading is not required (overland travel may remove vegetation but generally leaves soils in place though with some level of compaction). Additionally, low growing vegetation may be left intact, as practicable, within the solar arrays area, and desert pavement will be left in place, where practicable. Where disturbance is required, the reclamation approach described in Section 3 of the Site Reclamation and Revegetation Plan (SRRP) will be implemented.	Site Reclamation and Revegetation Plan

Resource	Topic	Description of EPM	Location of Information
Ecological	Ecological	Trash and debris will be removed from the Project Area throughout construction and following decommissioning and reclamation activities. Organic construction-related materials, such as used straw bales or wattles, may be incorporated into the soils throughout the Project Area or reserved for use in revegetation and erosion control (Sections 3.2.4 and 3.2.5). All trash and debris to be removed will be disposed of at an approved waste disposal site.	Site Reclamation and Revegetation Plan
Ecological	Ecological	Where practicable, topsoil will be stockpiled and reserved from native soil profiles to maintain a native seed bank and living soil biome for aid in reclamation performance. Topsoil salvage will consist of the removal of up to the top 4 inches (+/- 2 inches) of soils in areas to be trenched, bladed, and graded. Soils may not be salvaged in areas composed primarily of desert pavement (Section 3.2.6), or where noxious or invasive weeds occur at high densities (i.e., 20 percent or greater). The stockpiles will be labeled and fenced or staked, and weed-free straw bales, wattles or their equivalent will be installed to divert surface water as needed and to limit wind and water erosion.	Site Reclamation and Revegetation Plan
Ecological	Ecological	At the completion of construction in temporary impact areas and following decommissioning, minor regrading and recontouring will be completed as necessary to control runoff or run-on and to prepare the site for topsoil replacement. Following regrading and recontouring, stockpiled topsoil as discussed in Section 3.2.2 of the SRRP will be replaced in the appropriate areas (e.g., topsoil collected from vegetated areas will be returned to those areas, soil stockpiled from rocky/barren areas will be returned to those areas). To avoid major erosion events, soil replacement will occur outside of the monsoon season (July through September) and outside of excessively windy conditions as practicable and as planning allows. When the Project's internal access roads are no longer needed, they will be regraded and reshaped to the approximate surrounding topography	Site Reclamation and Revegetation Plan
Ecological	Ecological	Revegetation efforts will consist of seedbed preparation and reseeding. Revegetation efforts will occur after construction in formerly vegetated areas that were temporarily disturbed by Project activities; where use of the topsoil seedbank is not planned; and, where the topsoil seedbank is expected to be insufficient to meet reclamation goals. Areas that were documented as those that do not support vegetation or formerly contain desert pavement may not be revegetated; rather, they will be allowed to re-establish naturally.	Site Reclamation and Revegetation Plan
Ecological	Ecological	The seedbed would be prepared in the identified revegetation areas using a disc, harrow, or other appropriate equipment to break up the surface. In areas that are too narrow to operate equipment, or where organic debris have been spread, the surface will be left in a roughened condition to help retain the seed	Site Reclamation and Revegetation Plan

