

AZ Solar 1 Interconnection Project Draft Environmental Assessment

DOE/EA-2098



Prepared by



U.S. Department of Energy
Western Area Power Administration
Desert Southwest Region

Cooperating Agencies

Bureau of Land Management
Colorado River District
Lake Havasu Field Office

Bureau of Reclamation
Phoenix Area Office

March 2019

**DRAFT ENVIRONMENTAL ASSESSMENT FOR THE
AZ SOLAR 1 INTERCONNECTION PROJECT
DOE/EA-2098**

Prepared by

Lead Agency

**U.S. Department of Energy
Western Area Power Administration
Desert Southwest Region**

Cooperating Agencies

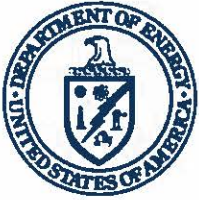
**Bureau of Land Management
Colorado River District
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March 2019



Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
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MAR 19 2019

SUBJECT: Notice of Availability of a Draft Environmental Assessment for Public Comment and Historic Properties Review for WAPA's AZ Solar 1 Interconnection Project, La Paz County, Arizona (DOE/EA-2098)

Dear Interested Party:

Western Area Power Administration (WAPA) invites you to review and comment on the *Draft Environmental Assessment for the AZ Solar 1 Interconnection Project* as part of the National Environmental Policy Act (NEPA) process. The document tracking number is DOE/EA-2098. The project is located near Salome, La Paz County, Arizona.

What is an Environmental Assessment?

An Environmental Assessment (EA) is concise public document that discusses the need for a project, alternatives considered, and environmental impacts. It contains a description of a project with associated resource protection measures. A federal agency circulates a Draft EA to obtain public comment prior to preparing a Final EA.

Where Can You Read the Draft EA?

You can access the Draft EA online at the following websites:

www.wapa.gov/regions/DSW/Environment/Pages/Arizona-Solar-1-Interconnection-Project.aspx or

www.energy.gov/nepa/doe-environmental-assessments

You can read a review copy at the Centennial Public Library located at 69725 Centennial Park Road, Salome, AZ 85348. They are open from 9 am to 4 pm on Mondays and from 10 am to 6 pm on Thursdays. Their phone number is (928) 859-4271.

You can ask WAPA for a copy by using the contact information below.

How Can You Comment?

WAPA would like to hear your comments about the Draft EA. Please make your comments as specific as possible. Comments that are solution-oriented and provide specific examples are effective. For more advice, see Page 27 in *A Citizen's Guide to the NEPA: Having Your Voice Heard*, which is available at: www.energy.gov/nepa/downloads/citizens-guide-nepa-having-your-voice-heard-ceq-2007.

You can provide comments in writing, by phone, or via email at the contact listed below. WAPA will consider all comments received or postmarked on or before Monday, April 29, 2019. WAPA will consider late comments to the extent practicable.

Mail: Western Area Power Administration, Desert Southwest Region
ATTN: Matthew Bilsbarrow, NEPA Document Manager
PO Box 6457; Phoenix, AZ 85005

Email: DSW-EA2098PublicComment@wapa.gov

Phone: (602) 605-2536

If you include your name and address with your comment, please be aware that WAPA could be required to release them under the Freedom of Information Act. If you wish us to withhold this information, you must state this prominently at the beginning of your comments, and we will honor the request to the extent allowable by law. WAPA will accept comments submitted anonymously.

Who is Involved in this Project?

WAPA is a federal power-marketing agency within the U.S. Department of Energy that operates and maintains transmission lines, such as the Little Harquahala to Harcuvar Transmission Line, in accordance with the Federal Power Act. WAPA is the lead federal agency for the project and is working cooperatively with Bureau of Land Management (BLM), Lake Havasu Field Office, which manages the land under the existing transmission line, and Bureau of Reclamation, Phoenix Area Office, which holds the easement for the line. AZ Solar 1, LLC is a private developer proposing the AZ Solar 1 facility.

What is Being Proposed, and Where is it Located?

WAPA is responding to a request from AZ Solar 1, LLC to interconnect a proposed photovoltaic solar plant near Salome, La Paz County, Arizona, to its electrical transmission system (Figure 1). The project consists of two components:

WAPA proposes to approve an interconnection request, enter into an interconnection agreement, and implement three types of project-related upgrades: 1) install two new pole structures within the existing transmission line right-of-way; 2) add guy wires and anchors to three existing pole structures; and 3) make control or communication improvements at existing facilities.

AZ Solar 1 proposes to build, operate, maintain, and decommission a 32.5-megawatt photovoltaic solar energy generation facility on a 480-acre parcel of private land. An optional 27.5 megawatts of photovoltaic solar energy generation and 20 megawatts of battery storage may be added based on market considerations. AZ Solar 1 proposes to maintain a less than 100-foot-long aerial connection across BLM land from their facility to WAPA's transmission line.

What Happens Next?

Thank you for your interest in WAPA's work. We look forward to receiving your comments on the Draft EA. WAPA will respond to the comments in the Final EA, which is expected in early July 2019.

Sincerely,


Sean Berry,
Environmental Manager

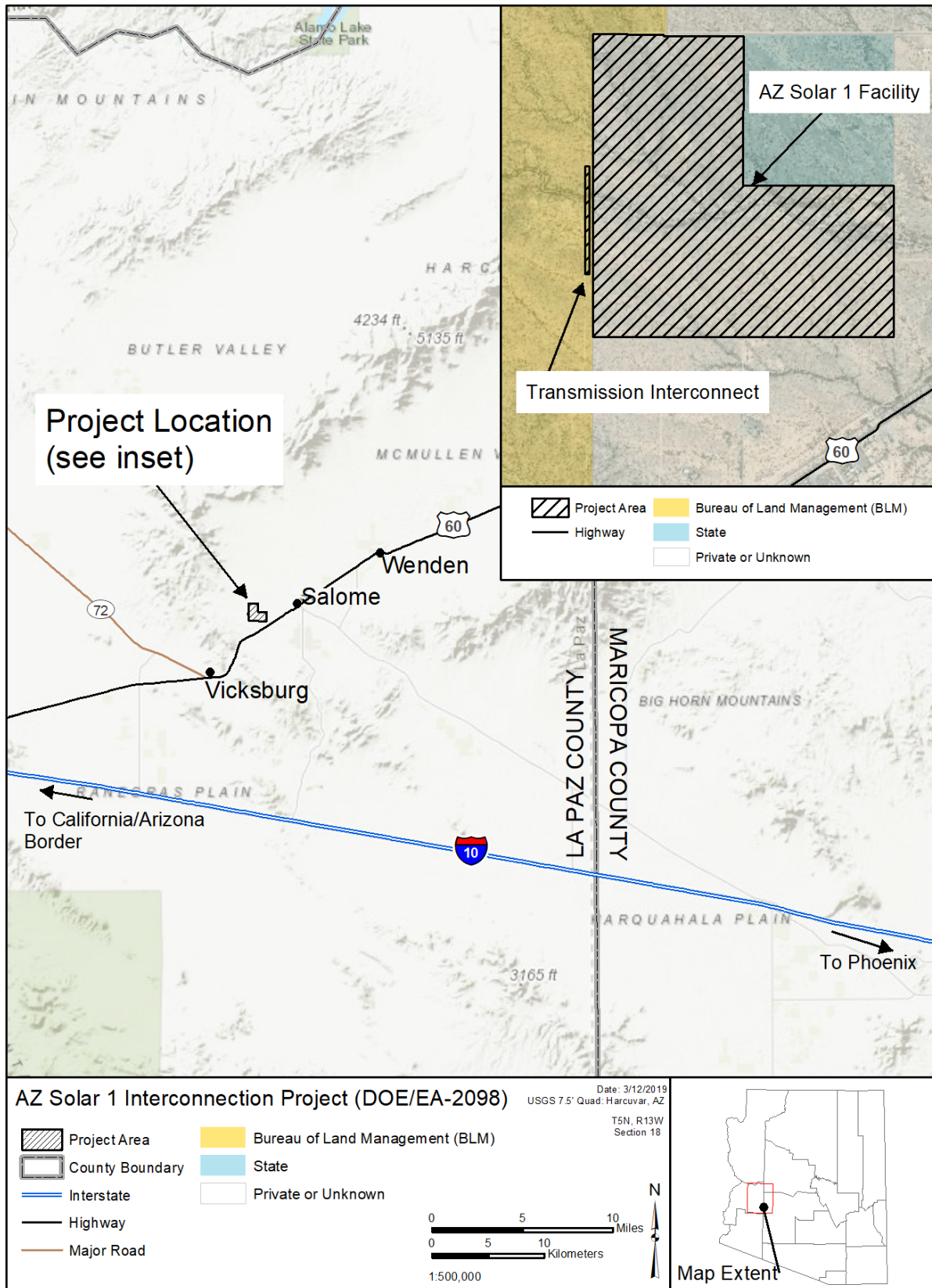


Figure 1. Project Location.

Draft Environmental Assessment Notice for
WAPA's AZ Solar 1 Interconnection Project (DOE/EA-2098)

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ACRONYMS AND ABBREVIATIONS

AADT	average annual daily traffic
AC	alternating current
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ANSI	American National Standards Institute
ARS	Arizona Revised Statutes
AZ Solar 1	AZ Solar 1, LLC
AZHGIS	Arizona Heritage Geographic Information System
BCC	Birds of Conservation Concern
bgs	below ground surface
BLM	Bureau of Land Management
CAP	Central Arizona Project
CDP	Census Designated Place
CFR	Code of Federal Regulations
CO	carbon monoxide
COD	commercial operation date
CUP	Conditional Use Permit
dB	decibel(s)
dBA	A-weighted decibels
DC	direct current
DOE	U.S. Department of Energy
Draft Solar PEIS	Draft Solar Energy Development Programmatic Environmental Impact Statement
EA	environmental assessment
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FONSI	finding of no significant impact
GHG	greenhouse gas
GIS	geographic information system
GPM	gallons per minute
HAP	hazardous air pollutant
KOP	key observation point
kV	kilovolt(s)

L _{dn}	day-night average noise level
L _{eq}	energy-averaged sound level
L _{max}	maximum sound level
MBTA	Migratory Bird Treaty Act
MW	megawatt(s)
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NRHP	National Register of Historic Places
O ₃	ozone
OATT	Open Access Transmission Service Tariff
OHV	off-highway vehicle
Pb	lead
PCS	Power Conversion Station
PM _{2.5}	particulate matter smaller than 2.5 microns in aerodynamic diameter
PM ₁₀	particulate matter smaller than 10 microns in aerodynamic diameter
PPA	power purchase agreement
project	AZ Solar 1 Interconnection Project
PV	photovoltaic
RCNM	Roadway Construction Noise Model
Reclamation	U.S. Bureau of Reclamation
RMP	Resource Management Plan
ROW	right-of-way
SO ₂	sulfur dioxide
SO _x	sulfur oxides
SR	State Route
SWPPP	stormwater pollution prevention plan
TMA	Travel Management Area
U.S. 60	U.S. Route 60
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WAPA	Western Area Power Administration

EXECUTIVE SUMMARY

Project Location

The AZ Solar 1 Interconnection Project (herein called the project) is located near Salome in La Paz County, Arizona, on private and Bureau of Land Management (BLM)-managed lands.

Project Participants and Background

Western Area Power Administration (WAPA), a federal power marketing agency within the U.S. Department of Energy (DOE), is the lead federal agency for the project under the National Environmental Policy Act (NEPA) review. The BLM Lake Havasu Field Office and the U.S. Bureau of Reclamation (Reclamation)-Phoenix Area Office are cooperating agencies under NEPA. AZ Solar 1, LLC (AZ Solar 1) is a private solar development company and the project proponent.

WAPA is responding to AZ Solar 1's request to interconnect a proposed photovoltaic (PV) solar plant near Salome, Arizona, to its electrical transmission system. The nearest transmission line to the proposed solar facility is the Little Harquahala to Harcuvar 115-kilovolt (kV) Transmission Line. The transmission line is part of the Central Arizona Project (CAP) built by the Reclamation and operated by WAPA. Adjacent to the proposed solar facility, the transmission line runs approximately north-south on lands managed by the BLM in an existing right-of-way (ROW) held by Reclamation.

Purpose and Need

WAPA

WAPA operates and maintains transmission lines and associated facilities in accordance with the Federal Power Act Sections 201 to 213, and its Open Access Transmission Service Tariff (OATT). WAPA's purpose and need is to consider and respond to AZ Solar 1's interconnection request in accordance with the Federal Power Act and OATT.

Reclamation

Reclamation owns a portion of the transmission line and the underlying BLM ROW to which AZ Solar 1 has requested an interconnection. Reclamation's purpose and need is to consider and respond to WAPA and AZ Solar 1's request to amend their existing transmission line ROW.

BLM

BLM's purpose for action is to respond to a ROW amendment request from Reclamation, which would include adding and maintaining the interconnection structures within the existing transmission ROW and to respond to the application submitted for a new ROW from AZ Solar 1 for the aerial connections across BLM-administered lands outside of the ROW from the new transmission structures and into AZ Solar 1's switchyard. The need for action arises from Title V of the Federal Land Policy and Management Act (FLPMA) (43 United States Code [USC] 1701), which requires BLM to respond to ROW applications.

AZ Solar 1

The primary purpose of the AZ Solar 1 facility is to provide solar-generated electricity from a site near Salome, Arizona, to meet customer demand for competitively priced energy from renewable resources.

Proposed Action

WAPA

WAPA's proposed action consists of approving an interconnection request, entering into an interconnection agreement, and implementing three types of project-related transmission system upgrades. WAPA would install, maintain, and decommission a tap on the existing Little Harquahala to Harcuvar 115-kV Transmission Line. The tap would consist of up to two new pole structures located within the existing ROW. WAPA would also add guy-wires and associated buried concrete anchors to up to three existing H-Frame wood pole structures in the tap's immediate vicinity and would upgrade relays at the Little Harquahala and Harcuvar substations. WAPA would also work with Reclamation and the BLM to amend the existing ROW documents to support these connections, as needed.

BLM and Reclamation

BLM's proposed action is to respond to a ROW request associated with the interconnection facilities on BLM-administered lands. Reclamation's proposed action is to apply for a ROW amendment for activities occurring within the existing ROW.

AZ Solar 1

AZ Solar 1 proposes to build, operate, maintain, and decommission an approximately 32.5-megawatt (MW) PV solar energy generation facility (Solar Field 1) on an approximately 480-acre private parcel of land. An optional approximately 27.5 MW of PV solar energy generation and 20 MW of battery storage may be added to the parcel based on market considerations (Solar Field 2). Construction of the facility includes installing solar panels, underground collection lines, access roads, on-site collection point substation/switchyard, and a short aerial connection (less than 100-feet-long) across BLM land from the new transmission line pole structures and into AZ Solar 1's switchyard. Because approximately 75 feet of the aerial connection is located outside of the existing transmission line easement, AZ Solar 1 would apply for a new ROW from BLM to install and maintain the aerial connection outside of the existing ROW.

Alternatives

A No Action Alternative was evaluated to provide a baseline against which the impacts of the Proposed Action can be compared. Under the No Action Alternative, WAPA would not approve an interconnection request, enter into an interconnection agreement, or implement project-related transmission system upgrades, additions, or configurations. BLM would not issue ROWs to Reclamation or AZ Solar 1, and AZ Solar 1 would not develop the private property for Solar Fields 1 and 2.

Summary of the Proposed Action's Environmental Consequences

Air Quality

The Proposed Action would result in negligible to minor impacts to air quality from equipment exhaust, vehicle exhaust from travel to and from the project site, and fugitive dust from soil disturbance during construction. These construction emissions would be temporary and localized air emissions. Operational emissions are expected to be negligible as they are restricted to vehicle and equipment emissions from periodic maintenance and inspections. The Proposed Action's emissions would not cause an exceedance of National Ambient Air Quality Standards (NAAQS).

Biological Resources

Construction of the Proposed Action would have direct, long-term impacts to vegetation. Approximately 462 acres of vegetation would be cleared. During operations, ongoing, temporary impacts to vegetation could occur as a result of ground-disturbing maintenance activities and vegetation clearing. The direct loss of vegetation would have a negligible impact on the impacted vegetation communities and would not affect the viability of any common species or local populations.

Impacts to special status species during construction include direct loss of suitable habitat (462 acres), potential disturbance from human noise and activity, and risk for direct mortality from ground disturbance and vehicle strikes. Conservation measures would be implemented to limit the risk of direct mortality. With the implementation of these measures, it is unlikely that the Proposed Action would result in direct mortality of individual species during construction. Special status species that may use the project area for foraging and breeding would experience long-term impacts as a result of disturbance and the loss of habitat. Long-term impacts to special status species would be negligible to minor and unlikely to result in population-level effects.

Groundwater

The Proposed Action's total construction water use would be 200.18 acre-feet and total operations water use would be 20.62 acre-feet. WAPA would use approximately 0.18 acre-feet of water during construction and again during decommissioning; WAPA would not use water during operations. WAPA would have a negligible impact on groundwater quantity during construction and decommissioning; there would be no long-term impacts to groundwater quantity during operations. AZ Solar 1 would use up 200 acre-feet during construction and an additional 20.62 acre-feet during operations. Decommissioning water use would be comparable to the amount of water that would be needed for construction, but somewhat less because decommissioning would not take as long as construction. AZ Solar 1 would have a minor impact on groundwater quantity during construction, operations and maintenance, and decommissioning. With the implementation of spill containment and control measures (see Appendix B), neither WAPA or AZ Solar 1 would impact groundwater quality during construction, operations, or decommissioning.

Historic and Tribal Resources

No historic properties were identified in the Proposed Action project area; therefore, no impacts to historic properties are anticipated from the construction, operations and maintenance, or decommissioning of the Proposed Action. The Proposed Action would not alter the integrity of

U.S. Route 60 (U.S. 60), which is approximately 0.25 mile from the project area. WAPA's tribal consultation efforts conducted to date identified general concerns about project-related impacts to vegetation, wildlife, and cultural resources. These concerns apply to WAPA's interconnection facilities and the AZ Solar 1 development.

Noise

During construction, the Proposed Action would have a short-term, minor noise impact on the nearest sensitive receptors in the analysis area (residences/campgrounds). The total noise level at nearby sensitive receptors consists of the estimated noise generated by construction activities combined with the estimated ambient baseline noise level. The nearest sensitive receptor to the Proposed Action is a residence/campground approximately 0.5 miles southeast of the project area. The total noise level at this nearest sensitive receptor during daytime construction was conservatively estimated (worst-case scenario) to be approximately 55.9 A-weighted decibels (dBA). The outdoor noise level at the nearest sensitive receptors would increase by approximately 13 dBA, which the human ear would interpret as being at least twice as loud as the outdoor ambient baseline noise level. This cumulative noise level is approximately equivalent to the sound level in a department store or hearing a residential air conditioning unit located 20 feet away. WAPA's operations-related noise would consist of a maintenance inspection approximately four times per year and would have short-term negligible impact on the sensitive receptor. AZ Solar 1's operations-related noise would consist of weekly site visits, routine maintenance actions, and operations of transformers and inverters. AZ Solar 1's operations-related noise would have minor, long-term impact on the sensitive receptor.

Public Health and Safety

The Proposed Action would have negligible impact on public health and safety from fugitive dust emissions and hazardous materials use and storage during construction, operations and maintenance, and decommissioning. The short-term fugitive dust emissions from construction and long-term emissions over the operations phase would not substantially increase emissions over background levels or cause an exceedance of NAAQS. With the implementation of conservation measures for handling of hazardous materials, impacts to public health and safety from hazardous materials are unlikely.

Public Land Access

The Proposed Action would have short-term and minor impacts on public land access during temporary construction and operations road closures. During construction, WAPA would temporarily close the transmission line access road within the immediate vicinity of the work area for safety. Once construction is completed, the road would be reopened per BLM's travel management plan. The 0.11-mile-long spur access road within the AZ Solar 1 boundary would be realigned at the outset of construction so that continued public land access would be maintained from this access point. There would be a temporary road closure (up to 5 days) to complete the realignment, after which the road would be reopened. There would be no long-term closures or loss of miles of routes available for public lands access.

Transportation

During construction, the Proposed Action would result in a minor, short-term increase in traffic on Hall Avenue in the immediate vicinity of the project area. Delay may occur during delivery of large equipment, such as the transformer and substation components; however, deliveries would be directed to the laydown areas within the project area to minimize traffic delays on Hall Avenue. Delays are not expected to impede existing uses of this road. Construction traffic would also result in a negligible impact

to U.S. 60 and State Route (SR) 72, with construction traffic resulting in an estimated increase of 4.8% and 7%, respectively, over existing traffic counts. An increase in traffic from operation of the Proposed Action would be negligible on Hall Avenue, U.S. 60, and SR 72.

Socioeconomics

The Proposed Action would have a short-term beneficial impact on employment in the analysis area during construction and decommissioning, and a negligible, long-term beneficial impact during operations. These employment benefits would result from the AZ Solar 1 facility; WAPA's actions would not impact employment. AZ Solar 1 construction and operations would have a minor beneficial impact on property tax revenues and sales and use taxes. During operations, AZ Solar 1's property tax contributions would decline over time and long-term increases in sales and use taxes are not expected.

Decommissioning would have similar short-term benefits to sales and use taxes and property taxes would be readjusted to reflect the vacant land. WAPA would not impact the property tax revenue or sales and use taxes from the construction, operations and maintenance, or decommissioning of the transmission line interconnection. WAPA's facilities would not impact property values. The AZ Solar 1 facility may have a short-term, adverse impact on property values nearest to the facility during the higher-impact phases of facility construction and decommissioning; however, a long-term decline in property values is not expected to occur from the presence and operation of the facility.

Visual Resources

The Proposed Action would create contrast (i.e., anticipated impact) with the existing landscape features. WAPA's facilities would create weak to moderate contrast and AZ Solar 1's facilities would create moderate to strong contrast. The project's location on the landscape reduces the contrast for typical viewers. Travelers headed in both directions on U.S. 60 at the posted driving speeds would see little to minimal changes in the landscape. Residential areas are generally above or at the same elevation as the project area; therefore, topography, existing vegetation, fences, and buildings provide complete to partial screening of the proposed project from residential areas. The Proposed Action would be in conformance with the BLM's Visual Resource Management (VRM) System Class III and IV objectives, which allow for a moderate to high amount of change to the landscape. Additionally, the AZ Solar 1 facility would not have any visual impact associated with sunlight reflecting off the panels (i.e., glare).

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1 INTRODUCTION, PURPOSE AND NEED

1.1 Project Background

Western Area Power Administration (WAPA) is responding to a request from AZ Solar 1, LLC (AZ Solar 1) to interconnect a proposed photovoltaic (PV) solar plant near Salome, La Paz County, Arizona, to its electrical transmission system (Figure 1-1). AZ Solar 1 is a limited liability corporation that is a subsidiary of Origis Energy USA, Inc. The nearest transmission line to the proposed solar plant is the Little Harquahala to Harcuvar 115-kilovolt (kV) Transmission Line. The transmission line is part of the Central Arizona Project (CAP) built by the U.S. Bureau of Reclamation (Reclamation) and operated by WAPA. Adjacent to the proposed solar facility, the transmission line runs approximately north-to-south on lands managed by the Bureau of Land Management (BLM) in an existing right-of-way (ROW) held by Reclamation.

On May 18, 2018, AZ Solar 1 submitted their interconnection request to WAPA. AZ Solar 1 proposes to build, operate, and maintain an approximately 32.5-megawatt (MW) PV solar energy generation facility (Solar Field 1) on a 480-acre parcel of private land. An optional 27.5 MW of PV solar energy generation and an optional 20 MW battery storage facility (Solar Field 2) may be added to the 480-acre private land based on market considerations. Although the total nameplate capacity of the planned facility and the optional installation totals approximately 60 MW, AZ Solar 1 plans to operate the facility such that the annual output is equal to or less than 50 average MW. Construction of the facility would include solar panels, access roads, an underground electrical collection system, and an on-site collection point switchyard. To interconnect with the transmission line, up to two pole structures would be installed in the existing transmission line easement and a new, less than 100-foot-long aerial connection across BLM lands would be installed to connect the transmission line to the new structures and into AZ Solar 1's switchyard (Figure 1-2).

On October 10, 2018, WAPA made a determination to prepare an environmental assessment (EA) for the Proposed Action in accordance with National Environmental Policy Act (NEPA) implementing procedures (10 Code of Federal Regulations [CFR] 1021). Actions that require an EA include those that entail the "establishment and implementation of contracts, policies, marketing and allocation plans related to electric power that involve (1) the interconnection of, or acquisition of power from, new generation resources that are equal to or less than 50 average megawatts." The Proposed Action fits this action classification, because AZ Solar 1's interconnection request is for the average generation of 50 or less MW per year.

1.2 Purpose and Need

1.2.1 Western Area Power Administration

WAPA is a federal power-marketing agency within the U.S. Department of Energy (DOE) that operates and maintains transmission lines and associated facilities in accordance with the Federal Power Act Sections 210 to 213, and its Open Access Transmission Service Tariff (OATT). WAPA's OATT is filed with the Federal Energy Regulatory Commission. WAPA's purpose and need is to consider and respond to AZ Solar 1's interconnection request in accordance with the Federal Power Act and OATT. These require WAPA to demonstrate that such requests do not degrade system reliability and safety, or adversely affect service to existing customers. WAPA conducts feasibility, system, and facility studies to determine the transmission line upgrades or additions necessary to meet these requirements and accommodate the proposed interconnection.

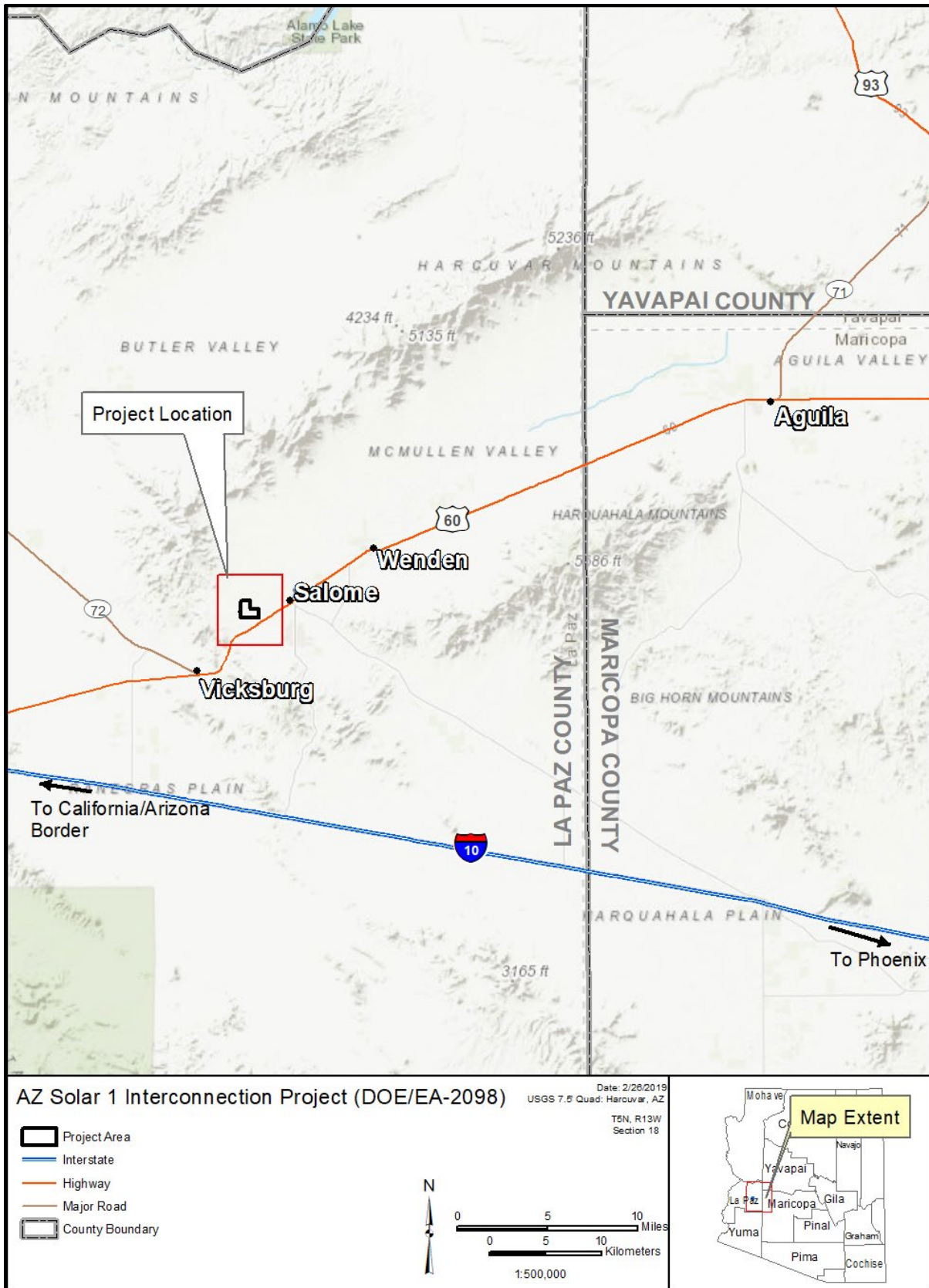


Figure 1-1. Project location in Salome, La Paz County, Arizona.

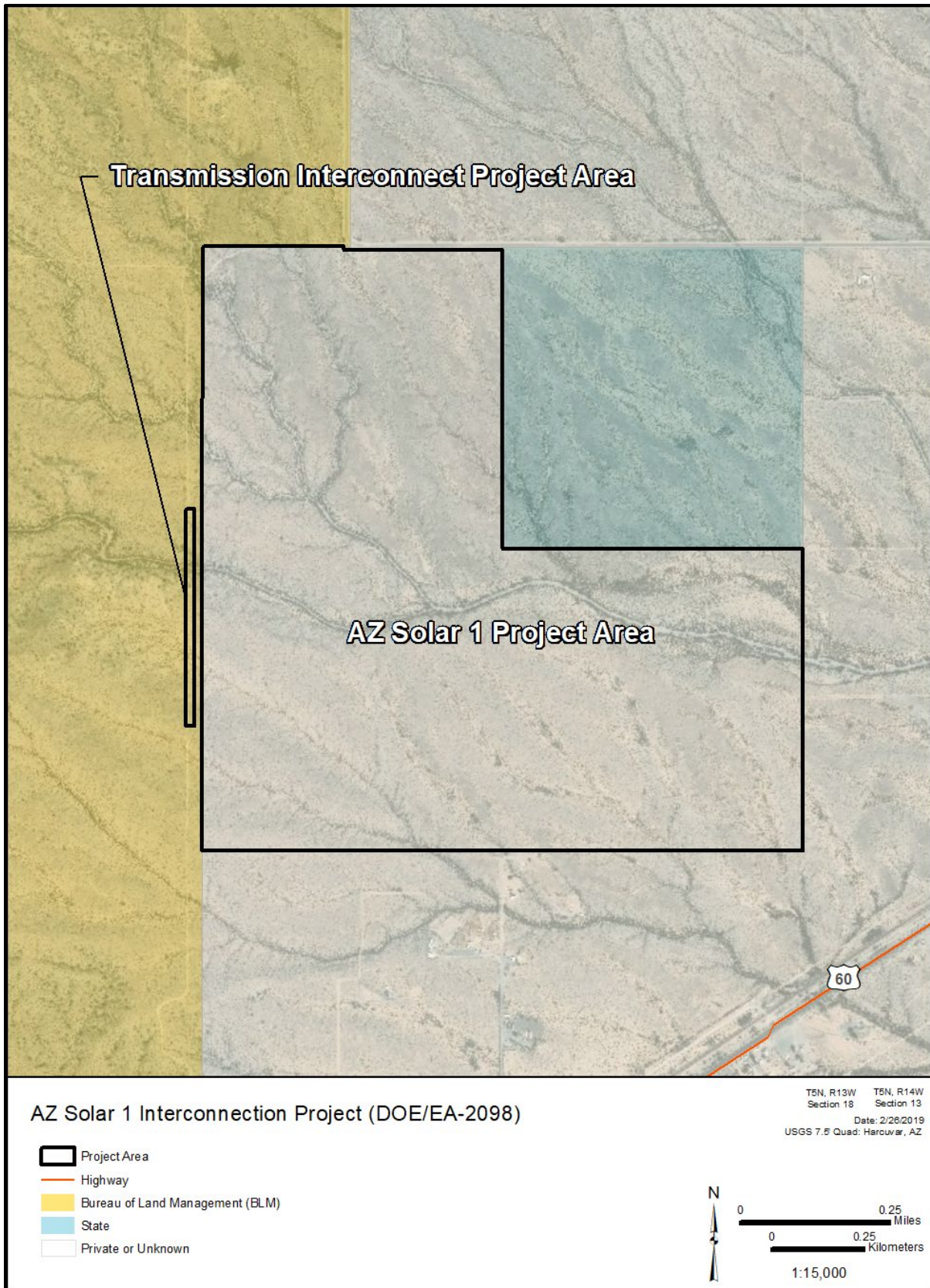


Figure 1-2. Project overview.