Resource	Topic	Description of EPM	Location of Information
Ecological	Ecological	The selected seed mix will contain a palette of species known to occur in the Project Area, be certified weed free, and selected in accordance with the BLM and U.S. Department of Agriculture State Noxious-Weed Seed Requirements (USDA 2023). The seed mix will be evaluated and revised in coordination with the BLM, as necessary including the final seed rate to be applied. The Project will work with qualified commercial suppliers to ensure enough seed is secured and available to meet the reclamation goals.	Site Reclamation and Revegetation Plan
Ecological	Ecological	Seeding will be completed via broadcast techniques using conventional methods such as broadcast drop seeders, manually operated cyclone-type bucket spreaders, drill seeding, a mechanical seed blower, or other appropriate application methods. The seed will be mixed frequently in seed boxes to discourage settling. Where practical, broadcast-seeded areas will be scarified, harrowed, or disced to cover the seed. In small areas or those areas inaccessible to large equipment, hand raking may be used to cover the seed. As appropriate, seed-free straw wattles or their equivalent, reserved wood, or rock debris will be installed to protect newly seeded areas from erosion and associated soil or seed loss. Seeding will be timed to take advantage of winter precipitation (November through February), or during the monsoon season (July through September) as practicable.	Site Reclamation and Revegetation Plan
Ecological	Ecological	Various enhanced reclamation concept research activities are proposed as outlined in the SRRP, including erosion control, re-vegetation, dust control, soil analysis, desert pavement preservation/reclamation concepts.	Site Reclamation and Revegetation Plan
Ecological	Ecological	The project owner will monitor the results of the reclamation and revegetation efforts and submit reports as outlined in Section 4 of the SRRP.	Site Reclamation and Revegetation Plan
Traffic	Transportation	The Arizona Department of Transportation (ADOT) recommends vegetation and debris removal from the rigid pavement edges of the Avenue 64E underpass (between cattle guards) before and during construction as needed. An encroachment permit will need to be obtained for such work, and such removal will ensure roadway edges are visible, making the them less likely to be driven over and subsequently damaged during periods of increased utilization for construction.	Site Access, Traffic and Transportation Management Plan
Water Resources	Groundwater	• Flowrate and cumulative flow will be recorded monthly from wells in use. • Data will be evaluated to determine whether withdraw rates exceed 600 AFY for construction or operations • Water use will be reported to BLM annually during construction, and any anticipated exceedance of estimated water demand will be flagged for further discussion with BLM.	Water Resources Monitoring and Mitigation Plan

Resource	Topic	Description of EPM	Location of Information
Water Resources	Groundwater	To monitor the water extraction and usage throughout the lifetime of the Project, a Recordall® Turbo Series Flow Meter, or similar, will be installed on wells utilized to provide water to the Project. Production will be sampled continuously but monitored regularly and recorded monthly as a total cumulative volume for evaluation and for annual reporting purposes.	Water Resources Monitoring and Mitigation Plan
Ecological	Ecological	All Project personnel will be required to complete a Worker Environmental Awareness Program (WEAP) prior to the start of any work within the Project Area. All personnel will be responsible for implementing aspects of the WEAP as appropriate according to their employment role. The WEAP will be submitted to the BLM as a separate document.	WEAP
Ecological	Glare	The solar panels and hardware will be designed to minimize glare and spectral highlighting through the use of engineered designs such as anti-reflective coatings to effectively reduce the refractive index of the solar cells and protective glass.	Biological Evaluation, Biological Assessment, BBCS
Ecological	Sonoran Pronghorn	Any Sonoran pronghorn observations within or adjacent to work areas will be reported to the BLM, USFWS, and AGFD.	Biological Evaluation and Biological Assessment
Ecological	Sonoran Pronghorn	Prior to construction, Project personnel will coordinate with the AZGFD, USFWS, and Interagency Sonoran Pronghorn Recovery Team to determine current pronghorn use in the Project Area.	Biological Evaluation and Biological Assessment
Ecological	Yuma Ridgway's rail	In the highly unlikely scenario that a Yuma Ridgway's rail is observed within project footprint, the area will be avoided until a qualified biological monitor has determined that the rail is no longer present. Any rail observations will be reported to the USFWS and BLM within 24 hours.	Biological Evaluation, Biological Assessment, BBCS
Ecological	Birds/Bats	If deceased or injured special-status bird or bat species are observed in the Project Area during Project construction and operations, the BLM will be notified via email within 24 hours of the finding. If the species is listed as threatened or endangered under the ESA, or listed under the BGEPA, the USFWS will also be notified. Additionally, coordination with the Site Project Manager will occur to discuss the events that caused the mortality, if known, and implement measures to prevent future mortality or injury.	Biological Evaluation, Biological Assessment, BBCS
Ecological	Burrowing Owl	A qualified biologist trained on the AZGFD burrowing owl survey protocol will conduct a pre-construction survey in accordance with the 'Burrowing Owl Project Clearance Guidance for Landowners' (Arizona Burrowing Owl Working Group 2009) within all suitable habitat in the Project Area and a 150-foot-wide buffer.	Biological Evaluation, BBCS