1.2.2 Cooperating Agencies

On October 9, 2018, WAPA invited Reclamation and BLM to be cooperating agencies in the preparation of this document, because of their jurisdiction by law or special expertise. WAPA volunteered to be the lead federal agency in the NEPA process as well as for the Endangered Species Act (ESA) Section 7 process and the National Historic Preservation Act (NHPA) Section 106 process. Both agencies accepted WAPA's offers.

1.2.2.1 U.S. BUREAU OF RECLAMATION

Reclamation owns a portion of the transmission line and the underlying BLM ROW to which AZ Solar 1 has requested an interconnection. Reclamation's purpose and need is to consider and respond to WAPA and AZ Solar 1's request to amend their existing transmission line ROW.

1.2.2.2 BUREAU OF LAND MANAGEMENT

BLM's purpose for action is to respond to Reclamation's ROW amendment request, which would include adding and maintaining the interconnection structures within the existing transmission ROW, and to respond to the application submitted for a ROW from AZ Solar 1 for the aerial connections across BLM-administered lands outside of the ROW (from the new transmission structures and into AZ Solar 1's switchyard). The need for action arises from Title V of the Federal Land Policy and Management Act (FLPMA) (43 United States Code [USC] 1701), which requires BLM to respond to ROW applications.

1.2.3 AZ Solar 1's Underlying Purpose and Need

The primary purpose of the AZ Solar 1 facility is to provide solar-generated electricity from a site near Salome, Arizona, to meet customer demand for competitively priced energy from renewable resources. In accordance with an existing power purchase agreement (PPA) with CAP, AZ Solar 1 needs to develop, operate, and maintain the generation infrastructure in order to deliver the renewable solar resource to CAP per the terms and conditions of the PPA.

1.3 Relationship to Other Plans and Analyses

1.3.1 Resource Management Plan Conformance

The proposed interconnection is subject to and would be reviewed for conformance with the BLM Lake Havasu Field Office's Record of Decision and Approved Resource Management Plan (RMP), which was approved on May 10, 2007 (BLM 2007). The Lake Havasu Field Office may issue ROWs for uses pursuant to Title 5 FLPMA that include "access roads, power lines, telephone lines, fiber optic systems, communications facilities, and so forth" (BLM 2007:37). The Proposed Action would be located in an existing designated utility corridor (Little Harquahala [LGN 4]) and would be consistent with the following RMP objectives, terms, and conditions:

- WF-20: Construction sites for wind turbines, power lines, telecommunication, towers, solar power sites, and any other new technology, etc., will conform with guidelines developed by USFWS [U.S. Fish and Wildlife Service] to minimize impacts to wildlife species, particularly migratory birds and bats. (BLM 2007:19)
- LR-11: New utility facilities will be located in designated corridors unless an evaluation of the project shows that location outside of a designated area is the only practicable alternative. (BLM 2007:39)

- LR-14: In utility corridors, uses including but not limited to transportation, pipelines, and electrical transmission lines will be allowed when the uses are compatible. These designated corridors apply only to BLM-administered lands. (BLM 2007:40)

1.4 Decisions Needed

This EA, which is the responsibility of WAPA, is a concise public document that serves to:

- provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI);
- aid WAPA's compliance with NEPA when no EIS is necessary; and
- facilitate preparation of an EIS if one is necessary (40 CFR § 1508.9).

Based on the analysis contained in this EA, weighing how each alternative meets the purpose and need, WAPA will determine whether the proposed AZ Solar 1 Interconnection Project requires an EIS, or if a FONSI can be prepared. In addition, the BLM Authorized Officer will use the analysis presented in this EA to make a decision regarding whether to approve the ROW applications submitted by Reclamation and AZ Solar 1, and if so under what terms and conditions.

1.5 Public and Tribal Participation

1.5.1 Scoping

WAPA initiated a 30-day public scoping period for the project on October 24, 2018, ending on November 26, 2018. Scoping letters were mailed to 59 agencies, organizations, and interested parties, 10 tribes, and approximately 1,200 landowners in the Salome area to inform them of the project and scoping period, and to request input on the federal action. WAPA published two newspaper advertisements in the *Parker Pioneer* (on October 24 and November 7, 2018) publicizing the scoping notice and open house. Forty people attended the public scoping meeting held on November 8, 2018, in Salome, Arizona. In addition, at the request of the Colorado River Indian Tribes, the agencies held a scoping meeting with representatives of the Colorado River Indian Tribes on November 21, 2018, in Parker, Arizona.

WAPA accepted scoping comments via telephone, email, U.S. mail, and in person at the scoping meeting. They received a total of 16 submittals from 11 individuals, two businesses, two state government agencies, and one tribe. Input received during scoping concerned a range of environmental and impacts analysis issues. The primary topics addressed during scoping included:

- Impacts to nearby airpark operations
- Impacts to sensitive species, including desert tortoise, and other wildlife and habitat
- Impacts to air quality from fugitive dust
- Impacts to groundwater and residential wells
- Impacts on recreation access to BLM lands
- Impacts on quality of life for nearby residences, including noise, traffic, visual impact, and property values
- Impacts to ancestral and archaeological sites

Refer to Appendix A for a scoping summary.

2 PROPOSED ACTION AND ALTERNATIVES

2.1 WAPA's Proposed Action

WAPA's proposed action consists of approving an interconnection request, entering into an interconnection agreement, and implementing three types of project-related transmission system upgrades.

- **New pole structures for the tap:** WAPA would install, maintain, and decommission a tap¹ on the existing Little Harquahala to Harcuvar 115-kV Transmission Line (Figure 2-1). The tap would consist of up to two new pole structures within the existing ROW in the vicinity of the existing Pole 14/1, located directly across from AZ Solar 1's proposed substation. The new pole structures would be made of steel, up to 100 feet tall and fit one of three standard pole types: H-frame, monopole, or three-pole. The new pole structures would connect to the existing transmission line via short (approximately 50-foot) aerial connections. Please see Section 2.3 for details on the aerial connection from AZ Solar 1's substation/switchyard to the new pole structures.
- **Modify existing pole structures:** WAPA would add guy-wires and associated buried concrete anchors to up to three existing H-frame wood pole structures in the tap's immediate vicinity to provide additional structural support to the existing transmission line. Guy-wires and anchors would be added to pole structures 14/2, 14/1, and 13/7 and the anchors buried within the existing ROW (see Figure 2-1).
- **Associated transmission system improvements:** WAPA would upgrade relays at the Little Harquahala and Harcuvar substations. This work would occur within the existing control buildings at these facilities. WAPA would install a microwave dish on an existing tower at WAPA's Pete Smith Peak communications site and point it towards the communication tower installed at the AZ Solar 1 substation.

WAPA would also work with Reclamation and the BLM to amend the existing ROW documents to support these connections, as needed. WAPA's Proposed Action is further described in Section 2.6 Project Implementation.

2.2 BLM and Reclamation's Proposed Action

BLM's proposed action is to respond to a ROW request associated with the interconnection facilities on BLM-administered lands. Reclamation would apply for a ROW amendment for activities occurring within the existing ROW. AZ Solar 1 would apply for a new ROW from BLM to install and maintain the aerial connections across BLM lands outside of the existing ROW.

¹ As defined by WAPA's glossary of terms for the electric power industry (July 1990), "tap" means: "to tie a substation into an existing line by simply running a new single-circuit line from the substation to the existing line and tying into it; tapping feeds only a portion of the power carried on the line to the substation."

2.3 AZ Solar 1's Proposed Facilities

While AZ Solar 1's facilities are not part of the federal actions, they are described alongside the federal actions to aid the analysis.

AZ Solar 1 proposes to build, operate, maintain, and decommission an approximately 32.5-MW PV solar energy generation facility on private land (Solar Field 1). An optional approximately 27.5 MW of PV solar energy generation and 20 MW of battery storage may be added based on market considerations (Solar Field 2). The AZ Solar 1's facility is shown at full build-out in Figure 2-2. Construction of the facility includes the following components:

- Installing solar panels;
- Installing underground collection lines from each panel to a collection point switchyard;
- Creating access roads within the facility for construction and maintenance;
- Constructing an on-site collection point substation/switchyard covering 5 acres; and
- Installing and maintaining a less than 100-foot-long aerial connection across BLM land from the new transmission line pole structures and into AZ Solar 1's switchyard, approximately 75 feet of which is located outside of the existing transmission line easement.

AZ Solar 1 would apply for a ROW from BLM for the aerial connections outside of the existing transmission line easement. AZ Solar 1's facility is further described in Section 2.6 Project Implementation.

2.4 Project Location

The project is located near the base of the Granite Wash Mountains, 2 miles west of Salome in La Paz County, Arizona (see Figure 1-1). The project would be located at approximately 1,970 feet in elevation, approximately 1 mile northwest of U.S. Route 60 (U.S. 60).

Combined, the project area includes 3.5 acres of BLM-managed land and 480 acres of private lands (total of 483.5 acres). WAPA's proposed interconnection would be located within the 3.5 acres of BLM-managed lands within and adjacent to the existing Little Harquahala to Harcuvar 115-kV Transmission Line easement, in Section 13, Township 5 North, Range 14 West, Gila and Salt River Baseline and Meridian. BLM-administered lands just east of the existing transmission line easement would be crossed to add short (less than 100-foot-long) aerial connections into AZ Solar 1's switchyard. AZ Solar 1's facility is located entirely on 480 acres of private lands adjacent to the BLM-administered lands in the NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 18, Township 5 North, Range 13 West, Gila and Salt River Baseline and Meridian.

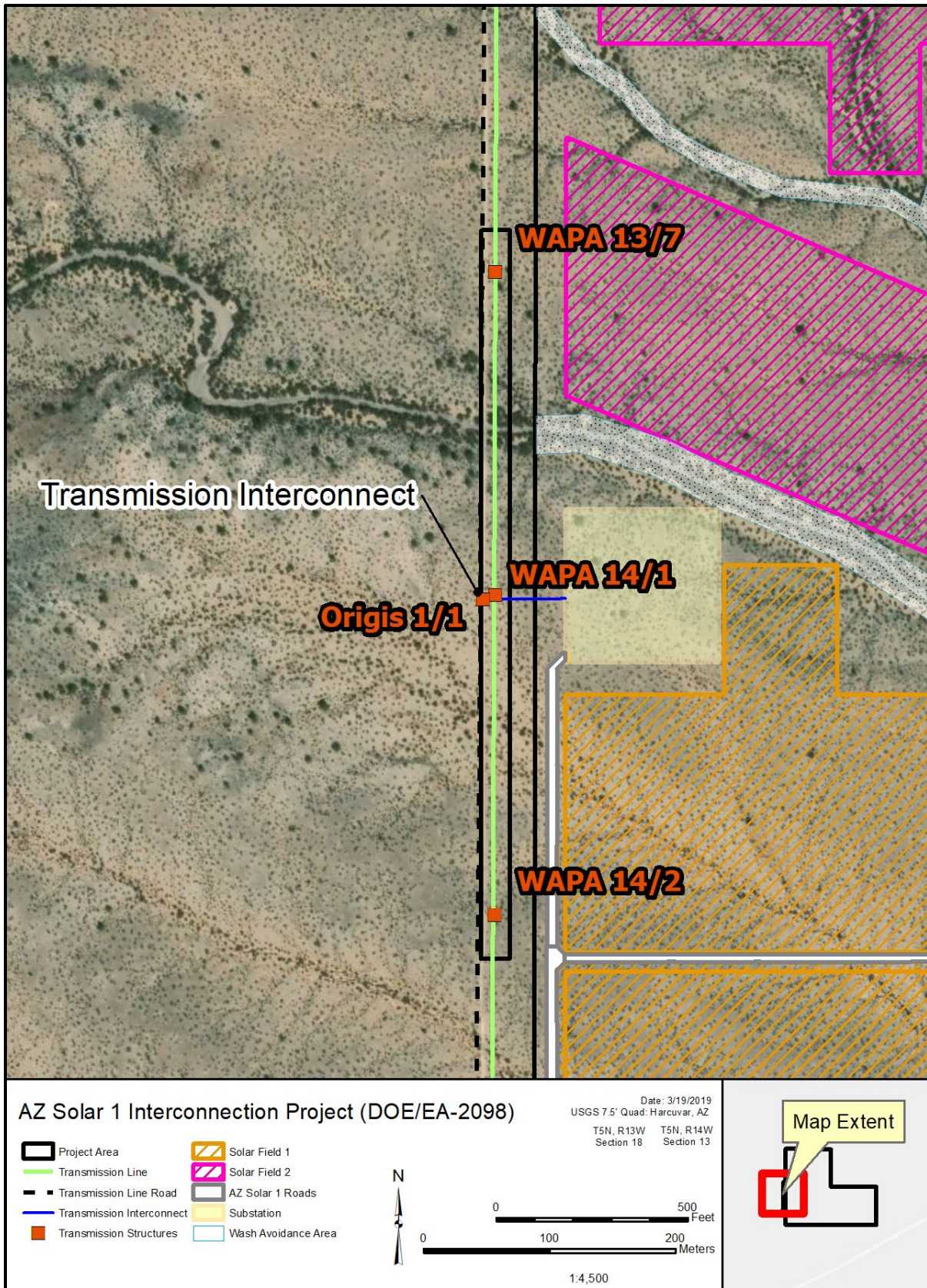


Figure 2-1. Transmission line interconnection detail.

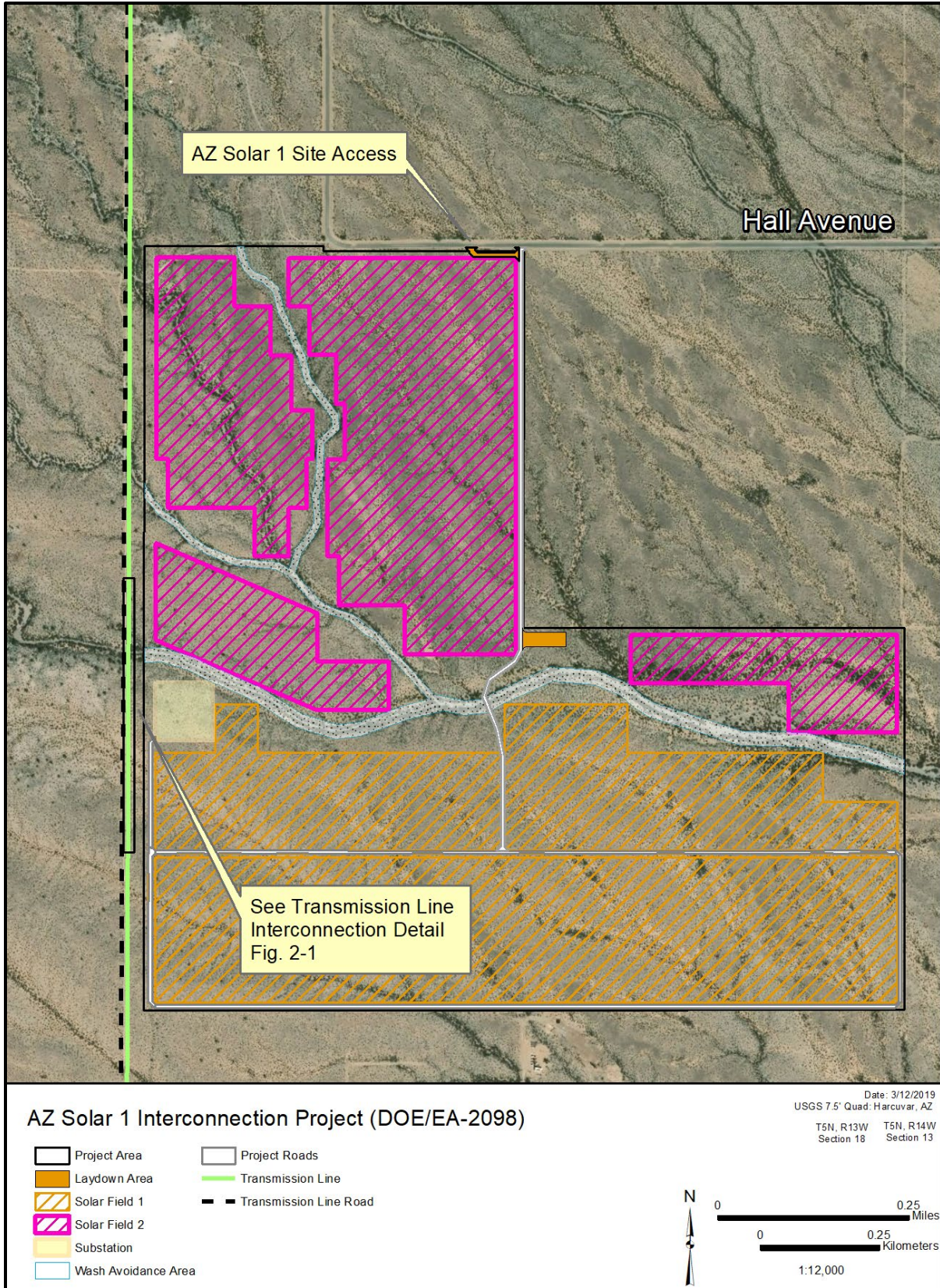


Figure 2-2. AZ Solar 1 facility detail.

2.5 Schedule

WAPA would begin construction in the fall of 2019. All construction would occur over a 45-day period during daylight hours. At this time, WAPA does not anticipate additional construction associated with the future development of AZ Solar 1's Solar Field 2 and battery storage system.

BLM would issue the ROW grants to Reclamation and AZ Solar 1 after completion of BLM's NEPA process and approval. If approved, this is expected to occur in August 2019. At this time, BLM does not anticipate additional ROW actions associated with the future development of AZ Solar 1's Solar Field 2 and battery storage system.

AZ Solar 1's Solar Field 1 would have a commercial operation date (COD) of December 2019. To meet this COD, construction would begin no later than August 2019 and is expected to take 4 months to complete, with an additional 1 to 2 months for testing. All construction would occur during daylight hours, and night lighting would not be required. There is no PPA for Solar Field 2 or the battery storage. Projects of this type would most likely not be installed prior to 2023. AZ Solar 1 anticipates that construction and testing for Solar Field 2 and the battery storage would take a similar amount of time as Solar Field 1 (approximately 4 to 6 months).

2.6 Project Implementation

The following sections describe the construction, operations and maintenance, and decommissioning activities for the WAPA interconnection and AZ Solar 1 facility. Table 2.6-1 provides a detailed account of all temporary and permanent disturbances related to project implementation. The Proposed Action would result in a total of 462.14 acres of temporary disturbance, of which approximate 461 acres would be permanent disturbance.

Table 2.6-1. Proposed Action Construction and Operation Disturbance

Project	Component	Temporary Disturbance (acres)*	Permanent Disturbance (acres)
WAPA's Transmission Interconnect	Access road blading**	0.10	–
	New pole structures and guy-wire installation	1.04	< 0.01
	Relay replacements at Little Harquahala and Harcuvar Substations and microwave dish at Pete Smith Peak communications site†	–	–
	Total WAPA Disturbance Area	1.14	< 0.01
AZ Solar 1 Facility	Solar Field	219	219
	Staging areas	4	4
	Access roads	17	17
	Underground collection††	–	–
	Substation/switchyard	5	5
	Well(s) and water storage tank(s)	4	4
	Communications utility	< 1	< 1
	Aerial connection to transmission line‡	–	–
	Solar Field 1 Total Disturbance Area	250	250

Project	Component	Temporary Disturbance (acres)*	Permanent Disturbance (acres)
AZ Solar 1 Facility (Continued)	Solar Field 2 [§] and Battery Storage [¶] Total Disturbance Area	211	211
	<i>Total AZ Solar 1 Disturbance Area</i>	<i>461</i>	<i>461</i>
Proposed Action Combined Total		462.14	461.01

* With the exception of less than 0.01 acre of temporary wash disturbance for collection/road crossings, the majority of AZ Solar 1’s construction disturbance would be permanent disturbance. For the purposes of this EA, it is assumed that all construction disturbance would be permanent.

** Access road is existing; no new permanent disturbance would result from this action.

† Activities would occur within the existing substation control buildings and the existing Pete Smith Peak communications site; no new temporary or permanent disturbance would occur.

†† Underground collection is co-located with the panel development area and access roads; therefore, no additional disturbance is associated with this project component.

‡ The aerial connection would be extended by hand, by workers walking across the less than 100-foot-long area between the transmission line easement and the private property fence line; no ground disturbance or vegetation clearing is required for this action.

§ A minimal amount (approximately 0.10 acre) of temporary disturbance would occur at the access roads and underground collection wash crossings associated with for the Solar Field 2 development; temporary disturbance areas would be reclaimed.

¶ Battery storage disturbance would total 1 acre of disturbance spread across the 480-acre parcel. Disturbance for the battery storage is accounted for in the total disturbance area.

2.6.1 Pre-Construction

WAPA would approve AZ Solar 1’s interconnection request and enter into an interconnection agreement with them. Reclamation would apply for a ROW amendment from BLM. BLM would issue a ROW amendment to Reclamation and AZ Solar 1 for the connections across BLM-administered lands. It is estimated it would take 3 months to secure the ROW.

AZ Solar 1 would obtain all necessary federal, state, and local permits and approvals for the construction and operation of their solar energy generation facility. Refer to Table 5-1 for a list of the major applicable regulatory requirements.

2.6.2 Construction

2.6.2.1 WAPA

Construction Work Areas, Staging Areas, and Site Preparation

WAPA would conduct work within the transmission line ROW from 100 feet north of Structure 13/7 to 100 feet south of Structure 14/2; this area measures 75 feet wide × 1,900 feet long (approximately 3.5 acres) (see Figure 2-1). WAPA would store equipment or materials in nearby previously disturbed areas, such as along the existing transmission line access road, the shoulder of Hall Avenue, or within the AZ Solar 1 facility staging areas.

WAPA would drive construction vehicles on the existing unpaved transmission line access road to reach the work area. WAPA does not plan to improve the existing access road. WAPA would blade the existing road prism to create a safe, level surface if the road becomes rutted due to weather or use by others. WAPA estimates that up to 50 feet of the 12-foot-wide road surface would need to be bladed during construction. WAPA would use a water truck to spray water on the road and work areas to control dust and to retain fine surface rock.

WAPA would remove vegetation and grade a level pad around each new structure and each structure being modified. At each structure, the blading area would be up to 150 feet long × 75 feet wide and centered on the structure.

At the Pete Smith Peak communications site, WAPA would install a 6- or 8-foot-diameter microwave dish up to 20 feet above the ground surface on an existing tower and point it towards the communication tower installed at the AZ Solar 1 substation. WAPA would connect the dish to new equipment installed on existing racks located within the communications building at Pete Smith Peak. The communications facility is located on BLM land north of Aguila in La Paz County, Arizona, in Section 1, Township 8 North, Range 11 West, Gila and Salt River Baseline and Meridian. WAPA would install the dish using a capstan or crane to lift the dish into position. WAPA would use the existing access road to reach the work site. No ground disturbance would be required to install the communication dish and equipment in the communications building.

Construction Equipment and Workforce

WAPA estimates its construction workforce would entail eight people. WAPA would use the following construction equipment:

- 1 crane (8 hours/day for 15 days)
- 1 tractor/loader/backhoe (8 hours/day for 15 days)
- 1 auger (8 hours/day for 5 days)
- 1 concrete truck (up to two trips)
- 1 grader (8 hours or 1 day)
- 1 water truck (8 hours /1 day for 15 days)
- 1 bucket truck (8 hours or 1 day)

Pole Construction and Assembly

In total, WAPA's interconnection would temporarily disturb 1.14 acre, and permanently disturb less than 0.10 acre.

WAPA would deliver the distribution poles, conductors, insulators, construction materials, and other hardware by truck to the transmission line ROW or a staging area. WAPA would assemble the new transmission line structures on-site. WAPA would auger 2-foot-diameter holes to a depth of up to 12 feet. The number of holes depends on structure type, and at maximum, six holes would be dug for two, three-pole structures. WAPA would lift the new structures into the holes and backfill with concrete. WAPA would then spread the dirt spoils from the holes around the base of the structures.

WAPA would install guys on top of the existing wood pole structures 13/7, 14/1, and 14/2. To install the concrete anchors, WAPA would excavate holes 6 to 8 feet in diameter and 6 to 8 feet deep, located 35 to 50 feet away from the base of the structure. WAPA would install up to four guys and anchors per structure, for a total of up to 12.

Water Source and Use

WAPA's total construction water use would be approximately 60,000 gallons (0.18 acre-feet). One 4,000-gallon-capacity water truck would be used to control dust and retain fine surface rock during clearing and grading. In the worst-case scenario, 4,000 gallons of water would be used per day for dust

abatement during up to 15 days of clearing and grading. WAPA would obtain water from the same water supply used for AZ Solar 1's facilities (see Section 2.6.2.2).

Wastes and Hazardous Materials

WAPA would generate a minimal amount (less than 10 cubic yards) of solid wastes during construction. All solid wastes would be transported off-site for disposal at approved waste handling facilities. No hazardous materials would be used or generated during construction.

2.6.2.2 AZ SOLAR 1

Construction Work Areas, Staging Areas, and Site Preparation

In total, the construction work area for the Solar Field 1 (32.5 MW), including the facilities described below, would permanently disturb approximately 250 acres. AZ Solar 1 or their construction contractor may install an additional Solar Field 2 (27.5 MW) and/or battery storage system (20 MW) at the site in the future. An additional 211 acres would be permanently disturbed for Solar Field 2, and 1 acre (spread out across the 480-acre parcel) would be disturbed for the battery storage (20-MW) development.

AZ Solar 1 would establish two construction equipment and materials staging areas covering 4 acres of the private land: one 9,000-square-foot area in the north of the property at the site entrance on Hall Avenue, and one 30,000-square-foot area farther into the property near the Solar Field 1 development area (see Figure 2-2). These staging areas would be permanent facilities and used for equipment laydown and solar panel assembly during future site development.

To prepare the site for construction, the land would be cleared and graded. The desert vegetation, primarily shrubs and grasses, would be removed. Site grading would only occur as needed to accommodate the laydown of materials at the staging area, solar panel installation, access roads and underground collection, and the substation/switchyard construction. Cleared vegetation would either be mulched on-site for use in dust abatement or hauled off-site for disposal at an approved facility.

AZ Solar 1 would minimize land disturbance (including crossings) in natural drainage systems and would locate and construct crossing structures so as not to decrease channel stability or increase water volume or velocity. One wash, totaling approximately 0.40 acres in project area, would be filled in to accommodate the solar panel array for Solar Field 2. The remaining washes in the project area (approximately 19 acres) would be avoided as shown on Figure 2-2. AZ Solar 1 would retain and maintain the existing desert vegetation in a 25-foot-wide avoidance buffer on either side of the remaining washes in the project area, totaling approximately 19 acres as depicted on Figure 2-2. With the exception of road crossings and temporary excavation to install underground collection lines, no vegetation clearing or disturbance would occur within these buffer areas. AZ Solar 1 would coordinate with the U.S. Army Corps of Engineers regarding Clean Water Act Section 404 permits for impacts to washes, and necessary permits would be obtained as applicable (see Table 5-1).

Additionally, to meet the requirements of the Arizona Pollutant Discharge Elimination System Permit / Stormwater Construction General Permit, AZ Solar 1 would implement a construction stormwater pollution prevention plan (SWPPP). The SWPPP would include conservation measures such as:

- Preventing channel erosion from project runoff
- Placing barriers and sedimentation devices around drainages
- Controlling water runoff and directing it to settling or rapid infiltration basins, as needed

- Retaining sediment-laden waters from disturbed, active areas within the project through the use of barriers and sedimentation devices (e.g., berms, straw bales, sandbags, jute netting, or silt fences). Removing sediment from barriers and sedimentation devices to restore sediment-control capacity.
- Constructing entry and exit pits in work areas to trap sediments from vehicles so they do not enter streams at stream crossings.
- Preventing the release of project waste materials into stormwater discharges

Construction Equipment and Workforce

AZ Solar 1 would require up to 350 workers at peak construction and use the following construction equipment:

- 1 crane (8 hours/day for 30 days)
- 11 tractors/loaders/backhoes/graders (8 hours/day for 60 days)
- 50 to 100 concrete truck loads (8 hours/day for 90 days)
- 5 water trucks (10 hours/day for 120 days during peak construction; reduced to 1 truck for 10 hours/day for 60 days during testing)
- 3 dump trucks (8 hours/day for 30 days)
- 1 well drilling rig (8 hours/day for 12 days)
- 1 wood chipper (8 hours/day for 10 days)

Construction of project facilities would occur simultaneously, using single vehicles for multiple tasks. The average number of daily vehicle trips to the site would vary, but would be on the order of 100 daily vehicle trips, while the number of vehicles actually working on-site would be on the order of 50.

During construction, traffic would stay within designated construction areas and access roads. Contractor and employee vehicles not used for construction would be parked at the staging areas. Construction haul routes would include Interstate 10, U.S. 60, and Hall Avenue. AZ Solar 1 would plan for traffic management of site access to ensure that traffic flow would not be unnecessarily affected and that specific issues of concern (e.g., the locations of school bus routes and stops) are identified and addressed. No closures, lane restrictions, or traffic lane improvements are anticipated for delivery of construction equipment or materials. One active railroad would be crossed at the entrance to Hall Avenue from U.S. 60; AZ Solar 1 would notify the railroad operator of construction traffic at the crossing.

AZ Solar 1 anticipates that the same number of employees and construction equipment would be needed for the future development of Solar Field 2 and the battery storage. The well drilling equipment would not be required if wells are drilled for Solar Field 1.

Fencing

AZ Solar 1 would install a permanent fence around the Solar Field 1 and Solar Field 2, in accordance with the North American Electric Reliability Corporation (NERC) critical infrastructure protection physical security guidelines (NERC 2011). The fences would be 6-foot-tall chain-link metal security fence enclosures with 2-foot barbed wire on top. Fencing would be set back from all property boundaries by 50 feet.

Materials Source

Gravel and rock materials for the roads, staging areas, and substations and solar panel foundations would be sourced from an existing off-site, Arizona Department of Transportation (ADOT)-approved materials source pit.

Water Source and Use Estimates

AZ Solar 1 would use a total of approximately 118 to 200 acre-feet of water for construction of Solar Fields 1 and 2; detailed water use estimates are provided in Table 2.6-2. The primary construction water use would be for dust suppression. Other minimal amounts of water would be used during construction of concrete foundations and for equipment washing. A range for water uses during peak construction is provided to represent the highest anticipated use levels required for dust suppression. Actual water use would be dependent upon wind patterns and rainfall amounts during the construction period. AZ Solar 1 anticipates that a similar amount of construction water would be needed for the future development of Solar Field 2 and the battery storage. However, because Solar Field 2 would develop a smaller area (211 acres), actual construction water use may be slightly less than required for Solar Field 1.

Water source options being evaluated for this facility include:

- Drilling on-site well(s) prior to the start of construction, to fill temporary water bladders or aboveground tanks, and disturbing up to 4 acres. Water would be conveyed to the water bladders or tanks via pumps. The well pumps are likely to be 35-gallons per minute (GPM) pumps and would be powered via underground cables from the project substation.
- Buying water from local farms within McMullen Valley
- Purchasing water from nearby towns within McMullen Valley and trucking it to the site

Table 2.6-2. AZ Solar 1 Facility Construction Water Use Estimates

Action Requiring Water Use	Gallons of Water Used per Episode	Frequency	Total Gallons
Solar Field 1			
Construction during ground disturbance	128,000 to 240,000 (0.39 to 0.74 acre-foot)	120 days, or as needed	15,360,000 to 28,800,000 (47.14 to 88.38 acre-feet)
Construction post-ground disturbance	64,000 (0.20 acre-foot)	60 days, or as needed	3,840,000 (11.78 acre-feet)
Solar Field 2	Same as above	Same as above	Same as above
Total Construction Water Use	–	–	38,400,000 to 65,280,000 (118–200 acre-feet)

Access Road Construction and Improvements

Primary access to the private land would be from Hall Avenue via U.S. 60. Any project-related damage to Hall Avenue would be repaired after construction per conditions of AZ Solar 1's La Paz County Conditional Use Permit (CUP).

Currently, an existing 10-foot-wide unpaved spur access route connecting Hall Avenue with the transmission line access road and BLM-managed lands crosses into the private property boundary. AZ Solar 1 would realign the 10-foot-wide spur access route to outside of the AZ Solar 1 facility fence line (Figure 2-3). The access route would be realigned at the outset of construction to allow for continued public access to BLM-managed lands.

Within the site, a network of internal access roads would be used to facilitate construction and maintenance of the solar facility, as well access to the substation/switchyard (see Figure 2-2). Access roads co-located with underground collection (described below) would be 50 feet wide and roads without collection would be 24 feet wide. All roads would consist of graded dirt covered with an aggregate surface adequate to support the size and weight of maintenance vehicles. At the central wash crossing, the access road would use a permanent 40-foot-wide \times 100-foot-long, concrete-surfaced ford crossing. The wash crossing would be designed to allow surface waters to flow unimpeded over the crossing. Less than 0.1 acre of the wash would be permanently disturbed by the crossing.

Additional access roads of similar size and type described above would be needed for development of Solar Field 2 and would include several temporary wash crossings. Future access road wash crossings would consist of unpaved ford crossings. AZ Solar 1 would reduce the slope of the wash bank by blading materials away from the wash so that workers can safely drive heavy machinery across. A minimal amount of temporary gravel fill placed in the wash would facilitate heavy machinery crossing in areas of soft or sandy soils. Temporary disturbances for these wash crossings would be removed after construction and disturbance areas would be reclaimed.

Solar Panel and Underground Collection Line Installation

The solar panel PV modules would be placed on fixed-tilt tracker assemblies that are mounted on driven steel posts/piles approximately 7.5 feet above ground level. Prior to installation, the area around the posts is cleared and the surrounding soil is compacted and graded. The posts are then machine driven into the ground and do not require concrete foundations.

The PV modules are connected by wire harnesses and combiner boxes that collect power from several rows of PV modules via underground direct current (DC) cables (i.e., underground collection network). These DC cables then feed to a Power Conversion Station (PCS), composed of DC to alternating current (AC) inverters and a medium-voltage transformer. The PCS inverters and transformers would have concrete foundations measuring up to 12 feet long \times 12 feet wide \times 12 inches deep. Each PCS connects to the project substation via underground collection network trenches. To install the underground collection network across the site, AZ Solar 1 would excavate 4-foot-wide \times 4-foot-deep trenches using both a trencher and a backhoe, install the underground collection network cables, and then backfill and compact the trenches. Where feasible, AZ Solar 1 would co-locate underground collection with existing features (e.g., roads or other paths of disturbance) to minimize the overall area of surface disturbance.

Both Solar Field 1 and Solar Field 2 would be constructed the same way. Underground collection for Solar Field 2 would cross several washes between the panels and from Solar Field 2 to the substation/switchyard in Solar Field 1 (see Figure 2-2). The collection would cross the washes via underground trenches, with an estimated total temporary wash disturbance area of less than 0.10 acre.

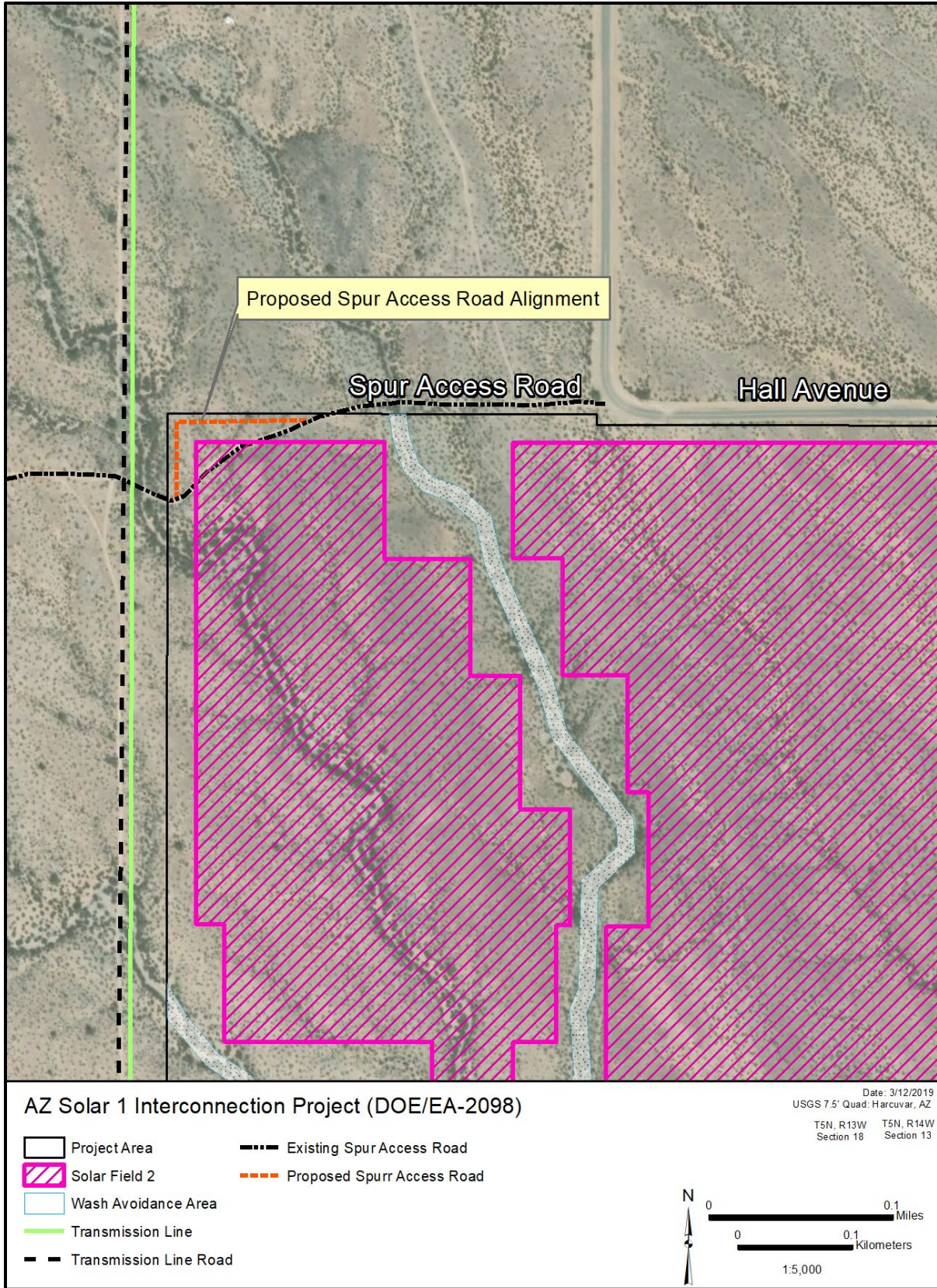


Figure 2-3. Hall Avenue spur access road realignment.

Substation/Switchyard Installation

All underground collection lines would terminate at the facility substation. The substation/switchyard would be a 5-acre facility surrounded by a 6-foot-tall chain-link metal security fence enclosure with 2-foot barbed wire on top.

The project substation steps up the voltage from 34.5 kV to 115 kV. The substation would include a power transformer, one 34.5-kV breaker and 115-kV main breaker, switches, a control house, and a substation superstructure. The substation would contain a switchyard that would be used to control the connection to the Little Harquahala to Harcuvar 115-kV Transmission Line. The substation/switchyard would be sized to accommodate the additional power load from the future Solar Field 2 and the battery storage.

The substation/switchyard would be constructed first by clearing, grubbing, grading, and compacting the substation site. A buried, steel grounding grid would cover the full substation area to carry the electric charge away from the equipment into the ground. A layer of gravel approximately 8 inches thick would be laid on top of the grounding grid throughout the substation/switchyard area. Drainage would slope toward the wash following slope contours. A concrete foundation would be poured for the 115-kV transformer that would be approximately 12 feet long × 12 feet wide × 4 feet deep. AZ Solar 1 would also build a control house measuring 20 feet long × 12 feet wide × 13 feet tall. Pole structures at this facility would have an average height of 40 feet, including one microwave tower approximately 35 feet in height. The tallest element would be the one lightning protection tower extending up to 85 feet. Lighting and power for the switchyard/substation are described further in sections below.

A communication line would be installed in a trench underground from a local utility to supply communication services at the substation/switchyard. It is anticipated that the communication line would run from Hall Avenue south across Solar Field 2 to the substation/switchyard.

All electrical systems would be designed to meet all applicable safety standards (e.g., National Electrical Code [NEC]) and to comply with WAPA's interconnection requirements.

Aerial Connection to Transmission Line

AZ Solar 1 would install an aerial connection from the substation/switchyard on private land to the point of interconnection with WAPA's transmission poles in the existing transmission line easement on BLM lands. Trucks with spooling equipment would be staged within the work areas in the existing transmission line easement or on the AZ Solar 1 property. Workers would be able to pull the cables by hand as they walk across the less than 100-foot-long area between the transmission line easement and the private property fence line. There would be no ground disturbance or vegetation clearing required for pulling the line by hand across this area. Equipment for wire pulling and tensioning would be staged in the temporary disturbance area described in Section 2.6.2.1 or on the private property.

Testing

The testing phase of construction consists of connecting the project to the grid, energizing the substation, making sure all the switches respond, generating power on each string of panels, and testing the panels and control systems. The whole testing sequence takes approximately 6 to 8 weeks to complete. Testing for Solar Field 2 and the battery storage would occur in a similar sequence.

Battery Storage

A 20-MW battery storage system would fit in less than 1 acre of land and would consist of approximately ten 40-foot International Standard Organization shipping containers. The battery containers would be located next to the PCS inverter sites located throughout the solar fields. Power would be stored before conversion to AC in the inverter systems (Figure 2-4). Foundations for these systems would be concrete and measure approximately 24 feet long \times 12 feet wide \times 2 feet deep. The battery containers would come installed with a fire protection system approved through the National Fire Protection Association. Fans and/or air conditioning equipment within the battery storage units would be used to maintain the manufacturer's required temperature within containers.

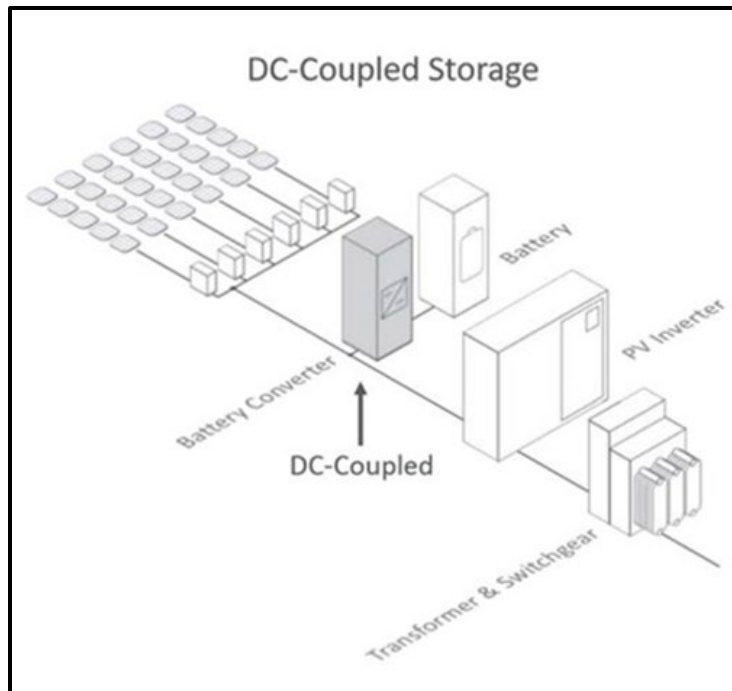


Figure 2-4. Battery storage system schemes.

Wastes and Hazardous Materials

Approximately 1,000 cubic yards of solid wastes would be generated during construction. All wastes would be collected on-site and temporarily stored in trash containers located at the staging areas. Wastes would be hauled off-site via dump trucks for disposal at approved waste handling facilities. The project would not generate hazardous wastes during construction; however, small quantities of hazardous materials are contained within the solar panels and the self-contained battery storage systems. AZ Solar 1 would inspect solar panels and the battery storage systems prior to installation. Any damaged materials would be handled in accordance with the manufacturer's specifications, including applicable recycling.

2.6.3 Operations and Maintenance

2.6.3.1 WAPA

Reclamation

Post-construction, temporary disturbance areas would be reclaimed in accordance with WAPA construction standards (WAPA 2016: Section 13.4).

Routine Site Inspections and Maintenance

WAPA would incorporate the inspection of the project-related new and modified poles structures and associated improvements into its existing inspection program. WAPA conducts aerial inspections on its systems up to four times a year and ground inspections up to once a year. WAPA uses the inspection reports to prioritize any needed repairs. WAPA dispatches six- to nine-person crews to make repairs as needed to maintain the reliability or safety of the bulk electric system. By its nature, this work is episodic. For example, WAPA conducted repairs on seven pole structures along the Little Harquahala to Harcuvar Transmission Line in 2018, and none in the previous 4 years (WAPA 2018a, 2018b). A comprehensive description of WAPA's transmission system operations and maintenance activities is provided in Section 2.2.1 of the Parker-Davis Transmission System Environmental Assessment (WAPA 2015).

WAPA operates and monitors its electrical power systems 24 hours a day, 7 days a week via a fiber-optic, microwave, and radio network connected to operations centers located in Loveland, Colorado, and Phoenix, Arizona. If a sustained fault is detected, switches will automatically de-energize the affected equipment. WAPA would inspect the equipment and manually return it to operation only when safe. WAPA would coordinate with customers about the timing and duration of any planned outages. WAPA typically avoids scheduling planned outages during the summer peak load season, from May 1 to October 1.

2.6.3.2 AZ SOLAR 1

Operations and maintenance for the AZ Solar 1 facility are described in this section for the full build-out of Solar Field 1, Solar Field 2, and the battery storage.

Reclamation

Post-construction, temporary disturbance areas would be reclaimed, and vegetation allowed to reestablish.

Routine Site Inspections and Maintenance

The facility would be monitored remotely from an operations and maintenance facility. At this time, AZ Solar 1's parent company is evaluating multiple locations for a permanent, internal operations and maintenance group. Projects are currently remotely monitored from offices in San Francisco, California, and Miami, Florida.

The facility would be maintained by one to five staff for normal preventative maintenance, solar panel washing, and dust abatement (described below). The site would be visited once per week, on average, for routine site inspections and maintenance. Operations vehicles would include pick-up trucks, small utility vehicles, water trucks for dust abatement, and occasional heavy equipment such as backhoes, front-end loaders, and dump trucks.

On an annual basis, or as needed under emergency conditions, the entire facility would be inspected for signs of deterioration or repair needs. Additionally, grading and drainage would be maintained for access roads and damage to roads would be repaired as soon as practical.

Herbicides and pesticides may be used as needed to control invasive/noxious weeds and/or pests on site. AZ Solar 1 would use only EPA-registered pesticides herbicides that also comply with state and local regulations. 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 applications.

Water Use and Source

AZ Solar 1 would use approximately 20.62 acre-feet of water over the 30-year operations phase of the project; detailed operations water use estimates are provided in Table 2.6-3. Operations water would be used for panel washing and dust suppression. In the worst-case scenario, AZ Solar 1 would wash the panels twice per year, using approximately 80,000 gallons per year. Performing dust abatement across the entire facility two times per year would use approximately 144,000 gallons per year. The high estimate of annual water use during operations is approximately 224,000 gallons (0.69 acre-foot).

Table 2.6-3. AZ Solar 1 Facility Operations Water Use Estimates

Action Requiring Water Use	Gallons of Water Used per Episode	Frequency	Total Gallons
Operations panel washing	40,000 (0.12 acre-foot)	Up to 2 times per year	80,000 (0.24 acre-foot)
Operations dust suppression	72,000 (0.22 acre-foot)	Up to 2 times per year	144,000 (0.44 acre-foot)
Total Annual Water Use Operations	–	–	224,000 (0.69 acre-foot)
Total Water Use Over 30-year Operational Life	–	–	6,720,000 (20.62 acre-feet)

As discussed under construction, several water source options are being evaluated for this facility, including:

- Continuing, during operations, to use any on-site wells that were drilled for construction. The wells would be used to fill several temporary PVC fabric water bladders. The area for the water bladders will cover up to 1 acre and would be used to fill water trucks during construction.
- Buying water from local farms
- Purchasing water from nearby towns and trucking it to the site

Facility Lighting

The substation/switchyard would be equipped with floodlights for safety and security purposes, but this lighting will only be used during nighttime emergency maintenance. Additionally, each PCS may be equipped with a small light fixture that would only be turned on in the event of emergency nighttime maintenance. AZ Solar would implement the following lighting measures during operations:

- Utilize the minimum intensity lighting that meets safety criteria
- Fully shield all permanent lighting (e.g., full cut-off), except for emergency lighting triggered by alarms
- Mount lighting so that no light is emitted above an imaginary horizontal plane through the fixture

- Considering lighting control through timers, sensors, dimmers, or switches that are available to facility operators

Power

In the event of a solar facility outage, backup power to the substation/switchyard would be provided via the interconnection. While unanticipated, in the event that both the solar facility and transmission line experience an outage, portable generators would provide backup power to the substation/switchyard.

Wastes and Hazardous Materials

A minimal amount (less than 1 cubic yard) of solid wastes would be generated each year during operations and maintenance. “Good housekeeping” procedures would be developed and implemented to ensure that during operation the site will be kept clean of debris, garbage, fugitive trash or waste, and prohibit scrap heaps and dumps. All solid wastes generated on-site would be transported off-site for disposal at approved waste handling facilities.

As part of routine operations and maintenance, solar panels would be routinely inspected for damage and replaced as needed. Damaged solar panels would be recycled in accordance with the manufacturer’s guidance.

Additionally, AZ Solar 1 would develop an emergency response plan for operations and maintenance of the facility.

2.6.4 Decommissioning

2.6.4.1 WAPA

WAPA would re-evaluate the need for the project-related transmission line upgrades if the solar facility is decommissioned in 30 years. If WAPA determines that they are no longer needed, WAPA would remove the poles and aerial connections. Materials that could not be recycled would be disposed of at an approved landfill. WAPA would restore disturbed areas to preconstruction condition where feasible and follow the conditions of the BLM ROW.

2.6.4.2 AZ SOLAR 1

The solar facility has an estimated lifespan of 30 years. At the end of the facility lifespan, AZ Solar 1 may choose to seek to update the solar facility under a new PPA. If AZ Solar 1 determines that the facilities are no longer needed, AZ Solar 1 would remove all structures and facilities, including foundations, and allow vegetation to reestablish itself. Property boundary fencing would likely remain, as well as internal roads to allow continued access through the site.

2.6.5 Conservation Measures

Conservation measures specific to AZ Solar 1’s facilities are presented in Appendix B and are considered part of the actions. WAPA’s Construction Standards would also be implemented as part of the Proposed Action (WAPA 2016).

2.7 No Action Alternative

The No Action Alternative provides a baseline against which the impacts of the Proposed Action can be compared. Under the No Action Alternative:

- WAPA would not approve an interconnection request, would not enter into an interconnection agreement, and would not implement project-related transmission system upgrades, additions, or configurations;
- BLM would not issue ROWs to Reclamation or AZ Solar 1; and
- AZ Solar 1 would not develop the private property for Solar Fields 1 and 2, including the battery storage system.

2.8 Alternatives Considered but Not Further Evaluated

Prior to submitting the interconnection request, AZ Solar 1 considered multiple factors in the evaluation of potential project locations, including proximity to the Little Harquahala to Harcuvar 115-kV Transmission Line, contiguous parcel(s) of private lands suitable for solar resource development and with low resource value, proximity to existing transportation and utility infrastructure, and proximity to developed areas to minimize materials transportation and workforce commute. Based on these and other development factors, AZ Solar 1 acquired the proposed 480-acre parcel for development in December 2018.

WAPA considered constructing a substation containing a breaker located at the interconnection point during the system impact study. However, the study results showed that WAPA could maintain reliable and safe transmission service by erecting a tap, which is cheaper and requires less land than a substation.

2.9 Past, Present, and Reasonably Foreseeable Future Actions

WAPA developed a list of past, present, and reasonably foreseeable future actions that, when combined with impacts from the Proposed Action, would have a potential for impacts resulting in cumulative effects (Table 2.9-1). Because planned projects are not always carried to completion, the window for future reasonably foreseeable projects was projected only for those projects anticipated to have on-site impacts within 10 years.

Table 2.9-1. Past, Present, and Reasonably Foreseeable Future Action

Project Name / Agency	Project Description	Status/Schedule	Project Location
Herbicide Application at 51 Substations located in Arizona, California, and Nevada, 2015–2016 (Categorical Exclusion) / WAPA	Herbicide application	Approved in 2015 / Completed in 2016	51 substations in Arizona (including Harcuvar Substation in La Paz County), California, and Nevada
CAP Rate Increase / WAPA (Categorical Exclusion) / WAPA	Adjustment to the CAP transmission rates for specific transmission services on CAP 115/230-kV transmission lines	Approved in 2015 / Effective 2016 through 2020	CAP 115/230-kV transmission system

Project Name / Agency	Project Description	Status/Schedule	Project Location
Bouse Hills Pumping Plant to Harcuvar 115-kV Transmission Line, Inset Structure Installation (Categorical Exclusion) / WAPA	Maintenance to correct conductor clearance issues. A wooden H-frame structure installed between structures 22-7 and 23-1 to raise the conductor height. Included repair/grading of existing service access road to allow for safe passage of equipment.	Approved and completed in 2015	Bouse Hills Pumping Plant to Harcuvar 115-kV Transmission Line
Liberty Parker No. 1 Transmission Line Ownership Transfer to WAPA (Categorical Exclusion) / WAPA	Transfer of Liberty-Parker No. 1 230-kV Transmission Line from Reclamation to WAPA	Approved and completed in 2016	Liberty Parker No. 1 230-kV Transmission Line
Herbicide Application at 11 Substations located in Arizona and Nevada, 2016–2017 (Categorical Exclusion) / WAPA	Herbicide application	Approved in 2016 / Completed in 2017	11 substations in Arizona (including Harcuvar Substation in La Paz County) and Nevada
Herbicide Application at 11 Substations located in Arizona and Nevada, 2017–2018 (Categorical Exclusion) / WAPA	Herbicide application	Approved in 2017 / Completed in 2018	11 substations in Arizona (including Harcuvar Substation in La Paz County) and Nevada
Hazard Vegetation Removal along CAP and Colorado River Storage Project Power System Transmission Lines in February 2018 (Categorical Exclusion) / WAPA	Hazard vegetation removal	Approved and completed in 2018	CAP and Colorado River Storage Project Power System Transmission Lines in La Paz, Maricopa, Mohave, Pinal, and Yavapai Counties, Arizona
Harcuvar – Little Harquahala Pump Plant and Harcuvar – Bouse Hills Pump Plant; Access Road, Pad, Static/Guy Wire Repairs, and Cross-Arm Replacement (Categorical Exclusion) / WAPA	Routine maintenance of access roads, pads, static/guy wires, and cross-arms	Approved and completed in 2018	Harcuvar – Little Harquahala Pump Plant and Harcuvar – Bouse Hills Pump Plant segments
Harcuvar to Little Harquahala Pump Transmission Line, Urgent Structure Repairs (9/4, 14/4, and 18/3) (Categorical Exclusion) / WAPA	Urgent repairs to three structures (9/4, 14/4, and 18/3)	Approved and completed in 2018	Harcuvar to Little Harquahala Pump Transmission Line
Parker-Davis Transmission System Routine Operation and Maintenance Project and Proposed Integrated Vegetation Management Program (Environmental Assessment) / WAPA	WAPA conducts routine operations and maintenance and implements an integrated vegetation management program on the Parker-Davis Transmission System.	Approved in 2015 / Ongoing	Parker-Davis Transmission System within legal ROWs on existing transmission line and access roads, as well as at substations, communication sites, and maintenance facilities associated with the system
WAPA Routine Transmission Facility Inspections / WAPA	WAPA conducts aerial inspections of transmission facilities via helicopter	Ongoing / 4 times a year	Harcuvar Substation; Little Harquahala Pumping Plant Substation; Harcuvar – Little Harquahala Pumping Plant 115-kV Transmission Line; Harcuvar – Bouse Hill Pumping Plant 115-kV Transmission Line; Parker Liberty #1 230-kV Transmission Line; Parker Liberty #2 230-kV Transmission Line

Project Name / Agency	Project Description	Status/Schedule	Project Location
AZA 37423 The Exchange Group LLC Assignment (Categorical Exclusion) / BLM	Proposal to assign the irrigation water well and a V-shaped ditch ROW to The Exchange Group, LLC	Approved in 2018	9 miles southeast of Salome, Arizona
K Lazy B Range Improvement Project Camp Well (Environmental Assessment) / BLM	Proposal from the K Lazy B Allotment Permittee requesting the authorization to construct a new water well with a storage tank on public lands	Draft Environmental Assessment published in December 2018 / Proposed Decision Issued February 2019	9 miles southeast of Salome, Arizona
Bouse and Cactus Plain Travel Management Areas (TMAs) (Environmental Assessment) / BLM	Travel Management Plan for the travel routes and route uses in the Bouse and Cactus Plain TMAs	Draft Environmental Assessment published for Bouse and Cactus Plains TMAs in July 2018 / Combined with Wenden and Alamo TMAs in 2018 / Analysis ongoing	BLM-managed lands in the analysis area
Ten West Link Transmission Line (EIS) / BLM	Proposed 500-kV transmission line that would connect existing substations near Tonopah, Arizona, and Blythe, California	Draft EIS published in August 2018 / Analysis ongoing, Final EIS expected March 2019	Various alternatives routes are located south of project along the Interstate 10 corridor and other utility corridors
Past/Present Livestock Grazing on BLM Lands / BLM	Livestock grazing operations	Ongoing	BLM lands in the Salome area
Past/Present Dispersed Recreation including Off-Highway Vehicle (OHV) Travel on BLM-lands / BLM	Dispersed recreation, including OHV travel	Ongoing	BLM lands in the Salome area
Past/Present Farming in the McMullen Valley / Private Landowners	Irrigated agricultural lands	Large-scale development began in the 1940s and 1950s / Ongoing	Private lands in the McMullen Valley; approximately 14,600 acres were farmed in 2007
Post-Navajo Generating Station Power Strategy / CAP	Each year CAP reserves a portion of the output from the U.S. share of Navajo Generating Station (NGS) to serve CAP pump loads. In February 2017, the utility owners of the NGS announced that they did not intend to operate the plant after 2019.	2015 / Ongoing	CAP facilities across Arizona
Mountain View RV Resort / Private Developer / La Paz County	Proposed RV resort on approximately 150 acres of private lands	Tentative plat approved by La Paz County in July 2018 / Development may occur within 5 years	Private lands within 1 mile north of the project area on Hall Avenue
U.S. 60 Wenden to Aguila / Centennial Wash to Aguila Project / ADOT	Roadway and bridge improvements along a 23-mile stretch of U.S. 60 between the communities of Wenden and Aguila, Arizona	Construction started in December 2018 and would last approximately 12 months	7 miles east of the project area on U.S. 60

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter describes the affected environment and the environmental impacts of the Proposed Action and No Action Alternatives on the resources identified for analysis. The resource issues addressed in this EA were developed using comments received from the public, tribes, and agencies during internal and external scoping (see Table 3.1-1). Resource issues considered but dismissed from further analysis are described in Section 3.3.

Table 3.1-1. Resource Issues Carried Forward for Analysis

Issue Topic	Analysis Issues
Air Quality	<ul style="list-style-type: none"> Fugitive dust emissions Other vehicle and equipment emissions Impacts to air quality standards
Biological Resources, including vegetation and special status species	<ul style="list-style-type: none"> Vegetation loss Impacts to special status species and habitat Impacts to avian species, including migratory birds
Groundwater	<ul style="list-style-type: none"> Impacts to groundwater quantity from project groundwater use Impacts to groundwater quality from project-related sources of groundwater pollutants
Historic and Tribal Resources	<ul style="list-style-type: none"> Impacts to historic properties Impacts to tribal resources
Noise	<ul style="list-style-type: none"> Impacts to sensitive receptors from construction and operations noise
Public Health and Safety	<ul style="list-style-type: none"> Potential for health effects to sensitive populations from fugitive dust and other air emissions Potential for public exposure to hazardous materials, including solar panels and the battery storage systems
Public Land Access	<ul style="list-style-type: none"> Impacts to public use of the spur access road from Hall Avenue Impacts to public land access via the transmission line maintenance road Impacts to public land access across the private parcel
Transportation	<ul style="list-style-type: none"> Construction and operations traffic on area roads, including Hall Avenue and U.S. 60 Impact to local school bus routes and railroad crossings
Socioeconomics	<ul style="list-style-type: none"> Impacts to area employment and housing Impacts to property values Tax benefits to area
Visual Resources	<ul style="list-style-type: none"> Impacts to residential areas in the vicinity of the project, including Harcuvar and Salome areas Impacts to views from Granite Wash Pass along U.S. 60

3.2 Impact Analysis Methodology

The affected environment for each resource consists of the physical area that bounds the environmental, economic, or cultural resources of interest that would likely be impacted by the alternatives. The affected environment is described for each resource analyzed based on primary and secondary data sources, and for some resources, field observations. The affected environment also serves as the baseline from which to evaluate likely changes, or impacts resulting from the Proposed Action and No Action Alternatives.

Environmental consequences, or impacts, were defined as modifications to the affected environment brought about by implementing the Proposed Action or the No Action Alternative. Impacts can be beneficial or adverse, result from the action directly or indirectly, can be temporary, long-term, permanent, or cumulative in nature, and described in intensity as negligible, minor, moderate, and major. The impact terminology used throughout this analysis are defined in Table 3.2-1. The impact analysis was conducted on either a quantitative or qualitative basis, depending on available data or the nature of the impact, and the severity of impact is established in the context of the affected environment. A direct and indirect analysis area is provided for each resource in the sections below.

To determine cumulative effects that would result from implementing the Proposed Action and No Action Alternatives, WAPA reviewed the known past, present, and reasonably foreseeable future proposed projects in the vicinity of the project area (see Table 2.9-1) and considered their temporary and long-term incremental effects on the local environment. The geographic analysis area considered for cumulative effects varies by resource issue.

The impacts of implementing the Proposed Action (WAPA’s actions and AZ Solar 1’s actions) are presented in total, followed by separate presentation of impacts specific to each element of the Proposed Action. It is assumed for this analysis that AZ Solar 1 would construct both Solar Field 1 and Solar Field 2, including the battery storage system; therefore, total construction, operations and maintenance, and decommissioning impacts would be representative of the full build-out of the AZ Solar 1 facility.

Table 3.2-1. Impact Analysis Terminology

Impact Category	Terminology	Definition
Type	Beneficial	A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
	Adverse	A negative change that moves the resource away from a desired condition or detracts from its appearance or condition.
	Direct	An effect on a resource which is caused by the action and occurs at a particular time and place.
	Indirect	An effect on a resource which is caused by the action and is later in time or farther removed in distance, but is still reasonably foreseeable.
	Cumulative	Impacts to resources which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.
Duration	Short-term / Temporary	Impact occurring during the construction period (4–6 months) or for a limited time thereafter (generally less than 1 or 2 years).
	Long-term / Permanent	Impact lasts beyond the construction period, and the resources may not regain their pre-construction conditions for a longer period of time.
Intensity	Negligible	Impact at the lowest levels of detection with barely measurable consequences.
	Minor	Impact is measurable or perceptible, with little loss of resource integrity and changes are small, localized, and of little consequence.
	Moderate	Impact is measurable and perceptible and would alter the resource but not modify overall resource integrity, or the impact could be mitigated successfully in the short term.
	Major	Impacts would be substantial, highly noticeable, and long term.

3.3 Resources Considered but not Further Evaluated

Resource issues dismissed from further evaluation—either because they are not present in the project area or because no measurable impacts would occur—are described briefly in Table 3.3-1.

Table 3.3-1. Resource Issues Dismissed from Further Evaluation

Issue Topic	Rationale for Dismissal
Agriculture / Prime and Unique Farmlands	No active farming occurs in the project area and soils in the project area are not designated prime or unique farmland (Natural Resources Conservation Service 2019). Active farming does occur in the vicinity of the project area off Hall Avenue; traffic impacts to Hall Avenue are discussed in Section 3.11.
Climate Change	Climate change is a global issue that results from several factors, including, but not limited to, the release of greenhouse gases (GHGs), land use management practices, and the albedo effect, or reflectivity of various surfaces (including reflectivity of clouds). Specific to the proposed project, GHGs are produced and emitted by various sources during the development and operational phases of transmission lines and utility-scale solar facilities. The primary sources of GHGs associated with transmission lines and substations are carbon dioxide (CO ₂), methane (CH ₄), and nitrous oxide (N ₂ O) from fuel combustion in construction and maintenance vehicles and equipment, as well as operational emissions of sulfur hexafluoride (SF ₆) associated with potential leakage from gas-insulated circuit breakers at the substation. Construction of the project would result in temporary activity and minor levels of GHG emissions that would cease after the construction period. During operations, periodic operations and maintenance would generate negligible GHG emissions. Overall emissions from construction and operation of the project would be minimal in comparison to global GHG emissions. The addition of up to 60 MW of renewable energy that would be developed as part of this project would result in an overall net benefit to GHG emissions, because no fuel is burned, and no air emissions are produced in the process of generating electricity from photovoltaic sources. Furthermore, this fossil fuel-less energy generation means there are also no GHG emissions due to the extraction of fossil fuel. In addition, equipment (switches and reclosers) containing sulfur hexafluoride (SF ₆) are not planned for this project.
Indian Trust Assets	Indian Trust Assets are legal assets associated with rights or property held in trust by the United States for the benefit of federally recognized Indian Tribes or individual tribal members. The United States, as trustee, protects and maintains the specific rights reserved by, or granted to, Indian Tribes or individuals by treaties, statutes, and executive orders. There are no known Indian Trust Assets within the project area, therefore the project would result in no adverse effects to any Indian Trust Asset.
Livestock Grazing / Rangeland Health / Wild Horses and Burros	Grazing occurs on BLM lands in the vicinity of the project area and there is evidence of grazing activity on the adjacent unfenced private property. Wild horses and burros may be present in the vicinity of the project area. The Little Harquahala Mountains Herd Management Area is located on BLM lands south of U.S. 60, approximately 1 mile from the project area. During construction and operation, livestock and wild horses and burros would be temporarily displaced from the BLM lands in project area; they would be expected to disperse onto adjacent public rangelands. As there are large areas of BLM lands to the north and west of the project area that would provide similar grazing conditions as within the project area, impacts would be temporary and negligible. The 480 acres is privately owned and not currently grazed; therefore, the development of the parcel would not have an adverse impact on livestock/wild horses and burros.
Invasive and Noxious Weeds	Some invasive and/or noxious weeds are present in previously disturbed areas, including along existing roads and drainages (see Section 3.5). Vegetation would be cleared prior to construction as described in Chapter 2. Ground-disturbing activities can create conditions that could increase the potential for introduction and/or establishment of nonnative plants. However, because WAPA and AZ Solar 1 would comply with all federal, state, and local weed control regulations, including the project conservation measures listed in Appendix B, the potential for spread of invasive and/or noxious weeds would be very low.
Geology and Mineral Resources	There are no geologic or mineral resources within the project area, therefore the project would result in no adverse effects to these resources.
Intentional Destructive Acts	The project presents an unlikely target for an act of terrorism or sabotage, with an extremely low probability of attack.
Special Management Areas, including Wilderness and Areas of Critical Environmental Concern	The nearest Wilderness and BLM Area of Critical Environmental Concern is located over 12 miles east of the project area, south of U.S. 60. There are no special designation areas in the project area or vicinity; therefore, the project would not impact special management areas.
Recreation	Recreation opportunities exist on BLM lands in the vicinity of the project area. No formal recreation opportunities exist on the private property. Access to BLM lands for recreation includes the transmission line access road and physical access across the private property where the solar facility would be developed. The project would not impact recreational opportunities in the vicinity of the project area; however, recreational access would be affected. Public land access impacts are discussed in Section 3.10 of this EA.