Resource	Topic	Description of EPM	Location of Information
Ecological	Burrowing Owl	If any active burrows (occupied by burrowing owls) are identified, no ground disturbing activities will occur within 100 feet of the burrow during non-nesting season, and 300 feet during nesting season.	Biological Evaluation, BBCS
Ecological	Burrowing Owl	If active burrows (burrows containing eggs, active nesting activity, or fledgling use) cannot be avoided, a qualified biologist holding a permit from the USFWS will be employed relocate the burrowing owl(s) from the Project Area - these active nesting burrowing owl relocations will be coordinated with the BLM, AZDGF and USFWS following the appropriate established protocols. Passive relocation of burrowing owls from inactive burrows may be performed in consultation with BLM and AZDFG by a qualified biologist.	Biological Evaluation, BBCS
Ecological	Le Conte's Thrasher	If surface disturbance is planned to occur during the breeding season for the species (January to April), the Project Area and a 150-foot buffer will be surveyed prior to surface disturbance to determine the presence/absence of Le Conte's thrasher.	Biological Evaluation, BBCS
Ecological	Le Conte's Thrasher	If active nests are found, a 150-foot non-ground-disturbing buffer will be established until a qualified biologist has determined that the nest is no longer active (e.g., the nestlings have fledged and are no longer reliant on the nest). Consultation with the BLM will occur prior to encroachment into or reduction of the protective buffer. Avoidance areas will be delineated in the field by a qualified biologist using flagging or temporary fencing.	Biological Evaluation, BBCS
Ecological	Sonoran Desert Tortoise	To prevent direct impacts to SDT, pre-construction surveys will be conducted by a qualified biologist prior to ground disturbing activities.	Biological Evaluation
Ecological	Sonoran Desert Tortoise	To assist in habitat connectivity, the Project security fence will be a wildlife friendly design that meets the goals of allowing wildlife to move freely through the Project Area during operation, leaving 4- to 7-inch openings or portals in the fence or the fence shall be raised 4 to 7 inches above the ground leaving a gap between the fence mesh and the ground. Additionally, access will be maintained within any remaining washes traversing the Project Area.	Biological Evaluation
Ecological	Sonoran Desert Tortoise	If a live tortoise is encountered, work will stop in that area to allow the tortoise to move away from ground disturbing activities.	Biological Evaluation
Ecological	Sonoran Desert Tortoise	If the tortoise does not move on its own, a qualified biologist will relocate the tortoise in accordance with AZGFD guidelines	Biological Evaluation
Ecological	Bendire's Thrasher	If surface disturbance is planned to occur during the breeding season for the species (mid-February to mid-April), the Project Area will be surveyed in coordination with the BLM and AZGFD prior to surface disturbance to determine the presence/absence of Bendire's thrasher.	Biological Evaluation, BBCS
Ecological	Bendire's Thrasher	If active nests are found, a 150-foot non-ground-disturbing buffer will be established until a qualified biologist has determined that the nest is no longer active. Consultation with the BLM will occur prior to encroachment into or reduction of the protective buffer. Avoidance areas will be delineated in the field by a qualified biologist using flagging or temporary fencing.	Biological Evaluation, BBCS