Issue Topic	Rationale for Dismissal
Environmental Justice	Low-income and minority populations are present within the vicinity of the project area (EPA 2019b); however, because the project would not result in significant adverse and unavoidable environmental impacts, no adverse impacts would disproportionately burden minority or low-income populations.
Land Use	No land use conflicts were identified for the project. As described in Section 1.3.1, the interconnection would occur within an existing designated utility corridor on BLM land. The solar facility would be located entirely on private lands under the jurisdiction of La Paz County (see Chapter 5). The project requires a Conditional Use Permit from the County and will follow all CUP terms and conditions.
Military and Civilian Aviation	Of primary concern for military and civilian aviation in the vicinity of the project area is the potential for glare from the PV solar array. An analysis of the AZ Solar 1 facility's glare potential was completed using the ForgeSolar Solar Glare Hazard Analysis Tool (SWCA Environmental Consultants 2018a). The tool meets Federal Aviation Administration glare analysis requirements (49 USC 471) and was developed in cooperation with the DOE. The tool is designed to determine whether a proposed solar energy project would result in the potential for ocular impact (i.e., retinal damage or burn), and whether the project demonstrates compliance with the standards for federally obligated airports. The tool indicates low potential for glare to result from the project on the identified route receptors and flight approach paths (Western Sky Airpark and Indian Hills Airpark).
Wildlife, excluding special status species	General wildlife (e.g., lizards, coyote, rabbits) in the project area and vicinity would be minimally impacted by construction and operation of the project, similar to those impacts described for special status species in Section 3.5. Similar habitat types occur in abundance on the undeveloped public lands to the north and west of the project area and wildlife would continue to be able to use these areas during and after construction of the project.
Surface Waters, including floodplains and wetlands	There are no floodplains or wetlands in the project area (Federal Emergency Management Agency [FEMA] 2019; USFWS 2019). There are several ephemeral washes on the private land that would be impacted during construction and operation of the facility, including from the solar panel layout, a permanent road crossing, and several temporary roads and underground collection trenches. AZ Solar 1 requested a Preliminary Jurisdictional Determination (PJD) from the U.S. Army Corps of Engineers, for washes in the project area. Total impacts to jurisdictional washes would be less than 0.50 acre. AZ Solar 1 would obtain a Section 404 Nationwide Permit 51 for Land-Based Renewable Energy for impacts to jurisdictional waters (see Table 5-1). AZ Solar 1 would implement conservation measures for stormwater and erosion control as part of the project SWPPP. Additionally, the AZ Solar 1 facility would be designed such that a buffer of "no disturbance" would be left in place around the remaining washes in the project area as depicted on Figure 2-2, thus protecting stormwater flows from leaving the site.
Soils	Impacts to soils in the project area, including soil compaction and soil erosion by wind and water, would occur from construction and operation of the project. Soil resources conservation measures to minimize impacts to soils, including those for stormwater, erosion, and fugitive dust control, would be implemented as part of the project conservation measures (see Appendix B) and project SWPPP.
Fire and Fuels Management	Vegetation under the solar panels would be cleared to reduce wildfire hazard at the solar facility. Conservation measures and emergency preparedness measures would be implemented during construction and operation to reduce fire potential (see Appendix B).

3.4 Air Quality

This section analyzes impacts of the Proposed Action and No Action Alternative on the air quality issues identified during scoping, including air pollutant emissions from vehicles and equipment, and fugitive dust. Air pollutants tend to disperse into the atmosphere, becoming more spread out as they travel away from a source of pollution, and therefore cannot be confined within defined boundaries, such as the boundary of the project area or county lines. Because of the nature of air pollutants, the air quality analysis area for direct and indirect effects extends 5 kilometers (3.1 miles) in all directions beyond the project boundaries.

3.4.1 Affected Environment

National Ambient Air Quality Standards (NAAQS) are set by the U.S. Environmental Protection Agency (EPA) Office of Air Quality Planning and Standards. Ambient air quality standards define the allowable concentrations of criteria pollutants in ambient air. The EPA has set air quality standards for the following criteria pollutants: nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), particulate matter smaller than 10 microns in aerodynamic diameter (PM₁₀), particulate matter smaller than 2.5 microns in aerodynamic diameter (PM_{2.5}), ozone (O₃), and lead (Pb). The NAAQS are provided in Table 3.4-1. The State of Arizona has incorporated the NAAQS by reference and does not have any additional ambient air quality standards.

The EPA assigns classifications to geographic areas based on monitored ambient air quality. Attainment is achieved when the existing background concentrations for criteria air pollutants are less than the NAAQS. As of January 22, 2019, the EPA designates La Paz County as in attainment or unclassified for all criteria pollutants, meaning that the air in La Paz County meets the NAAQS (EPA 2019a).

Table 3.4-1. National Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standards	Secondary Standards
CO	1 hour ^a	35 ppm	--
	8 hour ^a	9 ppm	--
Pb	3 months (rolling) ^b	0.15 µg/m ³	Same as primary
NO ₂	Annual ^c	0.053 ppm	Same as primary
	1 hour ^d	0.100 ppm	--
O ₃	1 hour ^a	--	--
	8 hour ^e	0.07 ppm	Same as primary
PM ₁₀	24 hour ^f	150 µg/m ³	Same as primary
PM _{2.5}	24 hour ^g	35 µg/m ³	Same as primary
	Annual ^h	12 µg/m ³	15 µg/m ³
SO ₂	1 hour ⁱ	0.075 ppm	--
	3 hour ^j	--	0.5 ppm

Source: EPA (2019c)

Notes:

µg/m³: micrograms per cubic meter.

ppm: parts per million.

ppb: parts per billion.

^a Not to be exceeded more than once per year.

^b Not to be exceeded.

^c Annual mean.

^d The 3-year average of the 98th percentile of the daily maximum 1-hour average must not exceed this standard.

^e The 3-year average of the 4th highest daily maximum 8-hour average O₃ concentration measured at each monitor within an area over each year must not exceed this standard.

^f Not to be exceeded more than once per year on average over 3 years.

^g The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed this standard.

^h The 3-year average of the annual arithmetic mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed this standard.

ⁱ The 3-year average of the annual 99th percentile of the 1-hour daily maximum must not exceed this standard.

^j Not to be exceeded more than once per year.

The National Emissions Inventory is a detailed annual estimate of criterial pollutants and hazardous air pollutants (HAPs) from air emission sources. Emission inventories provide an overview of the types of pollution sources in the area, as well as the amount of pollution being emitted on an annual basis. Emission inventories are useful in comparing emission source categories to determine which industries or practices are contributing to the general level of pollution in an area. The emissions inventory includes

estimates of emissions from many sources, including point sources (facilities such as power plants, airports, and commercial sources), nonpoint sources (such as asphalt paving, solvent use, and residential heating), on-road vehicles, non-road sources (such as construction equipment, lawn and garden equipment, trains, barges, ships, and other marine vessels), and event sources (such as wildfires). This inventory is a good estimate of how much each county and state is contributing to air pollution for a given year. Table 3.4-2 summarizes the emission inventory data for criteria pollutants and HAPs for La Paz County from the most recent National Emissions Inventory, which was conducted in 2014.

Table 3.4-2. 2014 Emissions Inventory in Tons per Year for La Paz County, Criteria Pollutants and HAPs

Source	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	VOC	HAPs
Agriculture	0	0	0	2,851	571	24	6
Biogenics*	25,947	644	0	0	0	113,152	21,336
Dust	0	0	0	2,601	284	0	0
Fires	353	9	3	47	37	63	18
Fuel combustion	80	77	2	15	13	14	2
Industrial processes	0	0	0	312	39	9	1
Miscellaneous†	17	0	0	9	8	648	73
Mobile	11,684	3,626	8	141	114	1,482	431
Waste disposal	121	6	1	30	24	22	7
Total	38,202	4,362	14	6,006	1,090	115,414	21,874

Source: EPA (2014)

Note: NO_x = nitrogen oxides; SO_x = sulfur oxides; VOC = volatile organic compound

* Biogenic emissions are those emissions derived from natural processes (such as vegetation and soil).

† Miscellaneous categories include bulk gasoline terminals, commercial cooking, gas stations, miscellaneous non-industrial (not elsewhere classified), and solvent use.

3.4.2 Environmental Consequences

3.4.2.1 METHODOLOGY AND ASSUMPTIONS

Impacts to air quality are discussed in terms of project emissions of criteria air pollutants and HAPs. Regulated pollutant emissions from the construction and operation of the Proposed Action have been estimated to characterize the potential emission increases. These emissions estimates are compared to La Paz County's emissions inventory as a percentage of the county's annual emissions.

WAPA used the emission factors for construction and maintenance equipment that were developed for California's South Coast Air Quality Management District to calculate construction worker commute and on-road construction equipment emissions (South Coast Air Quality Management District 2007a, 2007b). For off-road equipment, the appropriate emission factor, equipment type, quantity of equipment needed, and duration of use during construction of the Proposed Action were used in determining emissions from construction equipment. The estimated maximum number of construction workers (see Chapter 2) were assumed to commute from within La Paz County, up to 60 miles (one-way) to the project area. It was estimated that approximately 90 total trips would be required for the transmission interconnect and 312 total trips would be required for Solar Field 1 to deliver all of the material and off-road equipment. The material and equipment for the transmission interconnect and AZ Solar 1 were assumed to be sourced from Phoenix, Arizona, 100 miles from the project site; however, materials and equipment may ultimately come from sources closer to the project area.

The estimates of PM₁₀ and PM_{2.5} project emissions include emissions from on-road vehicles, off-road equipment exhaust, and fugitive dust. PM₁₀ and PM_{2.5} emissions from fugitive dust generated by earthmoving activities were estimated using the Western Regional Air Partnership’s Fugitive Dust Handbook (2006). The estimated emission calculations account for the Proposed Action’s dust control methods, including using water during construction to control fugitive dust.

3.4.2.2 NO ACTION

Under the No Action Alternative, the Proposed Action would not be developed and there would be no project-related emissions; therefore, there would be no impacts to air quality in the analysis area.

3.4.2.3 PROPOSED ACTION

The total emission estimates from the Proposed Action presented below is broken out into two components: the WAPA transmission interconnect and the Arizona Solar 1 facility. Appendix C provides a detailed breakdown of the WAPA’s and AZ Solar 1’s emissions by their construction and operations sources.

During construction, the Proposed Action would create short-term air pollutant emissions from equipment exhaust, vehicle exhaust from travel to and from the project site, and fugitive dust from soil disturbance. Table 3.4-3 presents the estimated total emissions that would occur from construction of the Proposed Action. The highest criteria pollutant emissions produced by construction of the Proposed Action are CO, nitrogen oxides (NO_x), and PM₁₀. The projected emission estimate for each pollutant from the construction of the Proposed Action is negligible in comparison to the county’s annual emissions (increase of 0.39% or less for each pollutant). Emissions from the 4- to 6-month-long construction period for the Proposed Action would be temporary and transient in nature. Construction of the Proposed Action is therefore not expected to cause an exceedance of the NAAQS.

Table 3.4-3. Estimated Proposed Action Construction Emissions in Tons per Year, Criteria Pollutants and HAPs

Project Component	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	VOC	HAPs
WAPA Transmission Interconnect	0.23	0.18	< 0.01	0.11	0.02	0.03	< 0.01
AZ Solar 1, Solar Field 1*	14.78	6.02	0.04	23.04	2.95	2.05	0.20
Total	15.01	6.20	0.04	23.15	2.97	2.08	0.20
La Paz County Emissions Inventory Total	38,202	4,362	14	6,006	1,090	115,414	21,874
Proposed Action’s Construction Emissions Increase as a Percent of La Paz County Emissions Inventory Total	+ 0.04%	+ 0.14%	+ 0.26%	+ 0.39%	+0.27%	+ < 0.01%	+ < 0.01%

Source: EPA (2014)

Note: SO_x = sulfur oxides; VOC = volatile organic compound.

* Construction of Solar Field 2 would result in similar levels of emissions as Solar Field 1. Because Solar Fields 1 and 2 would not be constructed at the same time, their construction emissions would not be combined.

Operations-related emissions from the Proposed Action are summarized in Table 3.4-4 and include: emissions from inspection activities such as exhaust from on-road inspection vehicles and fugitive dust from travel on paved and unpaved roads; and emissions from maintenance activities including exhaust from worker vehicles and any needed construction equipment as well as fugitive dust from travel on paved and unpaved roads. Operations and maintenance emissions would include vehicle exhaust from weekly travel to the AZ Solar 1 facility for routine inspections and maintenance activities including panel washing, inspections of the transmission interconnect four times per year, routine maintenance as needed,

and any equipment or road repairs. Impacts on air quality from operation of the Proposed Action would be negligible (increase of less than 0.01% for each pollutant). Therefore, operation of the Proposed Action would not cause an exceedance of the NAAQS.

Table 3.4-4. Estimated Proposed Action Operational Emissions in Tons per Year, Criteria Pollutants and HAPs

Project Component	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	VOC	HAPs
WAPA Transmission Interconnect	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
AZ Solar 1 Facility	0.05	0.01	< 0.01	0.22	0.02	< 0.01	< 0.01
Total	0.05	0.01	< 0.01	0.22	0.03	< 0.01	< 0.01
La Paz County Emissions Inventory Total	38,202	4,362	14	6,006	1,090	115,414	21,874
Proposed Action's Operations Emissions Increase as a Percent of La Paz County Emissions Inventory Total	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%

Source: EPA (2014)

Note: SO_x = sulfur oxides; VOC = volatile organic compound.

WAPA

During construction, WAPA would create temporary air pollutant emissions from equipment exhaust, vehicle exhaust from travel to and from the project site, and fugitive dust from soil disturbance. Table 3.4-3 presents the estimated total emissions that would occur from construction of the transmission interconnection. The highest criteria pollutant emissions produced by construction of WAPA's interconnection facilities are CO, NO_x, and PM₁₀. The greatest contributor to these pollutants is the exhaust emissions from on-road construction equipment and worker commuting. WAPA would increase La Paz County's annual emissions inventory by less than 0.01% for each pollutant. The projected emission estimate for each pollutant from the construction of the transmission interconnect is negligible in comparison to the county's annual emissions. Emissions from the 45-day construction period would be temporary and transient in nature and would have negligible impacts on air quality. Construction of the WAPA transmission interconnect is therefore not expected to cause an exceedance of the NAAQS.

During operations, WAPA would create emissions from inspection activities such as exhaust from on-road inspection vehicles and fugitive dust from travel on paved and unpaved roads. Emissions from operations and maintenance would increase La Paz County's annual emissions inventory by less than 0.01% for each pollutant. Impact on air quality from operation of the transmission interconnect is negligible. Therefore, operation of the transmission interconnect would not cause an exceedance of the NAAQS.

During decommissioning, WAPA would create the same or less emissions as during construction; therefore, impacts to air quality from decommissioning the transmission interconnect would be less than or equal to the construction impacts.

AZ Solar 1

During construction, AZ Solar 1 would create temporary air pollutant emissions from equipment exhaust, vehicle exhaust from travel to and from the project site, and fugitive dust from soil disturbance. The highest pollutant emissions produced by construction are CO, NO_x, and PM₁₀. Contributors to these pollutants include the exhaust emissions from on-road construction equipment and worker commuting,

and fugitive dust. The emissions due to Solar Field 1 construction would increase La Paz County's annual emissions inventory by 0.38% or less for each pollutant. These construction emissions would be temporary (4–6 months) and transient in nature. Construction of Solar Field 2 would occur up to 5 years after Solar Field 1 and would result in similar level of emissions because similar construction activities would occur. Since Solar Field 2 would not be constructed at the same time as Solar Field 1, Solar Field 2 construction emissions would not be combined with the construction emissions for Solar Field 1. The overall projected emission estimate for each pollutant from the construction of the AZ Solar 1 facility is small in comparison to the county's annual emissions and would have minor effects on air quality and would not cause an exceedance of the NAAQS.

Operations-related emissions include emissions from weekly inspection activities, such as exhaust from on-road inspection vehicles and fugitive dust from travel on paved and unpaved roads, and emissions from maintenance activities, such as panel washing and equipment and road repairs. AZ Solar 1 operations and maintenance emission would increase La Paz County's annual emissions inventory by less than 0.01% for each pollutant. Impact on air quality from operation of the AZ Solar 1 Facility would be negligible and would not cause an exceedance of the NAAQS.

Decommissioning would not involve any more time or equipment than construction; therefore, impacts to air quality from decommissioning would be less than or equal to the construction impacts.

Cumulative Impacts

The analysis area for cumulative effects was expanded to 15 miles around the project area to account for a wider scope of regional air quality impacts that could cumulatively overlap with the Proposed Action. Cumulative effects to air quality from the cumulative actions listed in Table 2.9-1 would occur as a result of emissions from construction of the U.S. 60 Wenden to Aguila/Centennial Wash to Aguila Project and the potentially overlapping construction of the Mountain View RV Resort project. During construction, these projects would result in emissions from equipment exhaust, vehicle exhaust, and fugitive dust. Additionally, operations activities associated with transmission system maintenance would also result in emissions from the same sources (equipment, vehicles, and fugitive dust). These types of activities would be expected to have minimal emissions relative to existing county-level emissions inventory. Cumulatively, the long-term impact to air quality would be negligible.

3.5 Biological Resources

This section analyzes impacts of the Proposed Action and No Action Alternative on the biological resource issues identified during scoping, including impacts to general vegetation and special status plants and animals, such as migratory birds. Additional information is considered in the Biological Evaluation (Appendix D).

WAPA studied a 5-mile radius around the project area for direct, indirect, and cumulative impacts to biological resources. This analysis area provides context for potential impacts, and matches the occurrence records for special status species in the 2018 Arizona Heritage Geographic Information System (AZHGIS). Site visits documented habitat conditions within and in the vicinity of the project area, and a description of conditions specific to the project area is included in Appendix D. These conditions were used to determine the habitat present, and if habitats present could support listed threatened, endangered, and/or special status species.

3.5.1 Affected Environment

3.5.1.1 VEGETATION

The vegetation observed within the analysis area has been affected by past and current land use practices, such as livestock grazing, agriculture, transmission lines, mining, and commercial and residential development. Roads within the analysis area also affect the existing vegetation both directly and indirectly, through direct disturbance and degradation of adjacent areas (often via the spread of nonnative species). Vegetation within the project area is largely undisturbed, similar to the vegetation located to the north and west of the project area. Vegetation to the east and south has been disturbed by residential and commercial development.

The analysis area contains the Arizona Upland and Lower Colorado River subdivisions of the Sonoran Desertscrub biotic community, at elevations ranging between approximately 1,800 and 2,500 feet above mean sea level (Brown 1994). The Southwest Regional Gap Analysis Project was used to identify more specific vegetation communities in the analysis area and project area, which are described in Table 3.5-1 and shown in Figure 3-1 (Lowry et al. 2005).

The project area contains 445 acres of the Sonora-Mojave Creosotebush-White Bursage Desert Scrub and 37.5 acres of the Sonoran Paloverde-Mixed Cacti Desert Shrub vegetation communities (Figure 3-2). During site visits to the project area (on July 24, 2018, and January 18, 2019) dominant vegetation observed included creosote bush (*Larrea tridentata*) and triangle leaf bursage (*Ambrosia deltoidea*), with large areas of desert pavement. There are multiple ephemeral drainages located within the project area, containing typical native xeroriparian species such as velvet mesquite (*Prosopis velutina*), yellow paloverde (*Parkinsonia microphylla*), catclaw acacia (*Senegalia greggii*), and wolfberry (*Lycium* sp.). Existing disturbance in the project area is limited to some evidence of off-highway vehicle (OHV) use (faint two-track roads are present within the project area) and evidence of the presence of cattle. The only nonnative species observed within the project area is red brome (*Bromus rubens*), notably along Hall Avenue.

Table 3.5-1. Vegetation Communities within the Analysis Area and Project Area

Vegetation Community	Description	Analysis Area (acres)	Percent of the Analysis Area	Project Area (acres)	Percent of the Project Area
Sonoran Paloverde-Mixed Cacti Desert Scrub	Occurs on hillsides, mesas, and upper bajadas, characterized by a sparse emergent layer of saguaro (<i>Carnegiea gigantea</i>) and/or codominated by creosote bush (<i>Larrea tridentata</i>) and yellow palo verde (<i>Parkinsonia microphylla</i>) and less-abundant species such as ocotillo (<i>Fouquieria splendens</i>), desert ironwood (<i>Olneya tesota</i>), and mesquite (<i>Prosopis</i> spp.). Other shrubs may include white bursage (<i>Ambrosia dumosa</i>), barrel cacti (<i>Ferocactus</i> sp.), chollas (<i>Cylindropuntia</i> spp.), and brittlebush (<i>Encelia farinosa</i>).	42,219	69%	37.5	8%
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	Forming the vegetation matrix in broad valleys, lower bajadas, plains and low hills, dominated by creosote bush and white bursage. Other species may be present and can include fourwing saltbush (<i>Atriplex canescens</i>), brittlebush, white ratany (<i>Krameria grayi</i>), big galleta (<i>Pleuraphis rigida</i>), Nevada jointfir (<i>Ephedra nevadensis</i>), ocotillo, and desert-thorn (<i>Lycium</i> sp.). Larger shrubs are generally sparse, but annuals are seasonally abundant and dependent on rainfall.	11,069	18%	445	92%

Vegetation Community	Description	Analysis Area (acres)	Percent of the Analysis Area	Project Area (acres)	Percent of the Project Area
Cultivated Cropland	Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards, where crop vegetation accounts for greater than 20% of total vegetation.	6,134	10%	N/A	N/A
Sonoran Mid-Elevation Desert Scrub	Characterized by an open shrub layer of creosote bush, narrowleaf goldenbush (<i>Ericameria linearifolia</i>), or Eastern Mojave buckwheat (<i>Eriogonum fasciculatum</i>) with taller shrub such as crucifixion thorn (<i>Canotia holacantha</i>) or jojoba (<i>Simmondsia chinensis</i>). The herbaceous layer is generally sparse.	1,279	2%	N/A	N/A
Developed, High Intensity	Highly developed areas where people reside or work in high numbers (such as apartment complexes, row houses, and commercial/industrial development). Impervious surfaces account for 80%–100% of the total cover.	788	1%	N/A	N/A

Source: Prior-Magee et al. (2007)

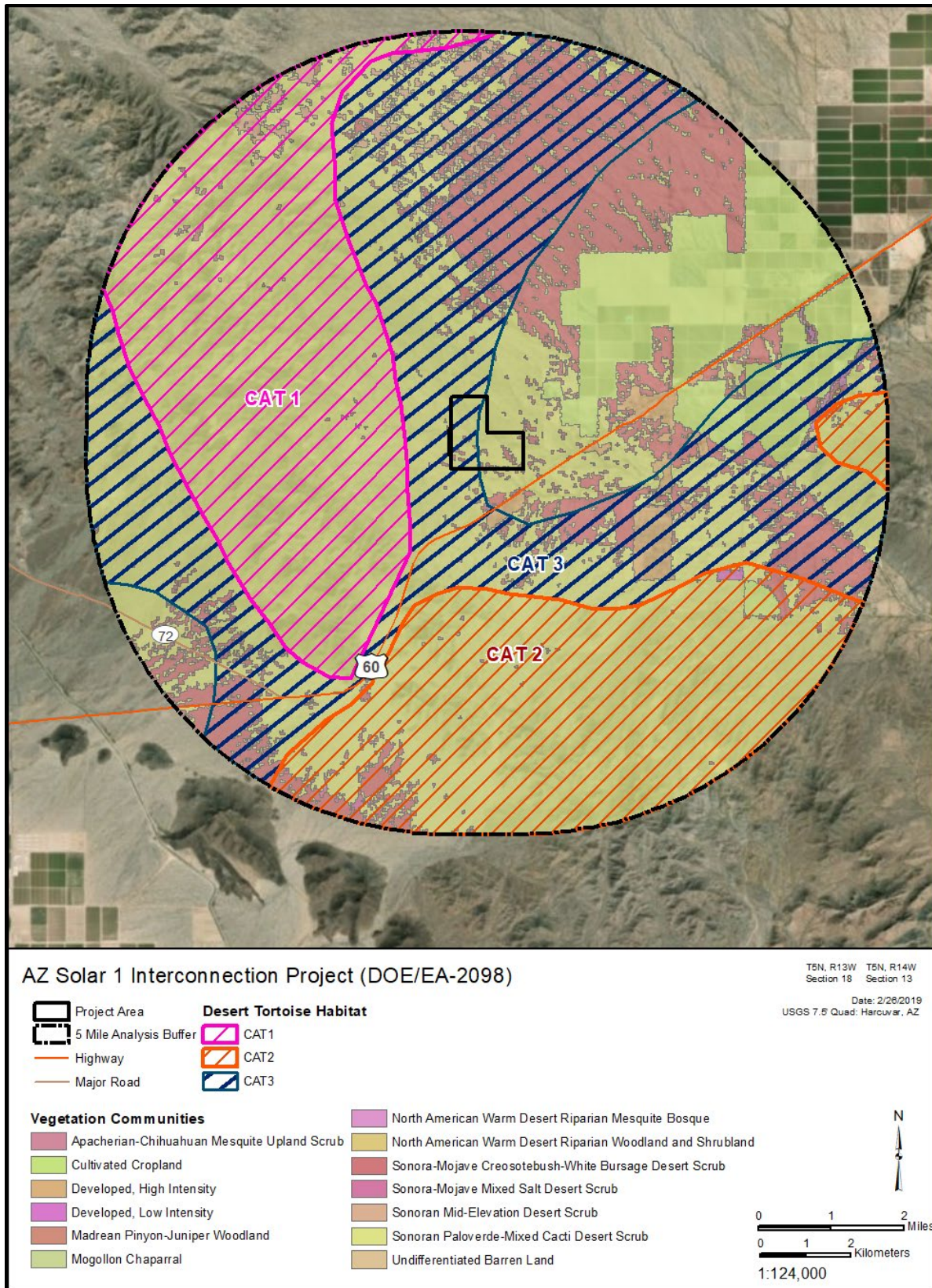


Figure 3-1. Vegetation communities and Sonoran Desert Tortoise Habitat Categories within the analysis area.

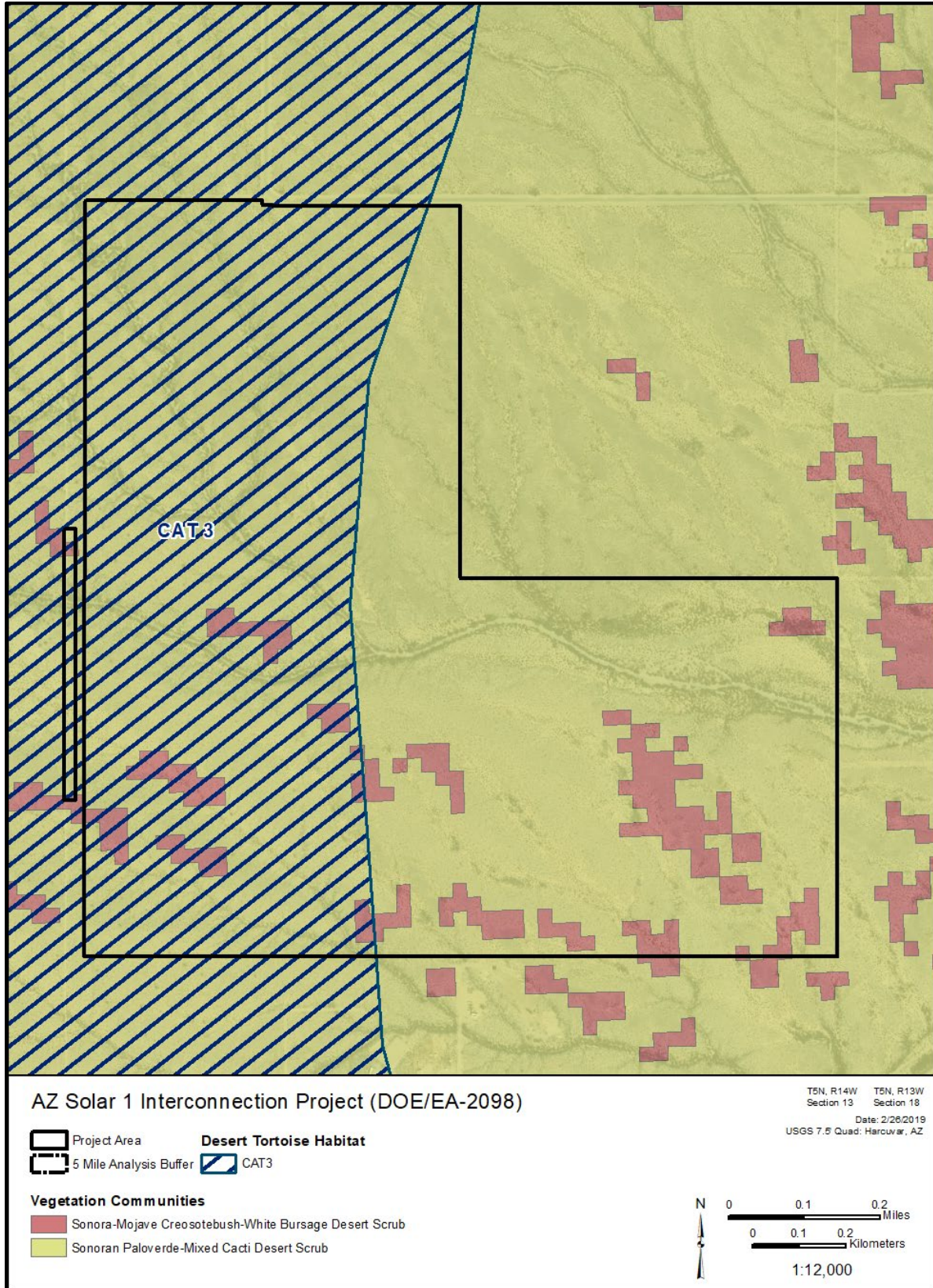


Figure 3-2. Vegetation communities and Sonoran Desert Tortoise Habitat Categories within the project area.

3.5.1.2 SPECIAL STATUS SPECIES, INCLUDING MIGRATORY BIRDS

The analysis area's desert scrub-type vegetation provides suitable habitat for a number of special status species which are either known to be present or have the potential to be present. Many of the special status species occurring or potentially occurring within the project area would likely only occur while moving between areas of suitable habitat.

In La Paz County, the USFWS (2018a) lists eight species managed by their Endangered Species Program. The eight species include one mammal: Sonoran pronghorn (*Antilocapra americana sonoriensis*); three birds: southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), and Yuma Ridgway's rail (*Rallus obsoletus yumanensis*²); two reptiles: desert tortoise, Mohave population (*Gopherus agassizii*) and northern Mexican gartersnake (*Thamnophis eques megalops*); and two fish: bonytail chub (*Gila elegans*) and razorback sucker (*Xyrauchen texanus*). None of the eight species are likely to occur in the analysis area. The analysis area is clearly beyond the known geographic or elevational range of these species, or it does not contain vegetation or landscape features known to support these species, or both.