Resource	Topic	Description of EPM	Location of Information
Ecological	Bald and Golden Eagle	Observations of eagles by biological monitors will be recorded in pre-construction survey/monitoring reports.	Biological Evaluation, BBCS
Ecological	Migratory Birds	If construction is scheduled during the breeding/fledgling season for migratory birds (February 1 to August 31), a qualified biologist will perform a nest survey within a 150-foot radius of the ground-disturbing areas no more than 3 days prior to the commencement of construction. If nests without eggs/nestlings/fledglings are detected, the nests will be removed. If ground-disturbing activities have not occurred within 14 days of a nest survey, nest surveys will be repeated prior to ground disturbance.	Biological Evaluation, BBCS
Ecological	Migratory Birds	If an active nest is located, a species-specific non-ground-disturbing buffer (Appendix D) will be placed around the nest using flagging or temporary fencing to avoid disturbance. The buffer will remain in place until a qualified biologist has determined that the nest is no longer active. For species that are not listed as threatened or endangered under the ESA and are not considered sensitive species by the BLM, encroachment into or reduction of the buffer may occur at the discretion of a qualified biologist. For BLM sensitive species, a variance request will be submitted to the BLM for review and written approval prior to encroachment into or reduction of the buffer. Species listed under the ESA are not expected to occur in the Project Area; however, if they are observed and encroachment into or reduction of the buffer is necessary, the biologist will coordinate with the BLM and USFWS to determine the appropriate actions to be taken. If construction is observed to be disruptive to the nesting birds (e.g., causes flushing or agitated behavior) the buffer will be reverted to its original size. All buffer modifications will be documented and submitted to the BLM.	Biological Evaluation, BBCS
Ecological	Migratory Birds	Should an active nest require removal due to planned construction activities, a qualified biologist will coordinate with the USFWS and BLM to determine whether the nest can be removed. If permission is granted by USFWS and BLM, the biologist will transport the eggs or chicks to a federally permitted wildlife rehabilitator or licensed veterinarian per the provisions in the USFWS memorandum FWS/DMBD/AMB/068029 (USFWS 2018a).	Biological Evaluation, BBCS
Ecological	Migratory Birds	Following the conclusion of the nest survey, a report will be submitted to the BLM. The report will include, at a minimum, the date(s) and methodologies of the nest survey and any pertinent nest information (e.g., species, location, nest cycle, documented effects to the nest, buffer reduction, etc.)	Biological Evaluation, BBCS
Ecological	Monarch Butterfly	Observations of monarch butterfly by biological monitors will be recorded in pre-construction survey/monitoring reports.	Biological Evaluation
Ecological	Monarch Butterfly	Speed limits while onsite will be reduced to 15 MPH to reduce the potential of injury to monarchs, when known to be present.	Biological Evaluation

Resource	Topic	Description of EPM	Location of Information
Ecological	Bat Species/ Construction	Construction activities will be limited to the time between dawn and dusk to avoid the illumination of adjacent habitat areas. If this is not possible, down shielding or directional lighting will be used to avoid light trespass onto habitat areas. To the maximum extent practicable, while allowing for public safety, low intensity energy-saving lighting (e.g., low pressure sodium lamps) will be used.	Biological Evaluation, BBCS
Ecological	Bat Species	Observations of bats by biological monitors will be recorded in pre-construction survey/monitoring reports.	Biological Evaluation, BBCS
Ecological	Wildlife	Biological monitoring by a qualified biologist during applicable breeding and nesting seasons will consist of 1) identification of active nests, 2) establishment of appropriately sized non-ground-disturbing buffers using flagging or temporary fencing, and 3) release of construction activities after the nest is determined to be no longer active. Coordination with a qualified biologist and/or the BLM will occur prior to encroachment into or reduction of the buffer as described in Section 3.2.6.	Biological Evaluation, BBCS
Ecological	Wildlife	The Project shall retain a qualified biologist to oversee compliance with protection measures for avian and bat species. The qualified biologist shall be available as needed throughout Project construction, operations, and decommissioning phases. The qualified biologist shall have the right to halt activities that are in violation of the special-status species EPMs. Work shall proceed only after hazards to special-status species are removed and the species is no longer at risk. The qualified biologist shall have in their possession a copy of all the compliance measures and appropriate plans while work is being conducted in the Project Area.	Biological Evaluation, BBCS