In addition to these species listed under the ESA, the BLM Arizona Sensitive Species³ lists 47 plant and animal species with the potential to occur within the Lake Havasu Field Office boundaries (BLM 2017a). Nineteen of these species have been observed or have the potential to occur within the analysis area or project area (Table 3.5-2). Golden eagle and eight bat species may use the project area for foraging but would not use the project area for breeding, nesting, or roosting. Five special status migratory bird species and one butterfly species may use the project area for breeding (monarch butterfly, western burrowing owl, Bendire's thrasher, desert purple martin, gilded flicker, and LeConte's thrasher).

Table 3.5-2. Special Status Species Observed or with the Potential to Occur in the Analysis Area or Project Area

Common Name	Scientific Name
Desert tortoise (Sonoran population)	<i>Gopherus agassizii</i>
Monarch butterfly	<i>Danaus plexippus plexippus</i>
American peregrine falcon	<i>Falco peregrinus anatum</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Bendire's thrasher	<i>Toxostoma bendirei</i>
Desert purple martin	<i>Progne subis hesperia</i>
Ferruginous hawk	<i>Buteo regalis</i>
Gilded flicker	<i>Colaptes chrysoides</i>]
Golden eagle	<i>Aquila chrysaetos</i>
LeConte's thrasher	<i>Toxostoma lecontei</i>
Western burrowing owl	<i>Athene cunicularia hypogea</i>
California leaf-nosed bat	<i>Macrotus californicus</i>

² Listed as Yuma clapper rail (*Rallus longirostris yumanensis*) by USFWS (2018a, 2018b). Formerly considered a subspecies of clapper rail, it was changed to Ridgway's rail (*Rallus obsoletus yumanensis*) in 2014 (Chesser et al. 2014).

³ The BLM Arizona Sensitive Species List for the Colorado River District Boundaries (BLM 2017a) and the Lake Havasu Field Office RMP sensitive species list (BLM 2007) were both used to develop the analysis area's BLM sensitive species list. Some species listed on the 2007 list are no longer on the 2017 list; however, the full list of species was included because the Lake Havasu Field Office RMP has not been updated to reflect the 2017 list.

Common Name	Scientific Name
Cave myotis	<i>Myotis velifer</i>
Greater western mastiff bat	<i>Eumops perotis californicus</i>
Pallid bat	<i>Antrozous pallidus</i>
Pocketed free-tailed bat*	<i>Nyctinomops femorosaccus</i>
Spotted bat	<i>Euderma maculatum</i>
Townsend's western big-eared bat	<i>Corynorhinus townsendii</i>
Yuma myotis**	<i>Myotis yumanensis</i>

* This species was included in the Lake Havasu Field Office RMP (BLM 2007) as Sensitive Species, but not included on the updated BLM Arizona Sensitive Species list (BLM 2017a) for the BLM Colorado River District Office.

** This species was included in the Lake Havasu Field Office RMP (BLM 2007) as Sensitive Species, but not included on the updated BLM Arizona Sensitive Species list (BLM 2017a) for the BLM Colorado River District Office.

Sonoran Desert Tortoise Habitat

The Sonoran desert tortoise is a BLM Sensitive species, as well as the subject of a Candidate Conservation Agreement (USFWS et al. 2015). The Candidate Conservation Agreement exists between the USFWS and several other entities, including the BLM and Reclamation. BLM has categorized Sonoran desert tortoise habitat into three habitat area categories, which are used to provide for protection and management of these areas and desert tortoise populations on BLM-administered lands. The criteria used to categorize tortoise habitats include the following: 1) importance of the habitat to maintaining viable populations, 2) resolvability of conflicts, 3) tortoise density, and 4) population status (stable, increasing, decreasing) (BLM 1988). The criteria are ranked by importance to the categorization process, with Criterion 1 being the most important, and Category I being the better or best habitat category. Table 3.5-3 describes the goals for each category and the area of each within the analysis area and project area. Figure 3-1 shows the location of these habitat area categories within the analysis area and Figure 3-2 shows the habitat area categories in the project area.

Table 3.5-3. BLM Sonoran Desert Tortoise Habitat Area Categories within the Analysis Area and Project Area

Category	Goal	Analysis Area	Percent of the Analysis Area	Project Area	Percent of the Project Area
I	Maintain stable, viable populations and protect existing tortoise habitat values; increase populations, where possible.	14,305 acres	23%	N/A	N/A
II	Maintain stable, viable populations and halt further declines in tortoise habitat values.	13,126 acres	21%	N/A	N/A
III	Limit tortoise habitat and population declines to the extent possible by mitigating impacts.	22,850 acres	36%	246.5 acres	51%
Uncategorized	Does not contain habitat.	12,405 acres	20%	237 acres	49%

Source: BLM (1988)

The project area consists of 246.5 acres of Category III Sonoran desert tortoise habitat and 237 acres of uncategorized area (see Figure 3-2). Category II habitat areas are located approximately 0.6 mile directly west of the project area (see Figure 3-2). Sonoran desert tortoise has been observed within the analysis area, but was not observed in the project area during site visits (AZHGIS 2018).

Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA), which prohibits take of any migratory bird or active nest, except as permitted by regulation. Migratory birds are broadly defined within the MBTA as species that cross international borders at any point during their life cycle, and therefore applies to most native bird species in North America. The USFWS identifies 22 migratory bird species listed as Birds of Conservation Concern (BCC) for La Paz County (2018a), nine of which are also BLM special status species, as discussed above in this section. BCC are identified by the USFWS as species, subspecies, and/or populations of migratory birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. These birds nest in vegetation, burrows, and cavities (such as in saguaros).

During site visits, migratory bird nests were observed in the vegetation throughout the project area, including a large stick nest in a saguaro that was inactive at the time of the site visits. Eight migratory bird species were detected during the site visits: common raven (*Corvus corax*), ladder-backed woodpecker (*Dryobates scalaris*), turkey vulture (*Cathartes aura*), cactus wren (*Campylorhynchus brunneicapillus*), gilded flicker (*Colaptes chrysoides*), loggerhead shrike (*Lanius ludovicianus*), black-tailed gnatcatcher (*Polioptila melanura*), and lesser nighthawk (*Chordeiles acutipennis*). Gilded flicker is the only special status species detected within the project area and was located on the AZ Solar 1 project area. Two BCC species are identified as having a high potential to occur within the project area: Costa’s hummingbird (*Calypte costae*) and Gila woodpecker (*Melanerpes uropygialis*) (USFWS 2018b).

3.5.2 Environmental Consequences

3.5.2.1 NO ACTION

Under the No Action Alternative, the project would not be developed and would not disturb vegetation, or special status species or their habitats (including migratory birds); therefore, there would be no impacts to biological resources in the analysis area.

3.5.2.2 PROPOSED ACTION

Vegetation

Impacts Common to WAPA and AZ Solar 1

Construction of the Proposed Action would have direct, long-term impacts to vegetation. Approximately 462 acres of vegetation would be cleared (Table 3.5-4; see Figure 3-2). Construction of the Proposed Action would not result in any indirect effects on vegetation adjacent to the project area.

Table 3.5-4. Temporary and Permanent Vegetation Disturbance Areas for the Proposed Action

Vegetation Community	WAPA Temporary Disturbance	WAPA Permanent Disturbance	AZ Solar 1 Temporary* Disturbance	AZ Solar 1 Permanent Disturbance
Sonoran Paloverde-Mixed Cacti Desert Scrub	1.14 acres	< 0.01 acre	424.00 acres	424.00 acres
<i>Percent of the Project Area</i>	33%	< 0.01%	1.00%	1.00%
<i>Percent of the Analysis Area</i>	< 0.01%	< 0.01%	88.33%	88.33%

Vegetation Community	WAPA Temporary Disturbance	WAPA Permanent Disturbance	AZ Solar 1 Temporary* Disturbance	AZ Solar 1 Permanent Disturbance
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	N/A	N/A	37.00 acres	37.00 acres
<i>Percent of the Project Area</i>	N/A	N/A	7.71%	7.71%
<i>Percent of the Analysis Area</i>	N/A	N/A	0.33%	0.33%
Total Disturbance	1.14 acres	< 0.01 acre	461.00 acres	461.00 acres
<i>Percent of the Project Area</i>	< 0.01%	< 0.01%	96.04%	96.04%
<i>Percent of the Analysis Area</i>	< 0.01%	< 0.01%	1.33%	1.33%

* With the exception of approximately 0.10 acre of temporary wash disturbance for collection/road crossings, the majority of AZ Solar 1's construction disturbance would be permanent disturbance. For the purposes of this EA, it is assumed that all disturbance would be permanent.

WAPA

During construction, WAPA would remove vegetation from approximately 1.14 acres for access road improvements, temporary equipment storage, and for work areas around the poles. Of this area, less than 0.01 acre would be permanently disturbed by the pole structures, and the remaining area would be reclaimed and allowed to naturally revegetate. WAPA would reclaim temporary disturbance areas by regrading so that surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation. However, these reclaimed areas may never provide the same habitat value as prior to construction because desert ecosystems can take from 70 to over 200 years to recover from disturbance (Abella 2010).

In addition, ground-disturbing activities can create conditions that would increase the potential for introduction and/or establishment of nonnative plants within the existing ROW. As part of the Proposed Action, WAPA would comply with all federal, state, and local weed control regulations, and implement construction standards (WAPA 2016: Section 13.6) such as maintaining vehicles and equipment free of mud and vegetation debris when transported between sites and use of only certified weed-free mulches and seed mixes for reclamation. Therefore, the potential for introduction and/or establishment of nonnative plants would be very low.

During operations, ongoing, temporary impacts to vegetation would occur as a result of ground-disturbing maintenance activities and vegetation clearing beneath the transmission line and around the pole structures associated with the interconnection.

Decommissioning would result in the same impacts as construction, and WAPA would reclaim the 1.14 acres associated with the transmission line and pole structures for the interconnection.

AZ Solar 1

AZ Solar 1 would disturb approximately 461 acres, or 96%, of the privately owned land for construction of the full build out (Solar Field 1 and Solar Field 2). The project area would be cleared of vegetation and graded to accommodate the installation of solar panels and related facilities, with the exception of the 19-acre wash avoidance areas where vegetation along the washes would be maintained (see Figure 2-2). As shown in Table 3.5-4, vegetation clearing would directly impact approximately 1% of the Sonoran Paloverde-Mixed Cacti Desert Scrub vegetation community and 0.33% of the Sonora-Mojave Creosotebush-White Bursage Desert Scrub vegetation community in the analysis area. As these

vegetation communities are abundant on lands within the analysis area, including the undeveloped federal lands directly adjacent to the AZ Solar 1 property, the direct loss of vegetation would have a negligible impact on these vegetation communities and would not affect the viability of any common species or local populations.

Operations and maintenance of the facility would result in ongoing, long-term and negligible impacts to vegetation. These impacts would be limited to maintaining vegetation-free buffers around facilities for fire protection, trimming of vegetation along access roads and the project area boundary, and herbicide applications.

Decommissioning would result in the same impacts as construction, with the full site decommissioned at once, and would be subject to reclamation and allowed to revegetate naturally. As the privately owned land would not be subject to the same construction standards for invasive and noxious weeds described for WAPA, it is anticipated that natural revegetation would increase the risk for establishment and proliferation of invasive and/or noxious weeds.

Special Status Species, including Migratory Birds

During construction, as well as intermittently during operations and maintenance, noise and activity might temporarily displace individual animals near the project area. This short-term disturbance would have a negligible impact on individuals. Clearing and grading activities have the potential to crush or bury individuals unable to escape into adjacent habitat. Impacts to monarch butterfly during construction may include risk of direct mortality of individuals and larvae, if vegetation clearing occurs during the breeding season and breeding monarch butterflies are present within the project area. Impacts to Sonoran desert tortoise as a result of the Proposed Action would be habitat loss, potential disturbance from human noise and activity, and risk for direct mortality from ground disturbance and vehicle strikes.

As part of the Proposed Action, WAPA and AZ Solar 1 would implement conservation measures for biological resources (see Appendix B)—which include conducting protocol surveys (for Sonoran desert tortoise, burrowing owl, and migratory bird nests) prior to surface disturbance, relocation of any tortoises within the project area, following Arizona Game and Fish Department guidelines for monitoring and handling of tortoises, establishment of avoidance areas, and restricting vegetation clearing to non-breeding seasons for birds. With the implementation of these measures, it is unlikely that the Proposed Action would result in direct mortality of individual species during construction.

The Proposed Action would result in the permanent loss of approximately 224 acres of Category III Sonoran desert tortoise habitat area (comprising 0.98% of available Category III habitat area in the analysis area). Sonoran desert tortoise was identified as a species with high potential to be present within the project area; however, individuals were not observed within the project area during site visits and the project area does not contain suitable burrowing habitat. Nearly all the permanent loss would occur as result of the AZ Solar 1 facility's permanent disturbance footprint. As large expanses of habitat are available adjacent to the project area, affected individuals would be able to shift use to these adjacent areas. It is unlikely that permanent habitat loss would result in population-level impacts from the Proposed Action because the project area comprises only marginal habitat for this species and higher-quality habitat (Category II) is available approximately 0.6 mile directly west of the project area. During operations, AZ Solar 1 would implement tortoise conservation measures to reduce the risk for direct mortality from vehicle strikes along access roads; therefore, a long-term, direct impact to desert tortoise individuals is not anticipated.

Long-term impacts to special status species would be negligible and unlikely to result in population-level effects. Special status species that may use the project area for foraging and breeding would experience long-term impacts as a result of disturbance and the loss of habitat. The clearing and grading of the

project area would remove habitat elements necessary for nesting (such as saguaro, dense shrubs, or burrows used by bird species and native milkweeds and other plants used by monarch butterfly). Large expanses of habitat available adjacent to the project area are of similar quality and composition as that which would be lost, and affected individuals would be able to shift use to these adjacent areas.

WAPA

During construction, WAPA would have negligible impacts to special status species. No special status species were observed on this portion of the project area during site visits, and the potential for occurrence of special status species is low. There would be a permanent loss of less than 0.01 acre of habitat from the installation of poles within the existing ROW; however, this loss is negligible as compared to the available habitat within the analysis area. Short-term impacts would be similar to those described above for impacts common to WAPA and AZ Solar 1. Temporary work areas would be reclaimed and the area would naturally revegetate, which would reduce the overall loss of habitat.

In addition to the impacts discussed above for all species, there would be a negligible increased risk of collisions for special status migratory bird species with the new transmission line poles and conductor. There would be an increased potential for bird strikes with the short transmission interconnect between the solar facility and the existing transmission line. WAPA would implement conservation measures to reduce the potential for bird strikes, including constructing the lines following industry standards aimed at reducing raptor and avian collisions (Avian Power Line Interaction Committee 2006) as well as discouraging perching or nesting.

Decommissioning would result in the same impacts as construction, except that the < 0.01 acre of permanent disturbance would be reclaimed.

AZ Solar 1

Construction and operation of the AZ Solar 1 facility, at full build-out, would result in the permanent removal of 461 acres of suitable habitat for a number of special status species. This habitat loss would have direct, long-term, and negligible impacts to special status species similar to those described above for impacts common to WAPA and AZ Solar 1.

Special status species would be unlikely to use the project area during operations and maintenance due to the lack of vegetation and suitable habitat. Additionally, boundary fencing would discourage use by ground-dwelling species. One factor known to contribute to bird collisions at PV facilities is artificial lighting. Birds flying at night, which are usually migrants, adjust their flight altitudes according to weather conditions, and may be attracted to steady light sources (Gauthreaux 1991; Longcore et al. 2012). Additionally, light pollution may disorient foraging bats (Longcore and Rich 2004). AZ Solar 1 would implement lighting measures to reduce the potential for nighttime lighting impacts, including restricting nighttime lighting to emergency maintenance actions.

Additional concerns over injuries and deaths of special status bird species at PV solar facilities is centered on the theory that waterbird species may potentially mistake the solar panels for water features on which the birds can land; this theory has been coined the “lake effect hypothesis” (Horvath et al. 2009). Similarly, bats can mistake smooth surfaces to be water (Greif and Siemers 2010). These maladaptive behaviors may lead to collisions with PV solar panels resulting in mortality, injury, or stranding of those species that require water to take off again. There is no clear evidence supporting the lake effect to date. Because bird and bat fatality data for PV solar facilities have only recently become available, and these data are exceptionally limited, science-based predictions of potential bird and bat risk are limited. Unlike wind energy, few studies currently address bird and bat impacts from PV solar and risks to these species are not well understood (BSG Ecology 2014; Leitner 2009; Waltson et al. 2015; Western Ecosystems

Technology, Inc. [WEST] 2014). Additional structured studies of utility-scale PV facilities are necessary before statistically significant conclusions about bird and bat risk and mortality associated with solar facilities can be drawn.

Contributing factors to a project's risk of lake effect impacts may include proximity to migration corridors and proximity to nearby waterbodies. There are no major water bodies to concentrate waterbirds during migration, breeding, or stopover periods near the project area; the nearest major water bodies are the Colorado River and Alamo Lake, located outside of the analysis area. Because waterbirds generally move along migratory corridors with existing water sources and available stopover habitat, waterbirds and other bird species would likely concentrate along the Colorado River, reducing the likelihood of these species to be present within the project area. Even if there is a potential for incidental lake effect impacts to occur at the project area, long-term impacts would be minor and unlikely to result in population-level effects.

Decommissioning would result in the same impacts as construction, with the full site decommissioned at once. The boundary fence and access roads would remain on the property, which would reduce the potential for special status species, such as Sonoran desert tortoise, to use the area. Other special status and migratory bird species for which the boundary fence would not create a barrier to movement could use the area once it had been reclaimed, but because the risk for establishment of invasive and/or noxious weeds would be increased and these reclaimed areas may never provide the same habitat value as prior to construction (see Vegetation discussion above), habitat quality would be degraded.

Cumulative Impacts

As discussed above in the affected environment section, the analysis area has been affected by past and current land use practices, some of which have resulted in the loss or degradation of vegetation and habitat and contributed to current conditions. When considering other reasonably foreseeable projects within the analysis area (see Table 2.9-1), the majority are limited in new ground disturbance, are located within existing facilities, or are not expected to result in adverse impacts to biological resources that would contribute to an adverse cumulative impact. The majority of the projects are on federal lands and would be subject to compliance with federal laws including the ESA, MBTA, Bald and Golden Eagle Protection Act, and BLM management guidance for special status species, which would reduce the potential for adverse cumulative impacts.

Only one reasonably foreseeable future action, the Mountain View RV Resort, would likely result in new ground disturbance and the loss and/or degradation of vegetation and habitat within the analysis area. The development of the RV resort could result in up to 150 acres of additional permanent disturbance to the same vegetation communities disturbed by the Proposed Action. As the cumulative area of disturbance for both projects are relatively small when considered in terms of the expanses of similar habitat available adjacent to the project areas, the projects would not result in long-term adverse cumulative impacts to vegetation communities or populations of special status species.

3.6 Groundwater

This section analyzes impacts of the Proposed Action and No Action Alternative on the groundwater resources issues identified during scoping, including impacts to the regional groundwater quantity and quality from project-related groundwater withdrawals and sources of groundwater pollutants. The analysis area for direct, indirect, and cumulative groundwater impacts is the McMullen Valley Basin, the basin where water needs for the project would be met, and where the project would be located.

3.6.1 Affected Environment

The McMullen Valley Basin, located in the northeastern portion of the Lower Colorado River Planning Area as defined by the Arizona Department of Water Resources (ADWR), covers approximately 649 square miles and is located within the Lower Gila Watershed (Figure 3-3). The McMullen Valley Basin is bound by the Harquahala Mountains along the southern boundary and the Harcuvar Mountains towards the northern boundary (ADWR 2009). The McMullen Valley Basin encompasses McMullen Valley to the west and Aguila Valley in the east; and Centennial Wash runs through the center of the basin east to west. The major aquifer is the basin fill which consists of alluvial-fan deposits with thickness ranging from 230 feet in the Wenden/Salome area to 3,100 feet north of Aguila (ADWR 2009). In the central and lower parts of the valley, fine-grained lake-bed deposits of low permeability overlie the alluvial fan deposits, ranging in thickness from 1,450 to 1,100 feet. Perched aquifers may occur due to the low permeability of the lake-bed deposits that impede the downward percolation of water (ADWR 2009). Approximately 3.5 miles southwest of the project area, there are stream alluvium deposits along Centennial Wash and its tributaries consisting of silt, sand, and clay, ranging in thickness from 50 feet to over 450 feet.

According to ADWR (2009), groundwater flows towards two cones of depression, one in the Wenden/Salome area (more than 5 miles northwest of the project area) and the other in the Aguila area (more than 25 miles northwest of the project area). Depth to groundwater across the basin ranges from 29 feet below ground surface (bgs) (west of Wenden) to 636 feet bgs (in the vicinity of Aguila). Water levels declined nearly 30 feet in the late 1980s to the early 2000s; however, recent studies suggest levels in the McMullen Valley, between 2008 and 2016, are stable with an average loss of less than 1 foot of water annually (ADWR 2017). The only source of natural recharge for the McMullen Valley Basin comes from rainfall and is estimated at 1,000 acre-feet annually. Per the most recent estimates (ADWR 2009), total groundwater stored in the McMullen Valley Basin is between 14 and 15 million acre-feet to a depth of 1,200 feet bgs.

Agriculture is dominant throughout the basin and there are many wells that draw groundwater for irrigation, most of which tap into the deep basin fill unit. Agricultural uses account for approximately 47,000 acre-feet of groundwater use annually and domestic use is approximately 300 acre-feet annually (ADWR 2017). ADWR maintains an online database of wells across Arizona, which was accessed for well data in the basin and within the vicinity of the project area. A search of the ADWR well data indicates there are 900 wells across the basin and no wells within the project area. Twenty-five wells are located within 1 mile of the project area. Of these, 14 are commercially owned and assumed to be used primarily for agriculture/irrigation; the remaining 11 are privately owned wells with depths that range from 130 to 680 feet bgs and have reported water levels ranging from 240 to 468 feet bgs (ADWR 2019).

Drinking water standards for concentrations of fluoride, arsenic, chromium, lead, and nitrates have been equaled or exceeded in wells throughout the McMullen Valley Basin (ADWR 2009). According to the Arizona Department of Environmental Quality (ADEQ), water quality exceedances are primarily between Salome and Wenden; a few exceedances of water quality standards have also been reported in wells east of the project and around the Salome area. Exceedances include arsenic, fluoride, and nitrate levels (Towne 2011).

A search of publicly available ADWR data indicates there are no springs in the McMullen Valley Basin; a search of the National Hydrography Dataset indicates there are three springs within the basin. There are no springs located within the project area or within 1 mile of the project area (ADWR 2009; U.S. Geological Survey 2018).



Figure 3-3. Groundwater analysis area.

3.6.2 Environmental Consequences

3.6.2.1 NO ACTION

Under the No Action Alternative, the project would not be developed and there would be no need for groundwater withdrawals during construction and operation, and no potential for accidental spills or leaks; therefore, there would be no impacts to groundwater in the analysis area.

3.6.2.2 PROPOSED ACTION

Total groundwater use during construction and operations of the Proposed Action is provided in Table 3.6-1. The amount of water use needed for decommissioning is anticipated to be comparable to the amount of water needed for construction, but somewhat less because decommissioning would not take as long as construction.

Table 3.6-1. Proposed Action Construction and Operations Water Use Summary

Action Requiring Water Use	WAPA	AZ Solar 1	Proposed Action (Combined)
Construction (acre-feet)	0.18	58.92 to 100 per solar field, total of 118 to 200	200.18
Operations (acre-feet)	–	20.62	20.62
Total (acre-feet)	0.18	220.62	220.80

WAPA

During construction, WAPA would use a minimal amount of water (approximately 60,000 gallons or 0.18 acre-foot) for dust suppression. Water would be sourced from the same water supply used for the AZ Solar 1 facility. The amount of groundwater used during construction is negligible compared to the millions of acre-feet in the larger regional aquifer; therefore, regional groundwater flow or drawdown of groundwater elevation would not occur. There would be no water use associated with operations of the transmission interconnection; therefore, no long-term impacts to groundwater quantity would occur.

During decommissioning, WAPA would also need water for dust suppression. This would be a one-time use and would be comparable to construction water use needs. There would be no long-term impacts to groundwater from decommissioning.

During construction, operations and maintenance, and decommissioning, WAPA would not store or generate hazardous waste. Accidental leaks or spills of material such as engine oil, and fuel and lubricants could occur. In the unlikely event of a leak or spill, WAPA would quickly contain and remove all spilled material so none would enter the groundwater. Therefore, no impacts to groundwater quality would occur.

AZ Solar 1

AZ Solar 1's total water use for construction of Solar Field 1 and Solar Field 2 is estimated between 118 to 200 acre-feet. One-time water use for construction of Solar Field 1 (up to 100 acre-feet) would be 10% of the annual natural recharge across the basin during the year of construction. Construction of Solar Field 2 would use the same amount of water but would occur in a different year than Solar Field 1. Annual water use for operations is 0.69 acre-feet per year over the 30-year lifespan (total of 20.62 acre-feet). This annual operations water use is 0.07% of the annual natural recharge in the basin.

Arizona Solar 1's use of groundwater during construction, either via an existing off-site well or construction of a new on-site well, has the potential to affect regional groundwater flow or cause drawdown of groundwater elevation. However, the water needs for the AZ Solar 1 facility during construction would be short term (4 to 6 months) and small (200 acre-feet) relative to the larger regional aquifer (estimated over 14 million acre-feet). Because of this, groundwater elevation in close proximity to the pumping well would likely drop by only several feet and would occur only during the months the well would be pumping. The drop in groundwater elevation would be greatest at the pumping well and immediately adjacent, likely within a couple hundred feet of the pumping well. As you move further away from the pumping well, the drop in groundwater elevation would dissipate quickly. It is anticipated that any drop in water levels in the vicinity of the pumping well would be replenished at the normal rate of annual recharge, likely recovering to pre-pumping levels within 6 months or less. A short-term drop in groundwater would most likely not be felt at the cones of depression in the basin because of their distance from the project area (5 miles and 25 miles). Water use for operations are very small relative to the larger regional aquifer and would not interfere with groundwater recharge. Overall impacts to groundwater available in the regional aquifer would be minor and would not adversely affect existing or future uses of the groundwater aquifer.

During decommissioning of the AZ Solar 1 facility, water would be needed for dust suppression. It is assumed that decommissioning activities would occur for Solar Field 1 and Solar Field 2 at the same time and that water use would be less than, but comparable to, that needed for construction. Impacts to groundwater quantity from decommissioning would be minor and short term (estimated at 20% of the annual natural recharge across the basin during the year of decommissioning).

It is unlikely that accidental spills or leaks of materials during construction, operation, and decommissioning would result in water quality impacts. In the event of a leak or spill, AZ Solar 1 would quickly contain and remove all spilled material so none would enter the groundwater. No hazardous materials would be generated during construction; however, during operations small quantities of hazardous materials would be stored in the solar panels and the battery storage system. Protective measures would be taken to prevent toxins from entering groundwater or waterways, including routine site inspections, timely repairs, and cleaning of all leaks or spills. If any damaged materials are discovered, they would be handled in accordance with the specifications provided by the manufacturer. Because of these protective measures, construction and operation of the AZ Solar 1 facility would not impact groundwater quality.

Cumulative Impacts

Several of the future and ongoing cumulative projects presented in Table 2.9-1 have anticipated groundwater uses in the same groundwater basin as the Proposed Action, including transmission system maintenance projects, continued agriculture in the McMullen Valley, U.S. 60 Wenden to Aguila / Centennial Wash to Aquila Project, K Lazy B Range Improvements Project Camp Well, and the Mountain View RV Resort.

The transmission system maintenance projects and U.S. 60 construction project are anticipated to use some groundwater for general construction, maintenance, and dust suppression. Amounts and sources of groundwater that would be used are not known; however, they are expected to be very minimal given the types of activities planned. Groundwater use for the Mountain View RV Resort is expected to be for minimal domestic use only. The Camp Well improvement project involves deepening the existing Camp Well to approximately 500 feet and using a 15-GPM pump to fill a storage tank (BLM 2019). The small-capacity pump proposed for this future project would result in a very minimal withdrawal of groundwater (less than 1 acre-foot) (BLM 2019).

One ongoing action, continued withdrawals for agricultural and residential use, may result in a greater cumulative impact on groundwater quantity within the basin. The withdrawal of groundwater for agricultural and residential uses in the McMullen Valley Basin is expected to continue (47,000 acre-feet annually for agriculture and 300 acre-feet annually for residential uses). Cumulatively, there would be small increases to the current groundwater withdrawals when combined with the Proposed Action; therefore, the Proposed Action would result in minor cumulative impacts to groundwater quantity. There would be no cumulative impacts to groundwater quality.

3.7 Historic and Tribal Resources

This section analyzes impacts of the Proposed Action and No Action Alternative on the historic and tribal resources issues identified during scoping, including impacts to archaeological sites and impacts to tribal resources. Of primary concern to this analysis are the potential impacts to historic properties, i.e., resources which are listed in or eligible for listing in the National Register of Historic Places (NRHP) as defined by the implementing regulations (36 CFR 800) of the NHPA. Indian tribes may know of resources with special significance or places of traditional cultural importance within the proposed project area.

The historic and tribal resources analysis area for direct impacts is the project area; the analysis area for indirect and cumulative impacts is a 3-mile radius around the project area. These analysis areas were selected to represent the area in which archaeological sites and tribal resources may be impacted as a result of implementing the project.

3.7.1 Affected Environment

3.7.1.1 HISTORIC PROPERTIES IDENTIFIED

For the direct impacts analysis area, an inventory consisting of a background records search of a 1-mile radius around the project area was completed per State Historic Preservation Officer (SHPO) guidelines; pedestrian survey of the project area was conducted in the fall of 2018 (SWCA Environmental Consultants 2019). The background records search for the pedestrian survey revealed that seven cultural resource survey projects have been conducted within 1 mile of the project area, and two sites have been previously recorded with 1 mile of the project area. One site, consisting of several rock rings, was likely previously recorded on BLM land within the project area, but was misplotted in the AZSITE online database,⁴ as well as having misrepresented boundaries. That site was recommended eligible for the NRHP. The other site is the historic alignment of U.S. 60 which has been determined eligible for the NRHP.

The pedestrian survey of the project area resulted in the recordation of two archaeological sites on private land for the solar plant site; no sites were identified on BLM land. One site consists of a rock ring and a rock cluster with no artifacts; the other consists of two rock clusters and a scatter of fire-cracked rock with no artifacts. Both sites were interpreted as affiliated with Native American peoples; however, due to the lack of artifacts the period of use remains unknown. The recorders recommended that these two sites are not historic properties.⁵

⁴ AZSITE is a geographic information system (GIS) site that serves as a consolidated informational network of recorded cultural resources, including prehistoric and historic sites and properties, and surface surveys within the state of Arizona.

⁵ WAPA's consultation with the State Historic Preservation Officer (SHPO) and Indian tribes on eligibility and effect is still pending.

In the 3-mile indirect analysis area, the records search identified historic properties where setting is a characteristic important to their integrity. One qualifying resource is within the indirect analysis area: U.S. 60. Within the analysis area, the resource consists of the in-use alignment of the historic U.S. 60 highway which runs northeast to northwest just south of the project area. Other resources within the indirect analysis area include two roads which have been recommended or determined not eligible for the NRHP, the town of Salome which is currently unevaluated, the above-discussed misplotted site, and a linear site with no information in the AZSITE database.

3.7.1.2 TRIBAL RESOURCES IDENTIFIED

WAPA contacted 10 Indian tribal governments (see Section 4.2 for list) by letter during the EA scoping period and on March 13, 2018 regarding the Proposed Action to determine if they had concerns or issues regarding tribal resources. WAPA initiated consultation with these Indian tribes on the basis of proximity of ancestral lands to the project area or previous stated interest.

One tribal government, the Colorado River Indian Tribes, requested an in-person meeting. WAPA, Reclamation, and BLM met with representatives of the Colorado River Indian Tribes on November 21, 2018 (in-person and via teleconference) to discuss the Proposed Action and tribal concerns. During the meeting, the Colorado River Indian Tribes expressed tribal interest in the Salome area and concern with project impacts to vegetation, wildlife, and cultural resources.

3.7.2 Environmental Consequences

3.7.2.1 NO ACTION

Under the No Action Alternative, the project would not be developed and would not require ground disturbance or impacts to biological resources; therefore, there would be no impacts to historic or tribal resources in the analysis areas.

3.7.2.2 PROPOSED ACTION

Historic Properties

WAPA would complete the NHPA Section 106 process. Based on the information gathered to date, WAPA would propose that the two sites are not historic properties and no historic properties would be affected. If consulting parties disagree with these findings, WAPA would continue to consult to reach a resolution.

No historic properties were identified in the Proposed Action project area; therefore, no impacts to historic properties are anticipated from the construction, operations and maintenance, or decommissioning of the Proposed Action. The Proposed Action would not alter the integrity of U.S. 60, which is approximately 0.25 mile from the project area.

Tribal Resources

WAPA's tribal consultation efforts conducted to date identified general concerns about project-related impacts to vegetation, wildlife, and cultural resources. These concerns apply to WAPA's interconnection facilities and the AZ Solar 1 development.

Cumulative Impacts

Most of the past, present, and future projects listed in Table 2.9-1 are limited in ground disturbance, are within existing facilities, are not located in close proximity to the project area, or are not expected to result in adverse impacts to historic and tribal resources that would contribute to an adverse cumulative impact. Projects occurring on federal lands are subject to compliance with federal laws including the NHPA. Federal agencies are required to consult about any adverse effects and ways to avoid minimize, or mitigate adverse effects. The Proposed Action would not contribute to cumulative impacts to historic properties because the information gathered to date suggests that there are no historic properties in the project area; analysis of cumulative impacts to tribal resources is pending more information from tribal consultation.

3.8 Noise

This section analyzes impacts of the Proposed Action and No Action Alternative on sensitive receptors to noise identified during scoping, including impacts to nearby residences from construction and operation equipment and vehicle noise. The analysis area for direct, indirect, and cumulative noise impacts is 2 miles in all directions of the project area; beyond this area, noise associated with the Proposed Action would decrease to below background levels.

3.8.1 Affected Environment

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts normal activities. Although prolonged exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise; the perceived importance of the noise, and its appropriateness in the setting; the time of day and the type of activity during which the noise occurs; and the sensitivity of the individual.

Noise could also disrupt wildlife life-cycle activities of foraging, resting, migrating, and other patterns of behavior. Wildlife already existing in proximity to human development may be habituated to noise from land use and human disturbance; however, changes to these baseline activities may still result in wildlife disruption. Additionally, sensitivity to noise varies from species to species, making it difficult to identify how a noise source would affect all flora and fauna in an area.

3.8.1.1 NOISE REGULATIONS

Growing concerns over uncontrolled noise impacts on public health and welfare led Congress to pass the Federal Noise Control Act of 1972 and subsequent amendments (42 USC 4901 et seq.), which established a national policy for noise research and noise control. The EPA identifies requisite environmental noise levels for the protection of public health and welfare against hearing loss, annoyance, and activity interference (EPA 1974). The level of environmental noise which would prevent measurable hearing loss over a lifetime is identified as a 24-hour exposure level of 70 A-weighted decibels (dBA). Levels of 55 dBA outdoors and 45 dBA indoors are identified as preventing activity interference and annoyance. The activity interference and annoyance levels are those which would permit spoken conversation and other daily activities such as sleeping, working, and recreation. These levels are averaged over period of time, such as 8-hour, 24-hour, or longer periods of time, and are do not define single or “peak” event exposure levels.

In addition to EPA-identified environmental noise levels, the Federal Highway Administration (FHWA) establishes an exterior noise level standard for residential uses of 67 dBA equivalent or energy-averaged sound level (L_{eq}). Standards have not been established for undeveloped lands. There are no state-level noise regulations for Arizona, nor has La Paz County established any noise ordinances or regulations.

The American National Standards Institute (ANSI) has published a standard (Acoustical Society of America S12.9-1993/Part 3) (ANSI 1993) with estimates of general ambient noise levels (L_{eq} [energy-averaged noise level] and L_{dn} [day-night average noise level]) based on detailed descriptions of land use categories. The ANSI document organizes land use based on six categories. The descriptions and estimated daytime and nighttime L_{eq} ambient noise levels are provided in Table 3.8-1.

Table 3.8-1. Representative Existing Conditions Based on Land Use

Category	Land Use	Description	Estimated Existing Daytime Leq (dBA)	Estimated Existing Nighttime Leq (dBA)
1	Noisy commercial and industrial areas	Very heavy traffic conditions, such as in busy downtown commercial areas, at intersections of mass transportation and other vehicles, including trains, heavy motor trucks and other heavy traffic, and street corners where motor buses and heavy trucks accelerate.	69	61
2	Moderate commercial and industrial areas, and noisy residential areas	Heavy traffic areas with conditions similar to Category 1 but with somewhat less traffic, routes of relatively heavy or fast automobile traffic but where heavy truck traffic is not extremely dense, and motor bus routes.	64	56
3	Quiet commercial, industrial areas, and normal urban and noisy residential areas	Light traffic conditions where no mass transportation vehicles and relatively few automobiles and trucks pass, and where these vehicles generally travel at low speeds. Residential areas and commercial streets and intersections with little traffic comprise this category.	58	52
4	Quiet urban and normal residential areas	These areas are similar to Category 3 above but, for this group, the background is either distant traffic or is unidentifiable.	53	47
5	Quiet suburban residential areas	Isolated areas, far from significant sources of sound.	48	42
6	Very quiet, sparse suburban or rural areas	These areas are similar to Category 5 above but are usually in unincorporated areas and, for this group, there are few if any near neighbors.	43	37

Source: ANSI S12.9-1993/Part 3

WAPA determined that the project area fits ANSI’s Category 6 based on aerial photography and field observations. The project area is located in a rural undeveloped area. Low-density residential areas are located east and south of the project area. Existing noise emissions in the general vicinity of the project area include vehicular traffic, livestock grazing, railroad noise, flight traffic from the Western Sky Airpark, transmission lines, mining, and commercial and residential development. Additionally, background noise includes environmental sources such as wildlife and weather.

The general human response to changes in noise levels that are similar in frequency content (such as comparing increases in continuous [Leq] traffic noise levels) are summarized as follows:

- A 3-dBA change in sound level is considered a barely noticeable difference.
- A 5-dBA change in sound level typically is noticeable.
- A 10-dBA increase is considered a doubling in loudness.

Community sound levels are generally presented in terms of A-weighted decibels (dBA). The A-weighting network measures sound in a similar fashion to how a person perceives or hears sound, thus achieving a strong correlation with how people perceive acceptable and unacceptable sound levels. Table 3.8-2 presents A-weighted sound levels and the general subjective responses associated with common sources of noise in the physical environment.

Table 3.8-2. Typical Sound Levels Measured in the Environment and Industry

Noise Source at a Given Distance	Sound Level in A-weighted Decibels (dBA)	Qualitative Description
Carrier deck jet operation	140	
Civil defense siren (100 feet)	130	Pain threshold
Jet takeoff (200 feet)	120	Deafening
Auto horn (3 feet)	110	Maximum vocal effort
Pile driver (50 feet)		
Rock music concert environment		
Jet takeoff (100 feet)	100	
Shout (0.5 foot)		
Ambulance siren (100 feet)		
Newspaper press (5 feet)		
Power lawnmower (3 feet)		
Heavy truck (50 feet)	90	Very loud/Annoying; Hearing damage (8-hour, continuous exposure)
Power mower		
Motorcycle (25 feet)		
Propeller plane flyover (1,000 feet)		
Pneumatic drill (50 feet)	80	Very loud
Garbage disposal (3 feet)		
High urban environment		
Passenger car, 65 mph (25 feet)	70	Loud/Intrusive (telephone use difficult)
Living room stereo (15 feet)		
Vacuum cleaner (3 feet)		
Air conditioning unit (20 feet)	60	
Human voice (3 feet)		
Department store environment		
Light auto traffic (50 feet)	50	Moderate/Quiet
Residential air conditioner (50 feet)		
Private business office environment		
Estimated existing daytime sound level for land use category 6: very quiet, sparse suburban or rural areas	43	
Living room/Bedroom	40	
Bird calls (distant)		
Estimated existing nighttime sound level for land use category 6: very quiet, sparse suburban or rural areas	37	
Library soft whisper (5 feet)	30	Very quiet
Quiet bedroom environment		
Broadcasting/Recording studio	20	Faint
	10	Just audible
	0	Threshold of human audibility

Sources: Adapted from Table E, "Assessing and Mitigating Noise Impacts" (New York Department of Environmental Conservation 2001) and *Handbook of Environmental Acoustics* (Cowan 1993).

In outdoor settings, the rate at which noise decreases is influenced by the distance separating noise sources and noise receptors, as well as local conditions such as traffic, topography, and weather. Generally, when noise is emitted from a point source, the noise is decreased an average of 6 decibels (dB) each time the separating distance is doubled.

Noise Sensitive Receptors

Noise-sensitive receptors generally are defined as locations where people reside or where the presence of unwanted sound may adversely affect the existing land use. Typically, noise-sensitive land uses include residences, hospitals, places of worship, libraries, performance spaces, offices, and schools, as well as nature and wildlife preserves, recreational areas, and parks. Sensitive receptors within 2 miles of the project area were analyzed for potential impacts as a result of project construction and operation. The majority of the analysis area consists of open space, but residences, a school, and campgrounds all lie within the noise analysis area (Table 3.8-3).

Table 3.8-3. Nearest Sensitive Receptors to the Proposed Action

Receptor Type	From Center of WAPA Transmission Interconnect Project Area		From Center of AZ Solar 1 Facility Project Area	
	Distance (feet)	Direction	Distance (feet)	Direction
Residence/Campground (Spirit Ranch)	3,960	Southeast	3,036	South
Campground (KOA)	6,250	South-southeast	5,450	South

3.8.2 Environmental Consequences

3.8.2.1 NOISE DATA SOURCES, METHODS, ANALYSIS ASSUMPTIONS

The construction noise level was estimated using the FHWA’s Roadway Construction Noise Model (RCNM). The RCNM is FHWA’s national model for the prediction of construction noise. The maximum noise levels presented at a specified distance from the source are based on a roster of likely construction equipment operating. Estimates of noise from the construction are based on a roster of the maximum amount of construction equipment in use on a given day analyzed from the center of the project area to the nearest sensitive receptor (for the calculations, all equipment is assumed to be operating at this single point). The Proposed Action’s construction equipment used in the analysis is given in Appendix C.

Although the project is not a road construction project, the RCNM includes the same types of equipment that would be used in the construction of the project. The RCNM has noise levels for various types of equipment pre-programmed into the software; therefore, the noise level associated with the equipment is typical for the equipment type and not based on any specific make or model. The RCNM assumes that the maximum sound level for the project (L_{max}) is the maximum sound level for the loudest piece of equipment operating at the project property boundary that is closest to the nearest sensitive receptor.

Worker commutes and material delivery vehicles would cause noise that would be short term and have little effect on the hourly average noise level. In comparison to the other construction equipment noise during construction, the increase in the frequency of brief noise from a vehicle passing by would not be noticed. Therefore, this traffic was not included in the construction noise analysis. Additionally, decreases in noise levels due to atmospheric interference (i.e., weather) or intervening structures was not accounted for in the analysis.

The estimated project noise levels are compared to the existing conditions in the project area. For ANSI Category 6, the estimated existing daytime L_{eq} could be considered 43 dBA, and the estimated existing nighttime L_{eq} could be considered 37 dBA.

3.8.2.2 NO ACTION

Under the No Action Alternative, the project would not be developed and there would be no noise associated with construction and operations; therefore, there would be no impact to noise in the analysis area.

3.8.2.3 PROPOSED ACTION

During construction, the Proposed Action would have a short-term, minor noise impact on sensitive receptors identified in Table 3.8-3. The total noise level at nearby sensitive receptors consists of the estimated noise generated by construction activities combined with the estimated ambient baseline noise level. The total noise level at the nearest sensitive receptor to the Proposed Action (residence/campground, Spirit Ranch) during daytime construction was conservatively estimated to be approximately 55.9 dBA. This worst-case total noise level estimate assumes the maximum amount of construction equipment in use on a given day for each project would occur simultaneously. The equipment noise was assumed to be originating from the center of each project site. Figure 3-4 depicts the project site centers, the nearest sensitive receptors, and the estimated noise impacts.

The outdoor noise level at the nearest sensitive receptors would increase by approximately 13 dBA, which the human ear would interpret as being at least twice as loud as the outdoor ambient baseline noise level. This cumulative noise level is approximately equivalent to the sound level in a department store or hearing a residential air conditioning unit located 20 feet away. Impacts due to the noise generated by the construction of the Proposed Action would be slightly annoying but temporary.

WAPA's operations-related noise would consist of a maintenance inspection approximately four times per year and would have short-term negligible impact on the nearest sensitive receptor (campground). AZ Solar 1's operations-related noise would consist of weekly site visits, routine maintenance actions, and operations of transformers and inverters. AZ Solar 1's operations-related noise would have minor, long-term impact to the nearest sensitive receptor (residence).

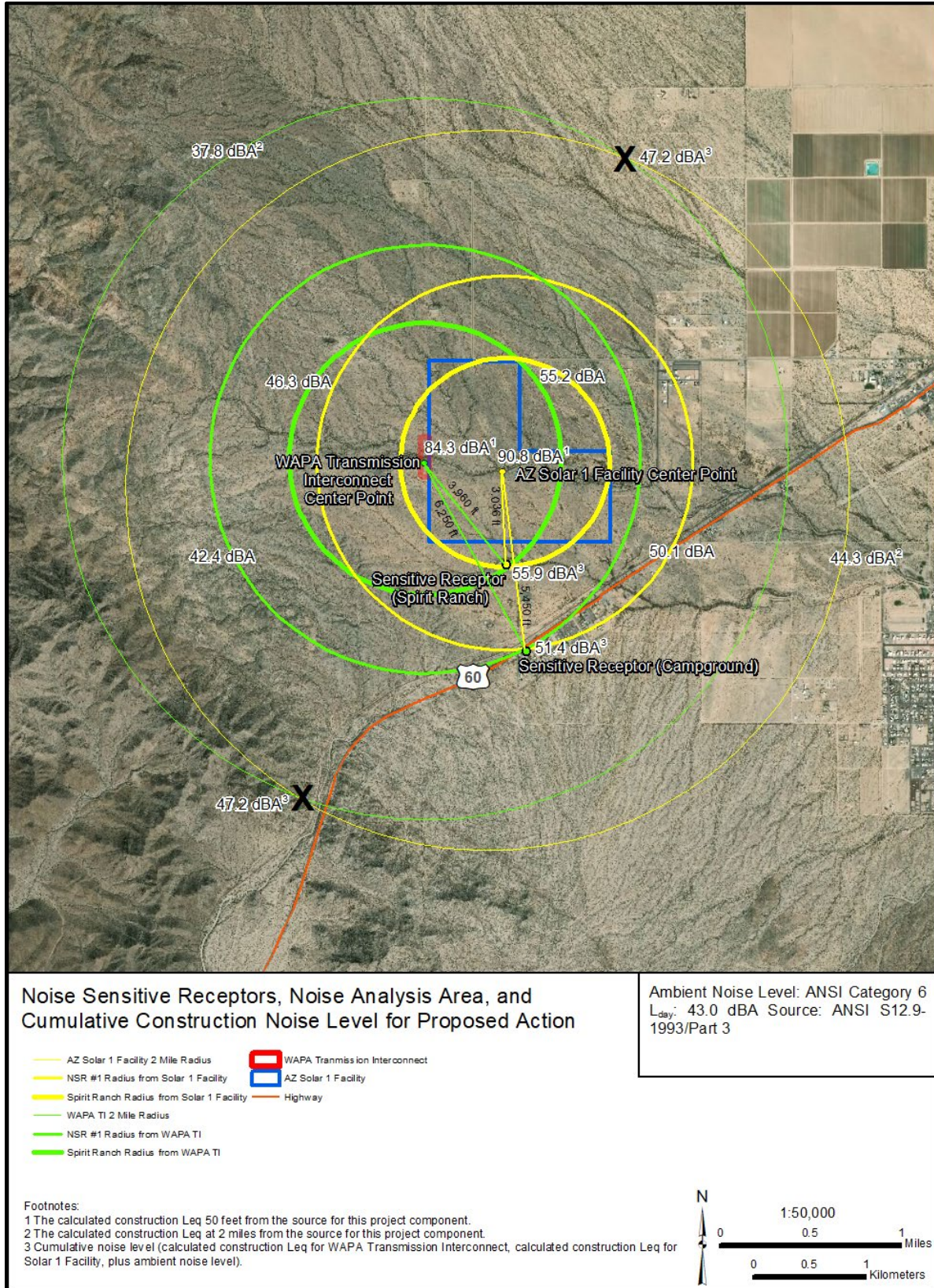


Figure 3-4. Noise sensitive receptors and estimated noise impacts during construction of the Proposed Action.

WAPA

Impacts due to the noise generated by the construction of the transmission interconnection would be minor and short term. During WAPA’s construction, the maximum sound level for the loudest piece of equipment at the nearest sensitive receptor (Spirit Ranch) is approximately 47 dBA (see Table 3.8-4). The nearest sensitive receptor would hear noise at the 8.0 dBA level, which is 5 dBA above the background level. This increase in outside noise level is a noticeable change from the ambient noise level, approximately equivalent to hearing light traffic or a residential air conditioning unit. For the analysis, all of the construction equipment is assumed to be operating simultaneously on a given day from the same place; however, during construction the equipment would be spread out over the project area. Therefore, the construction noise level at the nearest sensitive receptor would vary depending on the relative location to the construction equipment.

Table 3.8-4. Calculated Noise Levels at Nearest Sensitive Receptor due to Transmission Interconnect Construction

	Calculated L _{max} (dBA)	Calculated L _{eq} Total (dBA)	Noise Level, Ambient and Construction L _{eq} (dBA)
Ambient baseline noise level*	–	–	43.0
Noise level at residence/campground (Spirit Ranch) (3,960 feet from center of project area)	47.0	46.3	48.0
Noise level at campground (6,250 feet from center of project area)	43.1	42.4	45.7
Noise level 2 miles from the center of the project area	38.5	37.8	44.1

* Baseline noise level obtained based on estimated local land use.

WAPA’s operations-related noise impacts are expected to be negligible and of a short duration. Operations-related noise would consist of a maintenance inspection approximately four times per year. The maintenance inspection may be conducted by helicopter which would cause temporary disturbance. Helicopters generally fly at low altitudes; therefore, potential temporary increases to ambient sound levels would occur in the area where helicopters are operating as well as along their flight path. It is anticipated that light-duty helicopters may be used for routine inspections. However, these helicopter inspections would occur a maximum of four times per year, would be limited to daytime working hours only, and would disturb the transmission interconnect area for less than 1 minute (WAPA 2015).

Decommissioning would involve no more time and equipment than construction; therefore, the impact on noise levels due to decommissioning the transmission interconnect would be no greater than the impacts due to construction.

AZ Solar 1

Impacts due to the noise generated by the construction of the project would be annoying (minor), but temporary. The maximum sounds level for the loudest piece of equipment at the nearest sensitive receptor residence is approximately 49.3 dBA (Table 3.8-5). The outdoor noise level at the sensitive receptor would increase by approximately 12.4 dBA, which is twice as loud as the outdoor ambient noise level and is approximately equivalent to the noise level inside a department store or hearing a residential air conditioning unit located 20 feet away. Construction-related noise and impacts to sensitive receptors

during Solar Field 2 construction would be similar to those described for Solar Field 1 because similar equipment would be used. Solar Field 1 would not be constructed at the same time Solar Field 2 is constructed, therefore noise from Solar Field 1 construction and Solar Field 2 construction would not be combined.

Table 3.8-5. Calculated Noise Levels at Nearest Sensitive Receptor due to Solar Field 1 Construction

	Calculated L_{max} (dBA)	Calculated L_{eq} Total (dBA)	Noise Level, Ambient and Construction L_{eq} (dBA)
Ambient baseline noise level*	–	–	43.0
Noise level at residence/campground (Spirit Ranch) (3,036 feet from the center of the project area)	49.3	55.2	55.4
Noise level at campground (5,450 feet from the center of the project area)	44.3	50.1	50.8
Noise level 2 miles from the center of the project area	38.5	44.3	46.7

* Baseline noise level obtained based on estimated local land use.

Operations and maintenance–related noise would consist of a weekly maintenance inspection by workers in two pick-up trucks, small utility vehicles, water trucks, and occasional heavy equipment. Noise impacts from the operation of these vehicles and equipment are expected to be negligible and of short duration.

Operations-related noise impacts due to the noise generated by the transformers and inverters would be minor and long term. Transformers are the loudest piece of operational equipment in a substation and operate continuously (24 hours a day, 7 days a week). Transformer noise is principally a result of core vibration and is a function of the surface area, whether the transformer is air-filled or oil-filled, and the power rating. Transformer noise propagates and attenuates at different rates depending on size, voltage rating, and design, but typically generates a noise level ranging from 60 to 80 dBA. Conservatively, operational noise from the transformer would be no louder than the loudest construction equipment—a wood chipper with a dBA of 85. Therefore, when operational noise from a transformer located at the property boundary closest to sensitive receptor decreases to the receptor, it would be less than or equal to 61.9 dBA which is more than twice as loud as the ambient noise level. This is comparable to the sound level inside a department store or a residential air conditioning unit located 20 feet away.

Inverters will also generate noise, typically ranging from 65 to 70 dBA. The noise from the inverters at a given moment would not be noticeable to the nearest sensitive receptor because its noise would be overpowered by the louder noise from the transformer. Inverters also do not operate at night.

Decommissioning would involve no more time and equipment than construction; therefore, the impact on noise levels due to decommissioning would be no greater than the impacts due to construction.

Cumulative Impacts

Noise impacts from the project and transmission interconnect would typically be localized, with noise levels associated with construction and operations returning to ambient conditions within a relatively short distance. Similar noise impacts would occur as a result of construction and operations for the transmission system maintenance projects and potentially overlapping construction of the Mountain View RV Resort project. There would be cumulative minor noise impacts in this localized area but these would

be temporary. Based on the relatively minimal nature of operational noise, ongoing cumulative effects would only occur for a short time during construction and during routine maintenance; there would be no long-term cumulative noise impacts.

3.9 Public Health and Safety

This section analyzes impacts of the Proposed Action and No Action Alternative on the public health and safety issues identified during scoping, including the potential for solar panels (which contain toxic materials) to break, hazards posed by battery storage, and air quality impacts (including fugitive dust) to sensitive populations. The public health and safety analysis area is a 3-mile radius around the project area. This analysis area was selected to encompass the area in which other project-related impacts may overlap with public health and safety.

3.9.1 Affected Environment

A review of aerial imagery identified one existing potential source for hazardous materials in the analysis area—the Salome waste transfer station located 1 mile north of the Proposed Action. The waste transfer station is operated by La Paz County. Primary access to the waste transfer station is Hall Avenue, which would be the same access road used by materials, equipment, and commuter trips associated with the proposed AZ Solar 1 facility. No specific public health and safety issues have been identified for the waste transfer station and it is assumed that the facility is operated in compliance with all applicable laws and regulations regarding waste transfer stations.

No public health and safety issues currently exist on the AZ Solar 1 facility project area. A Phase I Environmental Site Assessment was prepared for the privately owned AZ Solar 1 property. The Phase I Environmental Site Assessment determined that the project area has been an undeveloped vacant desert land with no known prior uses. Based on the review of historical aerial photographs, an interview with a representative of the owner of the project area, a review of the Environmental Data Resources, Inc., database, and field reconnaissance, it was concluded that there was no evidence of recognized environmental conditions in connection with the project area (SWCA Environmental Consultants 2018c).

A Phase I Environmental Site Assessment was not performed for the transmission interconnection area on BLM-managed lands. An existing transmission line and access roads are located in the project area. WAPA treats the existing wood pole transmission line structures with creosote to inhibit rot every 5 to 10 years, depending on yearly visual inspection results. Creosote is a fungicide, insecticide, and sporicide used as a wood preservative for aboveground and belowground wood protection treatments. Creosote is registered as a Restricted Use Pesticides and is primarily used to pressure-treat railroad ties/crossties and utility poles and crossarms (EPA 2008).

3.9.1.1 FUGITIVE DUST

A potential public health issue identified during the scoping process was increased exposure to particulate matter emissions (i.e., fugitive dust). As of January 22, 2019, the EPA designates La Paz County as in attainment or unclassified for all criteria pollutants under the NAAQS, which includes particulate matter pollution (EPA 2019a). Please see Section 3.4.1 for further discussion of existing air quality conditions in the analysis area.

Sensitive populations, including the young, elderly, and those with respiratory problems, are at a higher risk for health problems from exposure to particulate matter pollution (EPA 2018). Sensitive receptors in the analysis area include nearby residence (closest residence is 0.7 mile from the project area boundary), a school, and a campground and residences south of U.S. 60.

Another potential hazard from exposure to fugitive dust pollution includes the possibility of an increased release of spores associated with the fungus that causes valley fever. Valley fever (*Coccidioidomycosis*) is a condition that causes cold- or flu-like symptoms and in some cases can develop into more serious long-term lung problems or spread to the central nervous system, skin, or bones and joints (Centers for Disease Control and Prevention 2019).

3.9.2 Environmental Consequences

3.9.2.1 NO ACTION

Under the No Action Alternative, the project would not be developed and there would be no hazards to workers or the public; therefore, there would be no impacts to public health and safety in the analysis area.

3.9.2.2 PROPOSED ACTION

The Proposed Action would have negligible impact on public health and safety from fugitive dust emissions and hazardous materials use and storage during construction, operations and maintenance, and decommissioning.

WAPA

During construction, WAPA would create 0.01 ton of fugitive dust emissions (reported as PM₁₀ and PM_{2.5}) (see Table C-1 in Appendix C), which represents a less than 0.01% increase in emissions above existing La Paz County emissions and would not cause an exceedance of NAAQS. As discussed in Section 3.4.2.3, construction and operation of the transmission interconnection would result in short-term and transient emissions from equipment, vehicles, and fugitive dust. WAPA's implementation of dust control measures to minimize fugitive dust leaving the project area are accounted for in the air quality analysis. Fugitive dust emissions from construction and operation of the transmission interconnection would be negligible relative to the analysis area's existing conditions and would therefore have a negligible impact on public health.

Decommissioning would result in similar short-term and transient emissions as described above for construction. There would be no long-term emissions after decommissioning.

AZ Solar 1

AZ Solar 1 facilities (Solar Fields 1 and 2) construction fugitive dust emissions would total 13.06 tons (see Table C-3 in Appendix C), which represents 0.38% of the La Paz County's annual PM₁₀ emissions and 0.27% of PM_{2.5} emissions. During operations, particulate matter emission would increase by less than 0.01%, a portion of which is derived from fugitive dust emissions. AZ Solar 1's implementation of dust control measures to minimize fugitive dust leaving the project area is also accounted for in the air quality analysis. AZ Solar 1's emissions would not cause an exceedance of NAAQS. The short-term construction fugitive dust emissions and long-term fugitive dust operations emissions would have a negligible impact on public health.

Decommissioning would result in similar short-term and transient emissions as described above for construction. There would be no long-term emissions after decommissioning.

Hazardous Materials

WAPA

Impacts to public health and safety from WAPA's hazardous materials are unlikely. WAPA would not generate hazardous wastes during the construction, operations and maintenance, and decommissioning of the transmission interconnection except for the retreating of the existing wood pole transmission line structures with creosote every 5 to 10 years. As discussed in the groundwater analysis (see Section 3.6), in the unlikely event of a leak or spill, WAPA would quickly contain and remove all spilled material so none would enter the groundwater and no impacts to groundwater quality would occur. Given the restrictive use of creosote, the EPA has determined that no impacts to food or water resources would occur as a result of this product, and residential exposure is minimal (EPA 2008).

AZ Solar 1

AZ Solar 1 would not generate hazardous wastes during construction of the facilities (Solar Fields 1 and 2). As with the transmission interconnection, in the unlikely event of a leak or spill during construction, operations and maintenance, or decommissioning, AZ Solar 1 would quickly contain and remove all spilled material so none would enter the groundwater and no impacts to groundwater quality would occur (see Section 3.6).

Hazardous materials contained in the solar panels, battery storage systems, and transformers and inverters are unlikely to impact public health and safety. A comprehensive analysis of hazardous materials and environmental exposure was completed for the Draft Solar Energy Development Programmatic Environmental Impact Statement⁶ (Draft Solar PEIS) developed by the BLM and DOE (BLM and DOE 2010). As described in the Draft Solar PEIS, solar panels for utility-scale facilities would likely use nonhazardous silicon-based semiconductor material in the near term. However, semiconductors containing cadmium, copper, gallium, indium, and/or arsenic compounds could be used in the future. Of these, cadmium is the metal with the highest potential for use in utility-scale systems and also has high toxicity. Cadmium-based semiconductor modules contain about 7 g of cadmium per square meter (Fthenakis and Zweible 2003). Consequently, substantial quantities of cadmium or other semiconductor metals may be present at utility-scale PV facilities. The release of cadmium and other heavy metals under normal operations could occur through leaching from broken or cracked modules. In general, researchers have concluded that such releases would result in a negligible potential for human exposures, including leaching into groundwater (EPRI and PIER 2003; Fthenakis and Zweible 2003). As one paper has noted:

The only pathways by which people might be exposed to PV compounds from a finished module are by accidentally ingesting flakes or dust particles, or inhaling dust and fumes. The thin CdTe/CdS layers are stable and solid and are encapsulated between thick layers of glass. Unless the module is purposely ground to a fine dust, dust particles cannot be generated. The vapor pressure of CdTe at ambient conditions is zero. Therefore, it is impossible for any vapors or dust to be generated when using PV modules. (Fthenakis and Zweible 2003:2).

AZ Solar 1 facility operations would include the use of small quantities of potentially hazardous materials within the solar panel arrays, battery storage systems, and the transforms and inverters as described in Section 2.6. The routine maintenance operations of the solar panels (such as washing) under normal operations would not cause harmful exposure of solar panel hazardous materials. Human exposure to hazardous materials can be averted through appropriate waste management strategies, properly designed

⁶ A Final Solar Energy Development Programmatic Environmental Impact Statement was published in 2012. The Final Solar PEIS is condensed and references the Draft Solar PEIS extensively; therefore the Draft Solar PEIS is referenced here.

storage areas, and worker training. AZ Solar 1 would service any broken or damaged solar modules or transformers and inverters and any associated released chemicals would be appropriately cleaned. AZ Solar 1 would recycle PV panels if damaged or at the end of their useful life per the manufacturer's warranty. The battery energy storage systems include self-contained design features; therefore, no leakage or hazardous waste exposure from battery storage systems are anticipated to occur. AZ Solar 1 would inspect battery storage systems for damage prior to installation and during routine maintenance and operations. Damaged systems would be handled in accordance with manufacturers specifications, including those for recycling. Additionally, AZ Solar 1 would develop an emergency response plan for operations and maintenance of the facility.

All potential sources of hazardous materials would be removed from the site during decommissioning (i.e., solar panels, battery storage systems, and transformers and inverters) and AZ Solar 1 would dispose of these materials in accordance with manufacturers specifications, including those for recycling; therefore, decommission would have no long-term impacts to public health and safety.

Cumulative Impacts

The Proposed Action is not anticipated to have a cumulative impact on public health and safety in the analysis area. As discussed in Sections 3.4 and 3.6, negligible long-term cumulative impacts are expected to occur for air emissions and no cumulative groundwater quality impacts are expected. No additional actions listed in Table 2.9-1 would generate hazardous materials in the analysis area. WAPA and AZ Solar 1 would comply with all applicable laws and regulations and would implement conservation measures to prevent and control accidental exposure to hazardous materials, as discussed above.

3.10 Public Land Access

This section analyzes impacts of the Proposed Action and No Action Alternative on the access issues identified during scoping, including impacts to public land access via the spur access road from Hall Avenue and the transmission line maintenance road, and impacts to public land access across the private parcel.

The public land access analysis area for direct, indirect, and cumulative impacts is a 5-mile radius around the project area. This analysis area was selected to represent the area in which access routes to public lands may be impacted as a result of implementing the Proposed Action.

3.10.1 Affected Environment

BLM manages the public lands open to public motorized and non-motorized access in the analysis area, which are in the Bouse and Wenden Travel Management Areas (TMAs). Travel management planning and route inventory for these TMAs is underway (see Table 2.9-1). The current vehicle access designation in the analysis area is "limited to existing roads and trails" (BLM 2007). There are approximately 272 miles of established and unauthorized user-created roads and trails on BLM lands in the analysis area, most of which are unpaved, primitive roads and trails, including routes established in washes (BLM 2007). Motorized access on these routes includes two-wheel drive and four-wheel drive vehicles, OHVs, and motorcycles.

Within the project area, public land access routes include an unpaved transmission line maintenance road that runs the length of the transmission line easement and an 0.3-mile-long unpaved spur access road extending west from Hall Avenue to the transmission line access road (see Figure 2-2). The transmission line maintenance road can be accessed from the south via U.S. 60 and Ballet Road or from the north via U.S. 60 and the Hall Avenue spur access road. Approximately 0.11 mile of the Hall Avenue spur access

road deviates from an established county road easement and into the northwest corner of the AZ Solar 1 private property.

WAPA uses its maintenance road to conduct routine operations and maintenance. The public travels the transmission line maintenance road and the Hall Avenue spur access road to access BLM lands in and around the Granite Wash Mountains west-northwest of the Salome area for a variety of recreational activities. Motorized users include two-wheel drive and four-wheel drive vehicles, OHVs, and motorcycles (BLM 2007). Non-motorized users include equestrians and hikers.

AZ Solar 1 recently purchased the 480-acre private property for the solar field and decided that it is not open to the public for recreation or other public uses. The previous owner may have tolerated or allowed public access in the past, and the parcel's barb-wire fence was down in places.