Appendix C

Resources Dismissed from Detailed Analysis

Table C-1. Supplemental Authorities and Other Relevant Resources

Supplemental Authorities*	Not Present†	Present/ Not Affected†	Present/ May Be Affected§	Rationale
Air Quality			X	Evaluated in Section 3.2.4.
ACECs		X		The Agua Caliente SEZ is not within an ACEC. The nearest ACECs are the Sears Point ACEC, which is approximately 5.3 miles southwest of the project site, and the Lower Gila Terraces and Historic Trails ACEC, which is approximately 15 miles southeast of the project area. Potential visual effects on ACECs are discussed in Section 3.3.8.
Cultural Resources			X	Evaluated in Section 3.3.5.
Environmental Justice			X	Evaluated in Section 3.3.11.
Farmlands, Prime and Unique	X			There are no prime or unique farmlands on the project site.
Floodplains			X	Evaluated in Section 3.3.4.
Woodlands and Forestry	X			There are no woodlands or forestry products on the project site.
Migratory Birds			X	Evaluated in Section 3.3.2.
Native American Religious Concerns			X	Evaluated in Section 3.3.6.
National Historic Trails		X		The Juan Bautista de Anza National Historic Trail is approximately 4 miles south of the Agua Caliente SEZ at its nearest point. Potential visual effects are discussed in Section 3.3.8.
Noxious Weeds and Invasive Plant Species			X	Evaluated in Section 3.2.3.
Threatened, Endangered, and Candidate Species			X	Evaluated in Section 3.3.1.
Hazardous and Solid Waste			X	Evaluated in Section 3.3.12.
Water Resources and Quality			X	Evaluated in Section 3.3.4.
Wetland and Riparian Zones		X		Evaluated in Section 3.3.4.
Wild and Scenic Rivers	X			There are no wild and scenic rivers in Arizona.

Supplemental Authorities*	Not Present†	Present/ Not Affected†	Present/ May Be Affected§	Rationale
Wilderness	X			The nearest wilderness area, Eagletail Mountains Wilderness, is approximately 15 miles away from the SEZ.

* See Handbook H-1790-1, Appendix 1, Supplemental Authorities to Be Considered.
† Supplemental authorities determined to be not present or present/not affected need not be carried forward for analysis or discussed further in the document.
§ Supplemental authorities determined to be present/may be affected must be carried forward for analysis in the document.

Table C-2. Resources Required for Consideration in Addition to Supplemental Authorities

Other Resources	Not Present†	Present/Not Affected†	Present/ May Be Affected§	Rationale
Greenhouse Gas Emissions and Climate Change			X	Evaluated in Section 3.2.5.
Hydrologic Conditions			X	Evaluated in Section 3.3.4.
Fuels and Fire Management		X		The potential for fires to start from construction equipment would be mitigated with design features and BMPs described in the RDEP Final EIS (BLM 2012b, Appendix B), Fire Management Plan, and Integrated Vegetation, Weed, and Pest Management Plan.
Lands and Realty		X		The project has been designed to avoid conflicts with the three authorized ROWs in the western portion of the SEZ. The project is consistent with the Yuma RMP as amended by the RDEP.
Fluid and Locatable Minerals	X			There is low potential for oil and gas or geothermal resources within the project site and no valid existing mining claims are known to occur.
Salable Minerals		1		A notice of segregation was published in the Federal Register on December 8, 2022 (87 FR 75283). The proposed action would close the project site to salable mineral development; salable minerals would be available elsewhere in the project area.
Paleontological Resources			X	Evaluated in Section 3.3.7.