3.10.2 Environmental Consequences

3.10.2.1 NO ACTION

Under the No Action Alternative, the project would not be developed, and temporary closure of the transmission line access road or permanent realignment of the Hall Avenue spur access road would not be required; therefore, there would be no change to public land access in the analysis area.

3.10.2.2 PROPOSED ACTION

The Proposed Action would have short-term and minor impacts on public land access during temporary construction and operations road closures. There would be no long-term closures or loss of miles of routes available for public lands access.

WAPA

Public access to federal lands in the project area would continue as described above in the affected environment. During construction, WAPA would temporarily close the transmission line access road within the immediate vicinity of the work area for safety (see Figure 2-2). Once construction is completed, the road would be reopened per BLM's travel management plan. The road would continue to be used for routine operations and maintenance of the transmission line and the interconnection structures. Temporary road closures or restrictions would be needed to complete routine operations and maintenance.

Decommissioning would have the same temporary impacts to public land access as described above for construction and operations and maintenance. There would be no long-term impacts to public land access after decommissioning. BLM would continue to manage access per their travel management plan.

AZ Solar 1

Construction and operation of the AZ Solar 1 facility would not change the miles of routes available for public land access in the analysis area. The 0.11-mile-long spur access road within the AZ Solar 1 boundary would be realigned at the outset of construction so that continued public land access would be maintained from this access point (see Figure 2-2). There would be a temporary road closure (up to 5 days) to complete the realignment, after which the road would be reopened. Construction of Solar Field 2 would have no impact to the realigned spur access road and the road would not be impacted during or after facility decommissioning. AZ Solar 1 would erect a fence along the private property boundary for safety and security purposes. Washes in the wash avoidance area would not be fenced to allow wildlife and

water connectivity. While physical public access to BLM lands would continue to exist via washes, legal public access across the private property would not be permitted.

Cumulative Impacts

As discussed in the affected environment section above, travel management planning is currently underway for TMAs in the analysis area. Restrictions on route designations established through travel management planning (see Table 2.9-1) could result in a loss of miles of routes available for public land access within the analysis area. Because the Proposed Action would not change the miles of routes available for public access in the analysis area, the Proposed Action would not contribute cumulatively to a loss in miles of routes available for public land access.

Future routine operations and maintenance actions for the transmission line would continue to use the transmission line access road, including the temporary road closures or restrictions along this road. These routine actions, when combined with operations and maintenance of the transmission interconnection structures, are not expected to have a long-term, cumulative impact on public land access in the analysis area.

3.11 Transportation

This section analyzes impacts of the Proposed Action and No Action Alternative on the transportation issues identified during scoping, including construction and operations traffic on area roads, particularly Hall Avenue and U.S. 60, and impacts to the railroad. The transportation analysis area for direct and indirect effects is a 5-mile radius around the project area. While materials, equipment, and commuter trips may originate outside of this analysis area, project-related traffic on the busier transportation corridors, such as Interstate 10, would have no notable impact on transportation.

3.11.1 Affected Environment

The analysis area includes a network of paved and unpaved roads. Paved roads within the analysis area include three rural major collector roads (U.S. 60, State Route [SR] 72, and Salome Road), two minor collector roads (Centennial Park Road and Harquahala Road) (ADOT 2005), and other residential and commercial roads associated with urban development of Salome, Arizona. Within the analysis area, the paved access roads to be used by WAPA and AZ Solar 1 include U.S. 60, SR 72, and Hall Avenue. Unpaved roads in the analysis area are associated with residential and commercial developments, access to linear utilities, and access to dispersed recreation activities. An unpaved spur access road and transmission line access road are within the project area. An active railroad corridor runs along the U.S. 60 corridor through Salome south of the project area. Additionally, school bus stops are located along Hall Avenue.

ADOT took average annual daily traffic (AADT) counts on U.S. 60 and SR 72 in 2018. The AADT for U.S. 60 between Vicksburg Rd and SR 72 was 2,617, between 1st Street and Ballett Road was 2,828, and between Jack Street and Centennial Park Road was 3,315. The AADT for SR 72 between Vicksburg Road and the U.S. 60 intersection was 1,656 (ADOT 2018). No other AADT traffic data were identified within the analysis area. No transportation studies have been conducted on the network of paved and unpaved roads identified within the analysis area (ADOT 2019b). Additionally, none of these roads have been identified as requiring any construction or maintenance activities within the State Transportation Improvement Program (ADOT 2019a). Existing traffic on Hall Avenue includes access to residential developments, Salome Elementary School, farms, and businesses and other commercial developments, including the local waste transfer station. The unpaved spur access road from Hall Avenue and the

transmission line access road are heavily used for motorized access to BLM lands in the analysis area (see Section 3.10).

3.11.2 Environmental Consequences

3.11.2.1 NO ACTION

Under the No Action Alternative, the project would not be developed and there would be no need for construction and operations-related traffic on area roads; therefore, there would be no impacts to transportation in the analysis area.

3.11.2.2 PROPOSED ACTION

During construction, the Proposed Action would result in a minor, short-term increase in traffic on Hall Avenue in the immediate vicinity of the project area. Delay may occur during delivery of large equipment, such as the transformer and substation components; however, deliveries would be directed to the laydown areas within the project area to minimize traffic delays on Hall Avenue. Delays are not expected to impede existing uses of this road. Construction traffic would also result in a negligible impact to U.S. 60 and SR 72, with construction traffic resulting in an estimated increase of 4.8% and 7%, respectively, over existing traffic counts.

Construction of the Proposed Action would begin in the fall of 2019. Prior to construction, WAPA and AZ Solar 1 would notify the railroad operator and local schools of the construction traffic that would occur at the railroad crossings and school bus stops. These crossings and stops would experience a temporary increase in traffic during construction, but no closures or infrastructure impacts would occur. WAPA and AZ Solar 1 personnel would follow all school bus traffic stop laws in accordance with Arizona Revised Statutes (ARS) 28-857.

Access for residents, recreational users, and emergency vehicles on roads to be used by the project would always be maintained. The project would also follow ADOT guidelines for oversized loads, and all traffic control activities, personnel, and measures would be provided in accordance with the FHWA's latest Manual on Uniform Traffic Control Devices for Streets and Highways.

An increase in traffic from operation of the Proposed Action would be negligible on Hall Avenue, U.S. 60, and SR 72.

WAPA

During construction, WAPA's workers and equipment transportation would increase the AADT on U.S. 60 and SR 72 by less than 1%, a negligible increase in traffic on these routes. Construction would generate approximately nine vehicle trips per day, with six vehicles working on-site. Traffic levels on the unpaved access routes would also increase by nine vehicles per day. These construction activities and associated vehicular use would occur over a 45-day period. While the negligible increase in construction traffic would not be noticeable along U.S. 60 and SR 72, the additional construction traffic could result in minor, temporary access delays to travel in the immediate vicinity of the project area.

Operations-related traffic would not increase traffic in the analysis area above that described in the affected environment section, as operations are an ongoing activity. Decommissioning would have similar traffic impacts as described above for construction.

AZ Solar 1

At peak construction, AZ Solar 1's workers and equipment would increase the AADT for U.S. 60 by up to 3.8% and SR 72 by up to 6.0%. Traffic levels on Hall Avenue would also increase by up to 100 vehicle trips per day for the duration of construction. This increase in traffic would be short-term (4–6 months of construction) and minor. As part of the approved La Paz County Conditional Use Permit, if construction traffic damages Hall Avenue, AZ Solar 1 would be required to restore Hall Avenue to pre-construction condition. It is anticipated that construction of Solar Field 2 would require a similar number of vehicle trips along the same access roads as Solar Field 1; however, vehicles trips would be slightly fewer due the smaller area of development.

AZ Solar 1 facility operations would increase traffic in the analysis area by up to five vehicle trips per week. Based on the AADT for U.S. 60 and SR 72, traffic associated with operations would increase AADT by less than 1% on U.S. 60 and SR 72. Traffic levels on Hall Avenue would increase by up to five vehicle trips per week. These increases in traffic would be long-term (30 years) and negligible. Only authorized personnel would access the roads constructed and maintained within the private parcel; these roads would not be considered part of the transportation network within the analysis area and the general public would be unable to access them.

Decommissioning would have similar traffic impacts as described above for construction. The five weekly vehicle trips associated with routine operations and maintenance would no longer be needed after decommissioning.

Cumulative Impacts

The analysis area for cumulative impacts is 15 miles around the project area. This large analysis area was selected to assess a wider scope of traffic impacts that could result from the cumulative actions listed in Table 2.9-1. Several cumulative projects may have transportation impacts during the same time period as the Proposed Action, including the U.S. 60 Wenden to Aguila / Centennial Wash to Aquila Project, various transmission system maintenance projects, and the Mountain View RV Resort project.

The Mountain View RV Resort and various transmission system maintenance projects could require vehicle trips traveling along the same routes as the Proposed Action during the operations phase. Increased vehicle trips per day along U.S. 60 and SR 72 associated with the U.S. 60 Wenden to Aguila / Centennial Wash to Aquila Project are likely to occur. Cumulatively, these projects would incrementally increase the number of vehicle trips per day along U.S. 60, SR 72, and other paved routes surrounding Salome, Arizona (including Hall Avenue); however, the traffic impacts associated with increased vehicle trips would be short-term. Since no transportation route closures, lane restrictions, or road improvements would be required for the Proposed Action (except for some unpaved access routes described in Section 3.10), the Proposed Action would have no cumulative impact to transportation routes.

3.12 Socioeconomics

This section analyzes impacts of the Proposed Action and No Action Alternative on the socioeconomic issues identified during scoping, including impacts to the local community from employment, tax benefits to the area, and impacts to property values. The socioeconomic analysis area for direct, indirect, and cumulative impacts is La Paz County, including the Salome and Wenden Census Designated Places (CDPs). This analysis area was selected to represent the areas in which employment and taxes may be impacted from construction and operations. The analysis area for property values is the residential area in and around Salome where localized impacts to property values would be expected to occur.

3.12.1 Affected Environment

3.12.1.1 EMPLOYMENT

Labor force and employment rates for the population 16 years and over in the analysis area are presented in Table 3.12-1. Employment rates in the analysis area have been decreasing since 2010, with the Wenden CDP seeing the greatest change (15 percentage points) in employment rates from 2010 to 2017.

Table 3.12-1. Analysis Area Labor Force and Employment Rate (Population 16 Years and Over), 2010 and 2017

Analysis Area	Labor Force 2010	Employment Rate 2010	Labor Force 2017	Employment Rate 2017	Employment Rate Percent Change from 2010 to 2017
La Paz County	17,278	40.9%	17,483	37.0%	-3.9%
Salome CDP	962	24.1%	1,170	21.3%	-2.8%
Wenden CDP	486	53.7%	305	38.7%	-15%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates (U.S. Census Bureau 2019a)

Tax Revenues

State property tax in Arizona is assessed by county treasurers, and La Paz County is the property tax assessor for the analysis area. Federal lands are not subject to state property taxes. The amount of property tax assessed on privately held lands is calculated based on property value, including the value of the land and improvements on the property. Property is also classified according to its value (i.e., residential, commercial, agricultural, etc.). In general, revenue from property tax collections helps fund state and local government budgets. Counties use their allocation of property taxes to fund county services, including operating budgets, school and fire districts, court systems, sheriff's departments, transportation projects, and emergency services.

La Paz County property tax revenue collected in 2017 (the most recent year for which data were available) was \$4,923,453 (La Paz County 2017). The La Paz County Fiscal Year 2018–2019 budget estimates a slight increase in property tax revenue to \$5,145,960 for 2018, and \$5,149,165 for 2019 (La Paz County 2018).

Property Values

Property values and marketability of properties in the Salome area are dependent in part on the rural community setting of the area, which includes access to and views of open space. Existing land uses in and around Salome include undeveloped public lands (BLM and Arizona State Lands), low-density rural-residential properties, private airparks, and RV parks. Other developments in the Salome area include a transmission line utility corridor, municipal waste transfer station, cultivated farmland, railroad corridor, and small business and commercial areas concentrated along U.S. 60. According to the U.S. Census Bureau's American Community Survey, median home values for owner-occupied housing units and owner-occupied mobile homes in the Salome area have been decreasing since 2010. The median home value of owner-occupied housing units in the Salome CDP was estimated to be \$59,200 in 2017, a 33% reduction from the median home value of \$88,500 in 2010 (U.S. Census Bureau 2019b). Median home values for owner-occupied mobile homes in the Salome CDP decreased 13% during the same time period, from \$64,600 in 2010 to \$56,000 in 2017 (U.S. Census Bureau 2019c).

3.12.2 Environmental Consequences

3.12.2.1 NO ACTION

Under the No Action Alternative, the project would not be developed and there would be no changes in employment, tax revenue, or property values; therefore, there would be no impact to the analysis area for socioeconomic issues identified during scoping.

3.12.2.2 PROPOSED ACTION

Employment

WAPA would not impact the area's employment during construction, operations and maintenance, or decommissioning of the transmission line interconnection. AZ Solar 1 would have a short-term beneficial impact on employment in the analysis area during construction and decommissioning, and a negligible, long-term beneficial impact during operations.

WAPA

WAPA and or its selected contractor would require approximately eight workers over a 45-day period for construction of the transmission line interconnection. Construction workers are expected to come from existing WAPA employees, AZ Solar 1's construction crew, and/or another selected contractor. Operations and maintenance would be carried out by existing WAPA maintenance employees. Employment during decommissioning would be similar to construction and it is anticipated that WAPA and or its selected contractor would perform the decommissioning.

AZ Solar 1

AZ Solar 1 estimates up to 350 workers would be needed during peak construction. Workers would be expected to come from the analysis area's construction workforce, generating a temporary employment boost during the 4- to 6-month construction period. As the analysis area's rural communities are spread out over long distances, construction workers commuting from surrounding towns may choose to temporarily reside closer to the project area in and around the communities of Salome, Wenden, Hope, and Vicksburg. Construction is expected to occur during the fall and winter months when the residential population in the analysis area is at its height. Temporary housing options, including local RV parks, campgrounds, and other private rentals, may be limited in the surrounding communities.

During operations, the facility would be remotely monitored from a centralized operations center, with one to five maintenance staff locally employed for normal preventative maintenance, solar panel washing, and dust abatement. Employment related to decommissioning would be similar to that described for construction. There would be no long-term employment after decommissioning.

Tax Revenues

WAPA would not impact the property tax revenue or sales and use taxes from the construction, operations and maintenance, or decommissioning of the transmission line interconnection. AZ Solar 1 construction and operations would have a minor beneficial impact on property tax revenues and sales and use taxes. During operations, AZ Solar 1's property tax contributions would decline over time and long-term increases in sales and use taxes are not expected. Decommissioning would have similar short-term benefits to sales and use taxes and property taxes would be readjusted to reflect the vacant land.

WAPA

Federal lands are not subject to state property taxes; therefore, WAPA’s action would not generate property tax revenue. Construction- and decommissioning-related expenditures and sales and use taxes associated with the transmission line improvements would be minor and are not expected to result in measurable benefits to the local economy.

AZ Solar 1

AZ Solar 1’s estimated La Paz County property taxes for the 30-year operational lifespan of the facility are provided in Table 3.12-2. In the first year of operations, AZ Solar 1 would pay an estimated \$116,000 in property taxes to La Paz County, a 2.36% increase over the 2017 countywide property tax revenue. Property tax payments are expected to decline steadily in operations years 2 to 8, settling at an estimated \$15,000 per year from years 9 to 30. Additionally, taxes associated with construction-related expenditures and sales and use taxes for goods and services would result in a minor, short-term benefit to the local economy during construction of Solar Fields 1 and 2. A minimal amount of operations-related expenditures would occur over the 30-year operational lifespan of the facility.

Table 3.12-2. AZ Solar 1 Estimated Property Taxes, Operations Years 1–30

Operations Year(s)	1	2	3	4	5	6	7	8 to 30
Estimated Property Taxes (dollars)	\$116,000	\$98,000	\$81,000	\$63,000	\$44,000	\$25,000	\$16,000	\$15,000

Source: Li 2019

Property Values

WAPA’s facilities would not impact property values. The AZ Solar 1 facility may have a short-term, adverse impact on property values nearest to the facility during the higher-impact phases of facility construction and decommissioning; however, a long-term decline in property values is not expected to occur from the presence and operation of the facility.

Previous Property Value Analyses

Impacts to property values from the development of utility-scale solar facilities are dependent on multiple factors, including proximity to the facility, perceptions related to the presence of renewable energy, impacts to the rural setting, and changes in environmental quality. Individual perceptions towards the presence of renewable energy may influence a prospective buyer’s assessment of property value. The following discussion of property value impacts associated with the development of utility-scale solar projects was excerpted from the Draft Solar PEIS:

There is concern that solar facilities affect property values in nearby communities. Property values might decline in some locations as a result of the deterioration in aesthetic quality, increases in noise, real or perceived health effects, congestion, or social disruption. In other locations, property values might increase because of access to employment opportunities associated with solar development. (BLM and DOE 2010:5-229)

The Draft Solar PEIS reviewed studies that assessed at the impacts to property values from development of hazardous and noxious facilities, such as oil and gas development and municipal landfills. In general, these studies conclude that:

while there may be a small negative effect on property values in the immediate vicinity of noxious facilities (i.e., less than 1 mi [1.6 km]), this effect is often temporary and associated with announcements related to specific project phases, such as site selection, the start of construction, or the start of operations. At larger distances or over longer project durations, no significant, enduring, negative property value effects have been found. (BLM and DOE 2010:5-230)

WAPA

WAPA would not impact property values because the construction, operations and maintenance, and decommissioning of the transmission interconnection would have only negligible to minor, short-term impacts to air quality, groundwater, noise, traffic, and public health and safety as described in previous sections, and the interconnection would not substantially change the existing visual setting (see Section 3.13).

AZ Solar 1

The construction, operations and maintenance, and decommissioning of the AZ Solar 1 facility (Solar Fields 1 and 2) would result in some changes to the existing environmental quality and rural setting from the air quality, noise, traffic, and public health and safety impacts described in previous sections. The facility would have a strong to moderate visual contrast against the existing natural and built landscape, with topography, existing vegetation, fences, and buildings providing complete to partial visual screening of the proposed project from residential areas (see Section 3.13). These environmental and setting changes may have a short-term, adverse impact on property values nearest to the facility during the higher-impact phases of facility construction and decommissioning. As evidenced by the Draft Solar PEIS analysis, a long-term decline in property values is not expected to occur from the presence and operation of the facility.

Cumulative Impacts

Construction and operations associated with the cumulative actions listed in Table 2.9-1 may have similar short- and long-term socioeconomic impacts on employment, tax revenues, and property values to those of Proposed Action. The Proposed Action construction-related effects would include short-term, beneficial increases in area employment and tax revenues, and short-term, adverse impacts on property values. Because the long-term socioeconomic impacts of the Proposed Action are negligible, a significant cumulative change in socioeconomic conditions in the analysis area is unlikely.

3.13 Visual Resources

3.13.1 Affected Environment

3.13.1.1 ANALYSIS AREA SETTING

The analysis area is located on the gentle, low, mildly sloping terrain of the McMullen Valley in the Sonoran Desert where the ground consists of warm, dull, tan and gray rocks that form a gentle but easily eroded surface that is sparsely covered with resilient vegetation. The vegetation varies in vibrancy and form with tall vertical bright green saguaro cacti, short twisted herbaceous soft golden yellow plants and grasses, to mid-sized deep brown mesquite trees. The study area's viewshed is enclosed by three rugged mountain ranges. The Harquahala Mountains are located to the southeast, the Granite Mountains to the west, and the Harcuvar Mountains to the northeast and are approximately 3,500 feet above mean sea level. These mountains appear to have minimal vegetation, a rough, angular, and amorphous shape, and

are composed of warm, deep browns and reds. Development and structures in the valley include transmission infrastructure, roads, railroad, one- or two-story residential and ranch buildings, U.S. 60, and various agricultural and commercial developments. These built structures' vibrant white colors, smooth textures, angular outlines, and stark patterns contrast with the natural environment.

The primary views of the project area are from travel routes and residential areas. U.S. 60, the main regional route through the McMullen Valley, passes east–west through the analysis area. This roadway connects the valley's small towns (Walden, Salome, and Harcuvar) to larger metropolitan areas. Primary viewers are traveling by vehicle through the valley, visiting recreation areas, or are residents of the McMullen Valley towns. Salome and Harcuvar contain other arterial streets that branch from U.S. 60 and provide access to local businesses and residences. Residences, an elementary school, and various commercial developments are located along Hall Avenue, the main arterial street in Salome north of U.S. 60.

The analysis area contains approximately 1,200 residences, each with its own distinct view. These residents are primarily located in neighborhoods east and south of the project area. Residential viewers are considered sensitive because of the long time (years) that the Proposed Action would be visible.

3.13.1.2 VISUAL RESOURCE MANAGEMENT INVENTORY

Visual resources on BLM-administered lands are managed in accordance with the Visual Resource Management (VRM) System (BLM 1986). The 2007 BLM Lake Havasu Field Office RMP designated the BLM-managed lands and areas within the analysis area as VRM Class III and Class IV (BLM 2017b). The visual analysis area consists of 43,068 acres of Class III lands and 19,618 acres of Class IV lands. The project area is primarily Class IV lands, including all BLM lands in the project area, and some Class IV lands in the northwest corner of the private parcel, as illustrated in Figure 3-5. BLM objectives for these VRM Class objectives are as follows:

- **VRM Class III Objective.** The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- **VRM Class IV Objective.** The objective of this class is to provide for management activities which require major modifications 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.

VRM Class IV objectives allow for a greater level of change as compared to Class III objectives; however, both classes allow for moderate to high modifications to the landscape.

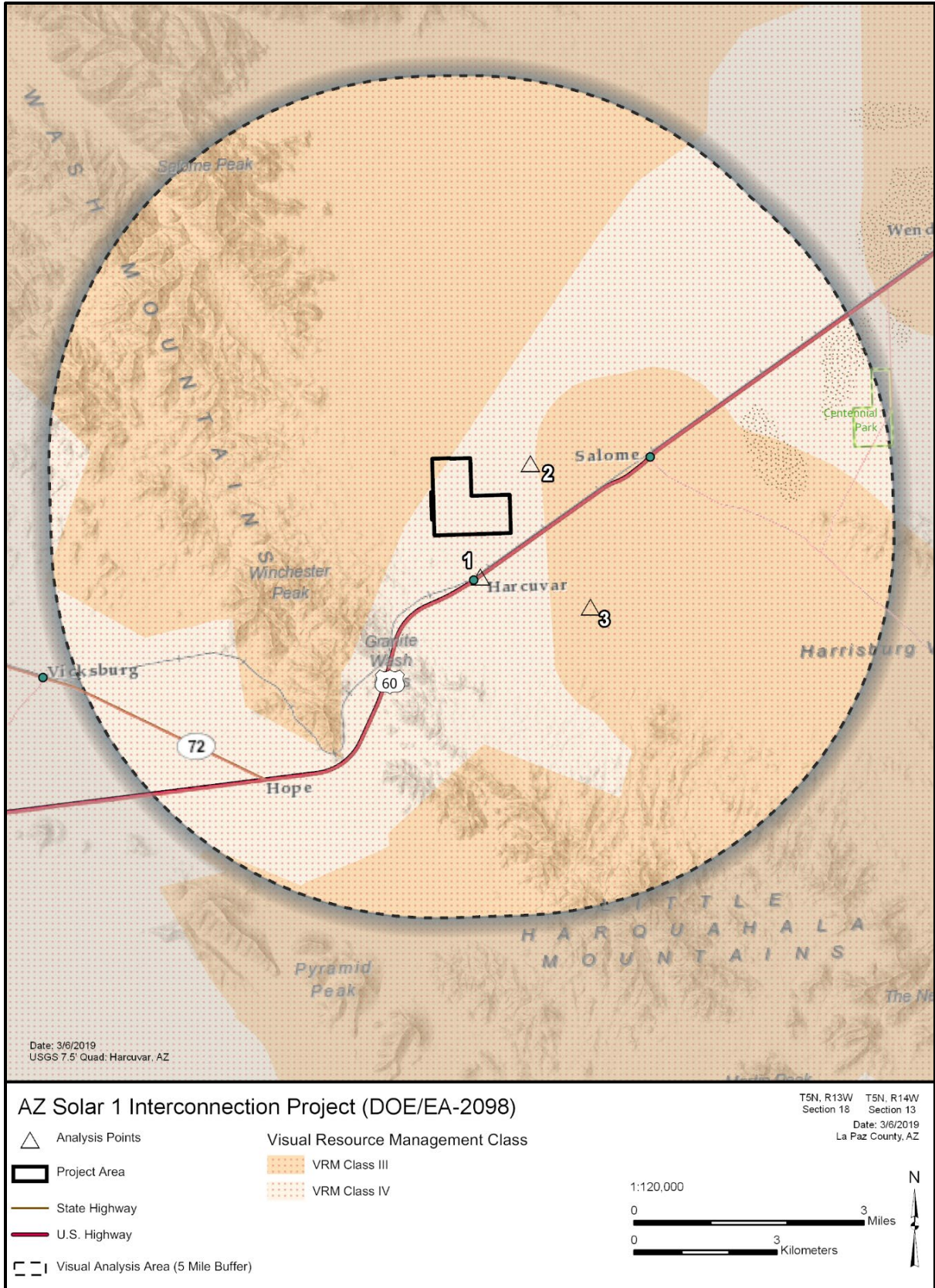


Figure 3-5. VRM Classes in the visual resource analysis area.

3.13.2 Environmental Consequences

3.13.2.1 METHODOLOGY AND ASSUMPTIONS

Viewshed Analysis

A viewshed of the analysis area was created using a geographic information system (GIS) approach to model the “seen area” or viewshed from which the Proposed Action would be visible based on elevation and landform (see Figure 3-5). The model does not account for vegetation, structures, and other landscape elements that would obstruct views. The viewshed analysis was used to assist in identification of key observation points (KOPs) that represent common or sensitive points from which the Proposed Action could be viewed. The three KOPs selected for analysis are shown in Figure 3-6.

BLM Contrast Rating Process

The BLM Visual Resource Contrast Rating System is a planning and analysis tool used for assessing project visual impacts. This tool was selected because the transmission interconnect is on BLM-managed lands and because of the large presence of BLM-managed lands nearby. It compares proposed project features with the major features in the existing landscape to determine whether the project will meet the designated VRM Class Objectives.

The contrast rating analysis was conducted for three KOPs (see Figure 3-6) representing common or sensitive views of the Proposed Action:

- KOP 1 – Iron Horse Grill, U.S. 60, Harcuvar, Arizona: This KOP represents views for visitors and residents in the town of Harcuvar and vehicular traveler views from U.S. 60, a major road within the visual analysis area. The project is located approximately 1 mile from this KOP.
- KOP 2 – Western Sky Airpark Runway Entrance: This KOP represents views for Western Sky Airpark airplane users and residents and is located approximately 0.5 mile from the project in the closest residential development.
- KOP 3 – Avenue 59 and 69th Street, southwest of Indian Hills Airpark: This KOP represents views for residents of Salome, Arizona. This KOP is located at the edge of a residential development and from an elevation higher than the project area.

The KOPs represent a sample of casual observers, including local, sensitive, and transitory observers. They differ in their distance from the project area and dominance and duration of view. Appendix E contains photographs taken from each KOP showing the current landscape view. To support the contrast rating analysis and disclose potential visibility of the Proposed Action, visualizations of the project from each KOP were simulated⁷ (see Appendix E). The visualizations are intended to provide a view of the Proposed Action after construction relative to the existing landform.

⁷ For the purposes of simulating the Project Action, the interconnection was simulated as one new 39.4-foot-tall pole installed near the existing WAPA 14/1 structure. The AZ Solar 1 facility was simulated at full build-out (Solar Fields 1 and 2), including the proposed substation and its related infrastructure.

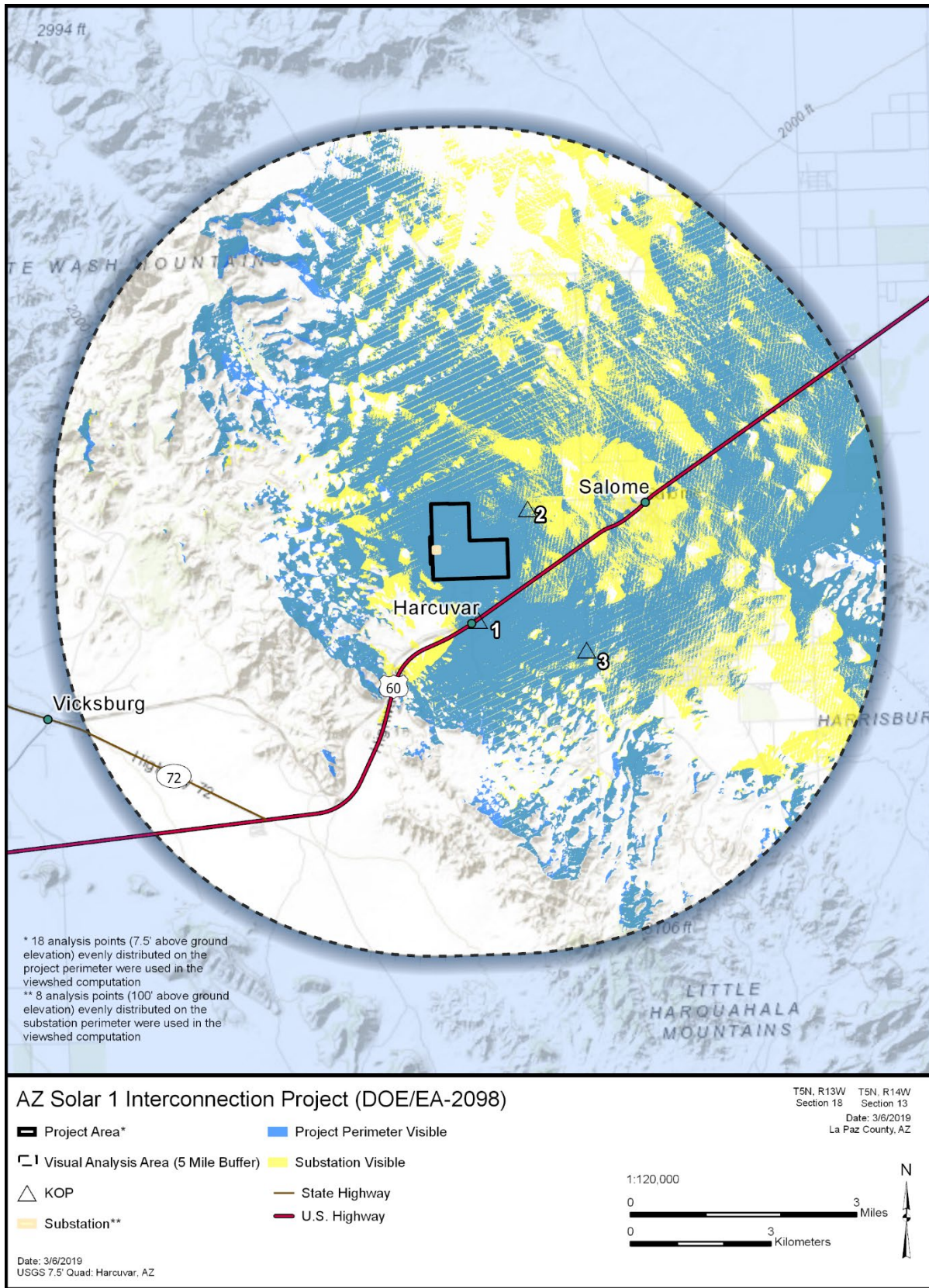


Figure 3-6. Proposed Action viewshed and Key Observation Points.

The BLM Contrast Rating process was used to determine the visual contrast that may result from the Proposed Action. The BLM Contrast Rating Forms for each KOP are provided in Appendix E. The contrast rating was based upon the visualizations of the Proposed Action as described above and the expected visual contrast between the Proposed Action elements and the existing landscape character. At each KOP, existing landforms, vegetation, and structures are described, along with a description of the Proposed Action. The level of perceived contrast between the Proposed Action and the existing landscape is then classified using the following definitions:

- None: The 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, would not be overlooked, and is dominant in the landscape.

Other Sensitive Areas

The Proposed Action's visual impacts to U.S. 60 along Granite Wash Pass were raised as a public concern during scoping. Based on the viewshed analysis (see Figure 3-6), the solar array would not be visible from U.S. 60 along Granite Wash Pass (between mileposts 52 and 53); however, the taller structures associated with the substation/switchyard and the transmission interconnection would be intermittently visible. The natural topography and vegetation along U.S. 60 would screen views as travelers exit the pass area in the eastbound direction.

Glare Analysis

AZ Solar 1 facility's glare potential was analyzed using the ForgeSolar Solar Glare Hazard Analysis Tool (SWCA Environmental Consultants 2018a). The tool meets Federal Aviation Administration glare analysis requirements (49 USC 471) and was developed in cooperation with the DOE. The tool is designed to determine whether a proposed solar energy project would result in the potential for ocular impacts (i.e., retinal damage or burn), and whether a project demonstrates compliance with certain federal airport standards. Glare is defined as a semi-continuous and sustained presence of light that may appear to sparkle from viewing locations. The effects of glare can vary from insignificant momentary blinding to temporarily seeing spots or after-images, or if intense enough or of a long enough duration, glare can cause permanent vision damage. The AZ Solar 1 proposed solar panel layout was evaluated for glare hazard along local driving routes (U.S. 60, Hall Avenue, and Winchester Avenue) and local, private airpark flight approach paths (Western Sky Airpark and Indian Hills Airpark).