Other Resources	Not Present[†]	Present/Not Affected[†]	Present/ May Be Affected[§]	Rationale
Rangeland and Livestock Grazing	X			The SEZ is within the former Palomas Grazing Allotment. The allotment was made unavailable to livestock grazing in the January 2010 Yuma Field Office RMP revision, as was the White Wing Allotment adjacent to the SEZ (BLM 2010).
Recreation			X	Evaluated in Section 3.3.9.
Socioeconomics			X	Evaluated in Section 3.3.11.
Soils			X	Evaluated in Section 3.3.3.
Vegetation			X	Evaluated in Section 3.2.2.
Visual Resources–Visual Contrast			X	Evaluated in Section 3.3.8.
Visual Resources–Glint and Glare		X		A Glint and Glare Assessment (Elisabeth Solar, LLC 2023f) indicated that no glint or glare impacts are anticipated for a single-axis tracking panel scenario and a very limited amount of glint and glare impact could occur (less than 0.55 percent of the year) at the Palomas Road and adjacent railway locations for a fixed-tilt panel scenario. Based on the low potential for glint and glare impacts and adherence to RDEP design features related to glare from signage and lighting, no long-term adverse impacts are anticipated.
Fish and Wildlife Excluding Federally Listed Species			X	Evaluated in Section 3.2.1.
Wild Horses and Burros	X			The SEZ is not within a current herd management area or herd area.

[†] Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward for analysis or discussed further in the document.
[§] Supplemental Authorities determined to be Present/May Be Affected must be carried forward for analysis in the document.

Appendix D

List of Preparers

Table D-1. BLM Interdisciplinary Team

Name	Area of Responsibility
Erica Stewart	Project Manager
Ray Castro	Field Manager, Recreation, Visual Resources, Travel and Transportation
Jessica Han	Assistant Field Manager
Bill Boyett	Fuels and Fire Management
Vanessa Briceno	Lands and Realty, Special Management Areas
Matt Driscoll	Visual Resources, Recreation
Nancy Favour	NEPA Compliance, Socioeconomics
Cristina Francois	Vegetation, Invasive Plants and Noxious Weeds
Joe Freitas	Public Health and Safety
Dolores Garcia	Public Affairs
Philip Gensler	Paleontological Resources
Aaron Jacobsen	Geology and Minerals
Hebin Lin	Environmental Justice
Ford Mauney	Biological Resources, Soils, Invasive Plants and Noxious Weeds
Jill McCormick	Cultural Resources and Native American Concerns
Angelica Rose	NEPA Compliance, Socioeconomics
Kaitlin Schnabel	Lands and Realty, Special Management Areas
Bill Wells	Water Resources
Aaron Wilkerson	Air Quality, Greenhouse Gases/Climate Change

Table D-2. AECOM Team

Name	Area of Responsibility	Education
Amy Cordle	Project Manager	BS, Civil Engineering
Shine Roshan	Deputy Project Manager	MS, Physics
Lily Benson	Air Quality and Climate Change	BA, Environmental Studies/Biology
Victoria Dekle	Cultural Resources and Native American Concerns	PhD, Anthropology
Kayla Ferron	Vegetation and Invasive Plant Species and Noxious Weeds	MS, Environmental Science
Claire Elias	Soil Resources, Socioeconomics, and Environmental Justice	MEM (Master of Environmental Management)
Dylan Lanka	GIS	BA, Physical Geography
Cortney Luxford	Paleontological resources	BS, Geology
Clayton McGee	Recreation and Access, Traffic and Travel Management	BA, Environmental Studies
Teresa O'Halloran	Groundwater Resources, Water Resources	MS, Hydrology
Rachel Redding	Wildlife, Special Status Species, Migratory Birds	BS, Wildlife Ecology and Conservation
Shannon Regan	Special Status Species, Migratory Birds	MS, Fisheries, Wildlife, & Conservation Biology
Erik Segura	Visual Resources and Acoustic Environment	BS, Environmental Science and Management

Name	Area of Responsibility	Education
Val Stanson	Public Health and Safety	MPH (Master of Public Health)
Morgan Trieger	Special Status Species, Migratory Birds	BS, Conservation and Resource Studies