3.13.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be no visual changes in the landscape or conflicts with VRM classifications; therefore, there would be no impacts to visual resources in the analysis area.

3.13.2.3 PROPOSED ACTION

The Proposed Action would create contrast (i.e., anticipated impact) with the existing landscape features. WAPA's facilities would create weak to moderate contrast and AZ Solar 1's facilities would create moderate to strong contrast. Geometric forms and addition of new colors would be introduced into the existing landscape, creating contrast between the solar facility structures and the existing landscape. The project's location in the landscape reduces the contrast for typical viewers. Travelers headed in both

directions on U.S. 60 at the posted driving speeds would see little to minimal change in the landscape. Residential areas within the analysis area are above or at the same elevation as the project area; therefore, topography, existing vegetation, fences, and buildings provide complete to partial screening of the proposed project from residential areas. The substation and interconnection infrastructure would not disrupt the mountain skyline or exceed the height of the existing transmission line. The interconnection would mimic the linear and vertical form of the existing transmission corridor.

The project would not have any visual impact associated with sunlight reflecting off the panels. According to the glare analysis, there is no anticipated potential for glare to occur on the identified route receptors and flight approach paths analyzed (SWCA Environmental Consultants 2018a).

Key Observation Points

Key Observation Point 1 – Iron Horse Grill, U.S. 60, Harcuvar, Arizona

From this KOP the project presents a strong to moderate contrast against the existing natural and built landscape and meets the VRM Class III and Class IV objectives. From this KOP the solar project components are visible and well-defined. Entire strings of the solar array would be visible in areas without vegetative screening. The solar panel array would represent the largest collection of structures in the landscape relative to the current existing structures. This solar facility, unlike anything else in this view, would have consistent and ordered pattern of form and line which juxtaposes with the scattered existing structures and gradational vegetation. However, the project would not dominate the view because existing structures (vehicles, buildings, and transmission poles) scattered throughout the view currently create contrast with the natural landscape. The proposed project would be intermittently screened by vegetation in the foreground and midground breaking up the strong lines and contrasting colors of the project.

Key Observation Point 2 – Western Sky Airpark Runway Entrance

From this KOP the project presents a moderate to weak contrast against the existing natural and built landscape and meets the Class III and IV VRM objectives. From this KOP few elements of the project would be visible, and some are not recognizable. Natural vegetation in the foreground and midground screen much of the project and break up the strong horizontal line of the panels. Existing structures in the midground present bright contrasting greys in the dark green vegetation. These existing structures create contrast with the existing landscape and would reduce the proposed project's dominance.

Key Observation Point 3 – Avenue 59 and 69th Street, Southwest of Indian Hills Airpark

From this KOP the project presents a strong to moderate contrast against the existing natural and built landscape and meets the Class III and IV VRM objectives. This view of the project mimics the existing forms of the horizontal valley and geometric structures. The project's line and texture would strongly contrast the landscape. From this KOP the project appears as a large clump of bold, hard, smooth, ordered, and angular lines and textures, contrasting with the existing structures that are irregular and are scattered throughout the view. The dark cool colors of the panels and the distant muted silver of the interconnection infrastructure are subdued tones but contrast the existing yellow-green vegetation and glaring gray structures.

Visual Resource Management Conformance

The Proposed Action would be in conformance with the VRM Class III and IV objectives, which allow for a moderate to high amount of change to the landscape. WAPA's interconnection facility would create a moderate to weak degree of contrast as shown by minimally noticeable changes in the background

views of the KOPs. The interconnection of the solar facility to the WAPA transmission corridor would include vertical infrastructure elements that would be adjacent and similar in form to the existing transmission corridor. AZ Solar 1's facilities would be visible and distinguishable from all KOPs, but would not dominate the view. From all three KOPs, AZ Solar 1's facilities mimic the horizontal line of the valley, are intermittently screened by natural plantings, and have similar visible frequency as the irregularly spaced contrasting structures that currently exist in the landscape. The facility structures would create a strong to moderate contrast when it is seen in the midground and weak when in the background. The strong contrast occurs where the AZ Solar 1 structures would be clearly visible from KOPs 1 and 3.

3.13.2.4 CUMULATIVE IMPACTS

Past and present land uses, primarily ranching and residential development, in the cumulative impacts area of analysis for visual resources have resulted in the current landscape character of the area as described in the affected environment section above. Implementation of the Proposed Action would introduce new electrical infrastructure into the region. However, because of the landscape already contains a transmission corridor and contrasting buildings and structures, this additional visual impact is expected to be minor in terms of a localized sensitivity to the landscape.

This section analyzes impacts of the Proposed Action and No Action Alternative on the visual resource issues identified during scoping, including impacts to residential areas near the project area, including the Harcuvar area, and impacts to views from U.S. 60. The analysis area for direct, indirect, and cumulative impacts is a 5-mile radius around the project area, which is roughly the maximum distance from which a casual observer could distinguish the elements of the Proposed Action.

4 COORDINATION AND CONSULTATION

4.1 Agency Coordination

WAPA invited the BLM and Reclamation to be cooperating agencies for this project. These agencies have been involved throughout the NEPA process, including scoping and EA development. Refer to Chapter 6 for a list of agency staff that contributed and were consulted in the preparation of this EA.

For this project, WAPA and/or AZ Solar 1 also contacted the following agencies:

Federal Agencies

- Bureau of Land Management, Lake Havasu Field Office
- U.S. Bureau of Reclamation, Phoenix Area Office
- U.S. Army Corps of Engineers, Arizona Field Office
- U.S. Environmental Protection Agency, Region 9 Environmental Review Office
- U.S. Fish and Wildlife Service, Arizona Ecological Services
- U.S. Department of Defense Siting Clearinghouse
- U.S. Air Force, Luke Air Force Base, 56th Range Management Office

State Agencies

- Arizona Game and Fish Department

- Arizona Department of Environmental Quality
- Arizona State Parks, Arizona State Historic Preservation Officer
- Arizona Corporation Commission / Arizona Power Plant and Transmission Line Siting Commission

County Government

- La Paz County

4.2 Tribal Consultation

WAPA initiated tribal consultation with the following tribes in a letter dated March 13, 2018:

- Chemehuevi Indian Tribe
- Colorado River Indian Tribes
- Hopi Tribe
- Fort McDowell Yavapai Nation
- Fort Mojave Indian Tribe
- Fort Yuma-Quechan Tribe
- Pueblo of Zuni
- Salt River Pima-Maricopa Indian Community
- Yavapai-Apache Nation
- Yavapai-Prescott Indian Tribe

WAPA also mailed EA scoping letters to these tribes and met with representatives from the Colorado River Indian Tribes during the scoping period.

5 APPLICABLE LAWS, REGULATIONS, AND OTHER REQUIREMENTS

Federal, state, and local agencies have jurisdiction over certain aspects of the proposed interconnection and solar facility. Major federal, state, and local agencies and their respective permit/authorizing responsibilities are summarized in Table 5-1.⁸

Table 5-1. Permit/Authorizing Responsibilities

Authorizing Action/Applicable Regulation	Responsible Lead Agency
Interconnection/Transmission Service Agreement	WAPA
NEPA	WAPA; Reclamation; BLM
BLM ROW Grant	BLM
Clean Air Act	EPA; ADEQ
Easement Grants and Road Crossing Permits	ADOT; La Paz County
Conditional Use Permit	La Paz County
National Historic Preservation Act	WAPA; Arizona State Historic Preservation Office
Native American Graves Protection and Repatriation Act	WAPA; Reclamation; BLM
American Indian Religious Freedom Act	WAPA; Reclamation; BLM
Construction Stormwater Permit	ADEQ, Arizona Division of Water Quality, Storm Water Program
Notice of Intent to Drill a Well	Arizona Department of Water Resources
Pesticide General Permit	ADEQ, Arizona Division of Water Quality, Arizona Pollutant Discharge Elimination System Program
Clean Water Act compliance, Section 404 Nationwide Permit and Section 401 Water Quality Certification	U.S. Army Corps of Engineers; ADEQ
Safety Plan	Arizona Division of Occupational Safety and Health
Migratory Bird Treaty Act	USFWS; WAPA; Reclamation; BLM
Bald and Golden Eagle Protection Act	USFWS; WAPA; Reclamation; BLM
Endangered Species Act	USFWS; WAPA; Reclamation; BLM
Executive Order 13690 (Federal Flood Risk Management) and Executive Order 11988 (Floodplain Management)	WAPA; Reclamation; BLM

⁸ The AZ Solar 1 Project is not subject to review by the Arizona Power Plant and Transmission Line Siting Committee, a Division of the Arizona Corporation Commission, because 1) the proposed plant would generate less than 100 MW, and 2) the two pole structures required for the transmission line interconnect do not meet the definition of a "Transmission Line" per ARS 40.360.

6 ENVIRONMENTAL ASSESSMENT PREPARERS AND CONTRIBUTORS

EA preparers and contributors are listed in Table 6-1.

Table 6-1. Environmental Assessment Preparers and Contributors

Name	Role
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APPENDIX A
Scoping Summary

AZ SOLAR 1 INTERCONNECTION PROJECT (DOE/EA-2098)

Scoping Summary

January 2019

Western Area Power Administration (WAPA) is responding to a request from AZ Solar 1, LLC, to interconnect its proposed photovoltaic solar plant, located near Salome in La Paz County, Arizona, to WAPA's electrical transmission system via the Little Harquahala to Harcuvar 115-kilovolt transmission line. The Bureau of Land Management (BLM) and U.S. Bureau of Reclamation (Reclamation) are cooperating agencies in the environmental planning process. The transmission line is located on BLM land in an existing right-of-way held by Reclamation. AZ Solar 1, LLC, proposes to build, operate, and maintain an approximately 32.5-megawatt photovoltaic solar energy generation facility on up to 480 acres of private land. The AZ Solar 1, LLC, facilities are not part of the federal action, but their impacts will be presented alongside that of the federal action as part of a comprehensive analysis in an environmental assessment (EA).

WAPA initiated a 30-day public scoping period for the project on October 24, 2018, ending on November 26, 2018. Scoping letters were mailed to interested parties and adjacent landowners to inform them of the project, notify them of the scoping period and open house, and request input on the project. WAPA published two newspaper advertisements for the scoping notice and open house, in the *Parker Pioneer*, on October 24 and November 7, 2018. Forty people attended the public scoping meeting held on November 8, 2018, in Salome, Arizona. In addition, at the request of the Colorado River Indian Tribes (CRIT), the agencies held a scoping meeting with CRIT representatives on November 21, 2018, in Parker, Arizona. Topics discussed at the CRIT meeting are incorporated into the tribal comment summary section below.

WAPA accepted scoping comments via telephone, email, U.S. mail, and in person at the scoping meeting. The project received a total of 16 submittals. Each submittal may have included multiple comments on environmental resources or topics for analysis. Documents were received from 11 individuals, two businesses, two government agencies at the state level, and one tribe. All documents were unique, no form letters were received.

In total, 52 comments were identified from the 16 documents. Comments received concerned a range of environmental and impacts analysis issues of the project. Biological resources were the most common topic with a total of eight comments. Biological resource topics included those concerning tortoises and other wildlife, salvage restricted species, avian (bird) species, and general conservations of comments received with a total of 8 comments. Land use was the second most commented topic, with six comments addressing impacts to airparks and two comments addressing solar project decommissioning. Air quality dust impacts was the third most common topic, with three comments. Other topics raised in the comments included access to public lands, cultural resources, surface water resources, socioeconomics, noise, public health and safety, traffic, visual resources, and the National Environmental Policy Act (NEPA) process. One comment expressed general opposition to the project and six expressed general support of the project. Table A-1 summarizes the various comment topic areas and corresponding comment totals.

Table A-1. Primary Issue Codes and Comments Identified during Public Scoping

Primary Issue	Secondary Issue	Number of Coded Comments*
Access	Project access road	1
	Recreation	1
Air Quality	Dust	3

Primary Issue	Secondary Issue	Number of Coded Comments*
Alternatives	Interconnection	1
Biological Resources	Conservation Measures	1
Biological Resources—Wildlife	Habitat	1
	Habitat connectivity	1
	Solar plant design	1
Biological Resources—Salvage Restricted Species	Saguaro	1
Biological Resources—Tortoise	Data	1
Biological Resources—Avian and Transmission Line	Conservation measures	2
Cultural Resources	Study/survey needed	1
	Tribal consultation	2
	Prehistoric sites	1
General	Support	6
	Opposition	1
Groundwater	Water Quality	1
Land Use	Airparks	6
	Decommissioning	2
	Transmission line design	1
NEPA Process	Public involvement	1
	Operations	2
	Proposed action description	2
	Federal agency authority	1
Noise	Operations	1
Public Health and Safety	General	1
	Toxic materials	1
Socioeconomics	General	1
	Costs	1
	Property value	2
Traffic	General	1
Visual Resources	Residences	1
Water Resources	Surface water	2

* Note that most submittal documents addressed multiple topics, resulting in a comment count well over the 16 total documents received. Additionally, several comments were coded to more than one primary and secondary issue category.

SUMMARY OF TOPICS HEARD AT THE PUBLIC OPEN HOUSE

At the public open house, WAPA and Reclamation agency staff and representatives from AZ Solar 1, LLC discussed the project and NEPA process with members of the public. Topics of interest or concern expressed at the public meeting included project water use amounts and sources for construction and operations, dust from construction and operations, and recreation access to adjacent BLM lands. Attendees expressed concern about the project's use of groundwater because area residents depend on wells for domestic uses; they have noticed that the water level in the aquifer has dropped in recent years,

and some wells in the Harcuvar area cannot be dug deeper due to bedrock. Area residents are concerned about air quality and dust because they have experienced an increase in dust, increase in the severity of local dust storms, and a decrease in rainfall or rainfall events over the past 10 years. Attendees expressed concern about loss of vehicular access to adjacent BLM land, such as Indian Canyon, which is used for recreation and community events, because the informal dirt road at the end of Hall Avenue crosses the northern portion of the proposed solar plant parcel.

Other topics heard at the open house included project construction and operations access and traffic, general impacts to wildlife and habitat, noise from construction and operations, viewshed as seen from Granite Wash Pass, and socioeconomic impacts to nearby residences and the community of Salome.

SUMMARY OF COMMENTS FROM AGENCIES

The Arizona State Historic Preservation Office (SHPO) and Arizona Game and Fish Department (AGFD) submitted comments regarding the project. SHPO recommend a Class III (intensive, 100%) survey of the project area (private and federal lands) and requested a copy of the survey report for review and comment. SHPO also recommended that the federal agencies consult with Tribes. AGFD's comments addressed potential project biological issues, including avian–transmission line conflicts, general wildlife impacts and habitat loss, and wash impacts to both upstream and downstream habitats. Other AGFD comments included recommendations and best management practices for minimizing wildlife impacts from solar developments.

SUMMARY OF COMMENTS FROM TRIBES

Comments submitted by the Hopi Tribe during the scoping period identified cultural affiliations to southern Arizona and expressed concern for the identification and avoidance of ancestral sites and prehistoric archaeological sites. The Hopi Cultural Preservation Office requested consultation on any proposal with the potential to adversely affect prehistoric sites and to review any documentation associated with adversely affected sites.

The agencies and CRIT discussed several topics of concern and interest at the November 21, 2018, meeting, including project impacts on plants and wildlife and impacts to cultural resources. CRIT provided additional background on ancestral use in the Salome area, requested to inspect BLM lands in the Harcuvar area, and to review cultural resource surveys completed for the project.

SUMMARY OF COMMENTS FROM INDIVIDUALS AND BUSINESSES

Individuals who submitted comments included concerned citizens and local business owners. Topics addressed in these comments ranged from biological resource concerns (including general wildlife and sensitive species such as the desert tortoise) to fugitive dust, access to BLM lands, visual resources, surface waters, land use, property values, and traffic concerns. Individual and business comments also expressed general support for and opposition to the proposed project. One alternative was suggested in the comments to locate the solar facility in another part of Arizona that would not impact people.

SUMMARY OF INTERNAL AGENCY SCOPING

WAPA and Reclamation met on December 19, 2018, to review the public scoping comments and discuss the issues raised by the public during scoping. WAPA solicited input from internal staff and Reclamation staff to assess other agency issues pertaining to the project. No additional internal agency scoping issues were raised during the meeting. During this internal agency scoping meeting, the agencies reviewed a comprehensive list of resources and resource issues for consideration in the EA analysis. The list of resource issues carried forward for detailed analysis and the list of resource issues considered but dismissed from further evaluation are detailed in Chapter 3 of the EA.

APPENDIX B

AZ Solar 1 Conservation Measures

Appendix B. AZ Solar 1 Conservation Measures

Resource	Measure	Project Phase
Air Quality	Control airborne dust during construction and operations: <ul style="list-style-type: none"> • Restrict dust-causing activities during high wind periods • Use stabilized rock at construction entrances/exits • Apply water and/or dust suppressants • Gravel surfaces, including roads and laydown areas, as applicable • Reduce vehicle speeds on unpaved roads • Woody vegetation cleared from the site may be mulched and used for on-site dust suppression. • Covering vehicles that transport loose materials as they travel on public roads, using dust suppressants on truck loads, and keeping loads below the freeboard of the truck bed. • Implement erosion control measures per project SWPPP 	Construction, operations and maintenance, and decommissioning
Air Quality	Use machinery that has air-emission-control devices as required by Federal, state, and local regulations or ordinances.	Construction, operations and maintenance, and decommissioning
Air Quality	Limit the idling time of equipment, unless idling must be maintained for proper operation (e.g., drilling, hoisting, and trenching) or safety.	Construction, operations and maintenance, and decommissioning
Biological Resources	Follow AGFD guidelines for monitoring and handling of desert tortoises on construction projects. Employ qualified desert tortoise biologists to perform preconstruction tortoise surveys and relocate tortoises per AGFD guidelines. Include desert tortoise education in the ecological awareness training.	Construction and decommissioning
Biological Resources	Fill any trenches/holes immediately or provide escape ramps and cover them at night. Trenches that have been left open overnight, or after rain events will be inspected, and animals removed prior to backfilling.	Construction and decommissioning
Biological Resources	Conduct vegetation clearing during the non-breeding bird season. If the bird breeding season cannot be avoided, conduct bird nest surveys in areas to be cleared and flag a non-disturbance area to avoid destroying active nests.	Construction
Biological Resources	Avoid or minimize impacts on burrowing owls by following AGFD <i>Burrowing Owl Project Clearance Guidance for Landowners</i> , to survey for burrowing owls and to institute the appropriate conservation measures for burrowing owls that occupy burrows in the construction footprint.	Construction and decommissioning
Biological Resources	Determine the presence of active raptor nests (i.e., raptor nests used during the breeding season). Measures to reduce raptor use at the Project Area (e.g., minimize road cuts, maintain either no vegetation or non-attractive plant species around PV panels) shall be considered.	Construction, operations and maintenance, and decommissioning
Biological Resources	Facilities shall be designed to discourage their use as perching or nesting substrates by birds including designing above ground transmission and collector lines to follow established Avian Power Line Interaction Committee (APLIC) guidelines to minimize bird collisions and avoid electrocution of raptors.	Construction and operations
Cultural Resources	Unexpected discovery of cultural resources during construction shall be brought to the attention the Arizona State Museum (ASM) immediately. Work shall be halted in the vicinity of the find to avoid further disturbance of the resources while they are being evaluated and appropriate mitigation measures are being developed.	Construction and decommissioning
Invasive Species and Weed Management	Develop and implement control of noxious weeds and invasive species, which could occur as a result of new surface disturbance activities at the site. If trucks and construction equipment are arriving from locations with known invasive vegetation problems, a controlled inspection and cleaning area shall be established to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.	Construction, operations and maintenance, and decommissioning
Surface Waters	Obtain and comply with necessary permits in accordance with the Clean Water Act Section 404 and Section 401.	Construction
Surface Waters / Soils	Recontour and revegetate temporary disturbance areas that are no longer needed in order to increase infiltration and reduce soil compaction.	Construction and decommissioning

Resource	Measure	Project Phase
Soils	Minimize soil-disturbing activities on wet soils.	Construction, operations and maintenance, and decommissioning
Soils	Perform routine site inspections to assess the effectiveness of maintenance requirements for erosion and sediment control systems. Regularly maintain roadway ditches, and culverts.	Operations
Fire / Fuels Management	Employ wildland fire prevention measures including limiting vehicle travel to and within construction areas to only essential vehicles, establishing parking guidelines in remote areas, banning smoking and non-construction flame sources outside of vehicles, and establishing safety guidelines for construction flame and spark sources. As a fire protection measure, vegetation would not be permitted to grow underneath the solar panels.	Construction, operations and maintenance, and decommissioning
Transportation	Obtain the applicable permits needed to transport equipment and materials (e.g. oversized transformers, lightning protection pole) and coordinate closely with ADOT and other state transportation departments, as appropriate.	Construction
Public Health and Safety	Battery energy storage systems are designed to be self-contained systems. They will require a fire protection system approved through the National Fire Protection Association and will have the ability to self-cool with fans and/or air conditioning equipment.	Operations
Public Health and Safety	Develop and maintain an emergency response plan. A copy of plan will be kept on-site during operations and maintenance and facility staff will be trained on the procedures outlined in the plan.	Operations
Wastes and Hazardous Materials	Design and operate systems containing hazardous materials in a manner that limits the potential for their release.	Construction, operations and maintenance, and decommissioning
Wastes and Hazardous Materials	Ensure vehicles and equipment are in proper working condition to reduce potential for leaks of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials.	Construction, operations and maintenance, and decommissioning
Visual Resources	Reduce visual impacts during construction by minimizing areas of surface disturbance, controlling erosion, using dust suppression techniques, and, if applicable, restoring exposed soils as closely as possible to their original contour and vegetation.	Construction, operations and maintenance, and decommissioning
General	Implement a worker environmental awareness program to train facility personnel regarding their responsibilities to conserve protected resources that are located on-site and associated treatment measures.	Construction, operations and maintenance, and decommissioning

APPENDIX C

Supplemental Air Quality and Noise Analysis Information

Table C-1. Estimated Transmission Interconnect Construction Emissions in Tons per Year, Criteria Pollutants and HAPs

Emission Source	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	VOC	HAPs
Construction equipment (off-road)	0.06	0.08	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Worker and on-road construction equipment commuting	0.09	0.01	< 0.01	0.03	0.01	0.01	< 0.01
Equipment/material delivery	0.08	0.09	< 0.01	0.06	0.01	0.01	< 0.01
Fugitive dust from construction operations	–	–	–	0.01	< 0.01	–	–
Total	0.23	0.18	< 0.01	0.11	0.02	0.03	< 0.01
La Paz County Emissions Inventory Total	38,202	4,362	14	6,006	1,090	115,414	21,874
Construction Emissions Increase as a Percent of La Paz County Emissions Inventory Total	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%

Source: EPA (2014)

Note: CO_{2e} is listed in metric tons. SO_x = sulfur oxides; VOC = volatile organic compound.**Table C-2. Estimated Transmission Interconnect Operations Emissions in Tons per Year, Criteria Pollutants and HAPs**

Emission Source	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	VOC	HAPs
Quarterly Inspections	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
La Paz County Emissions Inventory Total	38,202	4,362	14	6,006	1,090	115,414	21,874
Operations Emissions Increase as a Percent of La Paz County Emissions Inventory Total	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%

Source: EPA (2014)

Note: CO_{2e} is listed in metric tons. SO_x = sulfur oxides; VOC = volatile organic compound.**Table C-3. Estimated Solar Field 1 Construction Emissions in Tons per Year, Criteria Pollutants and HAPs**

Emission Source	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	VOC	HAPs
Construction equipment (off-road)	2.93	4.53	0.01	0.18	0.16	0.69	0.07
Worker and on-road construction equipment commuting	11.56	1.18	0.02	10.80	1.56	1.32	0.13
Equipment/material delivery	0.29	0.31	< 0.01	0.19	0.05	0.04	< 0.01
Fugitive dust from construction operations	--	--	--	11.87	1.19	--	--
Total	14.78	6.02	0.04	23.04	2.96	2.05	0.20
La Paz County Emissions Inventory Total	38,202	4,362	14	6,006	1,090	115,414	21,874
Construction Emissions Increase as a Percent of La Paz County Emissions Inventory Total	+ 0.04%	+ 0.14%	+ 0.25%	+ 0.38%	+ 0.27%	+ < 0.01%	+ < 0.01%

Source: EPA (2014)

Note: CO_{2e} is listed in metric tons. SO_x = sulfur oxides; VOC = volatile organic compound.

Table C-4. Estimated AZ Solar 1 Facility Operational Emissions in Tons per Year, Criteria Pollutants and HAPs

Emission Source	CO	NO _x	SO _x	PM ₁₀	PM _{2.5}	VOC	HAPs
Construction equipment (off-road)	0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Worker and water truck commuting and trips	0.01	< 0.01	< 0.01	0.12	0.01	< 0.01	< 0.01
Inspections	0.03	< 0.01	< 0.01	0.10	0.01	< 0.01	< 0.01
Total	0.05	0.01	< 0.01	0.22	0.02	< 0.01	< 0.01
La Paz County Emissions Inventory Total	38,202	4,362	14	6,006	1,090	115,414	21,874
Operations Emissions Increase as a Percent of La Paz County Emissions Inventory Total	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%	+ < 0.01%

Source: EPA (2014)

Note: CO₂e is listed in metric tons. SO_x = sulfur oxides; VOC = volatile organic compound.**Table C-5. WAPA Construction Equipment Roster Used For Noise Analysis**


Equipment Type	Quantity	Typical Maximum Noise Levels (dBA at 50 feet)
Bucket truck	1	75
Water truck	1	75
Backhoe	1	78
Concrete truck	1	81
Crane	1	81
Auger	1	84
Grader	1	85

Table C-6. AZ Solar 1 Construction Equipment Roster Used For Noise Analysis

Equipment Type	Quantity*	Typical Maximum Noise Levels (dBA at 50 feet)
Pickup truck	50	75
Water truck	5	75
Dump truck	3	77
Backhoe	11	78
Concrete truck	1	81
Crane	1	81
Wood chipper	1	85

* Quantity provided for Solar Field 1 construction. It is assumed that similar types of quantities of materials would be used during construction of Solar Field 2.

APPENDIX D
Biological Evaluation



Biological Evaluation of the
AZ Solar 1 Project,
La Paz County, Arizona

MARCH 2019

PREPARED FOR
AZ Solar 1, LLC

PREPARED BY
SWCA Environmental Consultants

BIOLOGICAL EVALUATION OF THE AZ SOLAR 1 PROJECT, LA PAZ COUNTY, ARIZONA

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SWCA Project No. 49090

March 2019

EXECUTIVE SUMMARY

This biological evaluation (BE) has been prepared to support Western Area Power Administration's (WAPA) effect determination under Section 7 of the Endangered Species Act of 1973, as amended (ESA), as well as other federal and state regulations, for the AZ Solar 1 Project in Section 18, Township 5 North, Range 13 West, Gila and Salt River Baseline and Meridian, La Paz County, Arizona. This project evaluation covers approximately 480 acres of privately owned land and approximately 3.5 acres of Bureau of Land Management (BLM)-administered land (action area).. The objectives of this BE are to 1) describe vegetation communities in the AZ Solar 1 Interconnection Project action area; and 2) evaluate habitat suitability for both federally listed and special-status species.

Eight federally listed species are addressed in this BE, all of which are listed by the U.S. Fish and Wildlife Service as threatened or endangered and are therefore protected under the authority of the ESA.

At this time, no federally listed species are known to occur in the action area. It is highly unlikely that the proposed action will have an effect on any federally listed species or its habitat. However, the lead permitting agency has the authority and final decision regarding what effect this project will have on any federally listed species and whether to require species-specific surveys for any protected species.

1.0 INTRODUCTION

SWCA Environmental Consultants (SWCA) was contracted by AZ Solar 1, LLC, to complete a biological evaluation (BE) for the AZ Solar 1 Project (project) near Salome, La Paz County, Arizona. The action area¹, which totals approximately 480 acres of privately owned land and approximately 3.5 acres of Bureau of Land Management (BLM)-administered land, is in Section 18, Township 5 North, Range 13 West, Gila and Salt River Baseline and Meridian (Figure 1). The purpose of this BE is to support WAPA's effect determination under the Endangered Species Act of 1973, as amended (ESA) (16 United States Code [USC] 1531 *et seq.*).

The proposed project includes an approximately 60-megawatt (MW) photovoltaic solar energy generation facility and interconnection with the Little Harquahala–Harcuvar 115-kilovolt (kV) transmission line, located within an existing utility right-of-way corridor located on land managed by the BLM and U.S. Bureau of Reclamation (Reclamation). Installation of panels, transformers, inverters, and substations on private land at the facility site would include vegetation clearing and grading. Due to the presence and operation of heavy equipment, some construction noise is expected during installation.

The scope of work for this BE included

- review of the U.S. Fish and Wildlife Service (USFWS) species list for La Paz County and the action area, available from the USFWS Information for Planning and Consultation (IPaC) website, as well as a project-specific IPaC-generated list;
- review of the Arizona Game and Fish Department (AGFD) Arizona Environmental Online Review Tool report;
- review of the USFWS Birds of Conservation Concern (BCC) list for Bird Conservation Region 16-Southern Rockies and Colorado Plateau, and Region 33-Sonoran and Mojave Deserts;
- review of the BLM Arizona Sensitive Species List (BLM 2017);
- field reconnaissance of the property; and
- evaluation of the potential for the species listed in this report to occur in the action area.

2.0 METHODS

SWCA biologist Meggan Dugan conducted field reconnaissance of the action area on July 24, 2018 and January 18, 2019. The field reconnaissance consisted of a pedestrian survey of the action area to evaluate vegetation and landscape features considered important to the potential occurrence of special-status plant and animal species. Vegetation was classified to the community level according to the map “Biotic Communities of the Southwest” (Brown 1994). The Natural Resources Conservation Service (NRCS) PLANTS database (NRCS 2018) was used to establish the common and scientific names for plant species.

2.1 Species Identification

The USFWS maintains a list of protected species and the critical habitat that is known to occur in each Arizona county. These species are currently listed or are proposed for listing as endangered or threatened under the ESA. The list also includes candidate species proposed as threatened or endangered, species delisted from protection under the ESA, and species delisted from protection under the ESA but currently proposed for relisting. The ESA specifically prohibits the “take” of a listed species, though incidental take

¹ The term action area used throughout this BE is the same as project area used in corresponding NEPA (National Environmental Policy Act) documents for this project.

may be exempted under 7(o)(2) or 10(a)(1)(B). Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.” Most bird species also receive legal protection under the federal Migratory Bird Treaty Act (MBTA) (16 USC 703–712).

The special-status species evaluated in this BE were based on the IPaC Trust Resource Report list of endangered, threatened, and proposed threatened species for La Paz County, Arizona, available at the USFWS website (USFWS 2018a). An action area-specific list was also generated. The IPaC Report provides other “trust resources,” including potential national wildlife refuges, BCC, wetlands, and invasive species issues.

The AGFD maintains the Heritage Data Management System (HDMS), which tracks records for federally listed species and other species of special concern. SWCA accessed HDMS through the Arizona Heritage Geographic Information System (AZHGIS) online environmental review tool to determine whether any federally proposed or designated critical habitat or special-status species have been documented in or near the action area (AZHGIS 2018). The search results are included in Appendix B.

The potential for occurrence of species addressed in this BE was based on 1) documented records; 2) existing information on distribution; and 3) qualitative comparisons of the habitat requirements of each species with vegetation communities or landscape features in the action area.² Possible impacts to these species were evaluated based on reasonably foreseeable components of the action.

2.2 Action Area

The action area, which totals approximately 480 acres of privately-owned land and 3.5 acres of BLM-administered land, is in Section 18, Township 5 North, Range 13 West, Gila and Salt River Baseline and Meridian (Figure 1). The action area is proposed for an approximately 60-megawatt (MW) photovoltaic solar energy generation facility and interconnection with the Little Harquahala–Harcuvar 115-kilovolt (kV) transmission line, located within an existing utility right-of-way corridor located on land managed by the BLM and Reclamation.

² We agree with Hall et al. (1997) that habitat is organism specific and thus not synonymous with vegetation community. However, we have refined their definition to read as follows: habitat is an area in which some members of a species regularly occur continuously or seasonally. In the field, habitat is operationally defined by the presence or absence of a species. Areas that appear suitable for a species but that have not been surveyed are considered possible habitat. We avoid using the term *potential* with respect to habitat because potential is defined as ‘capable of becoming but not yet in existence’; *possible*, on the other hand, is defined as ‘of uncertain likelihood’. We also avoid using the terms “unoccupied habitat” or “suitable, but unoccupied habitat,” which represent a contradiction in terms.

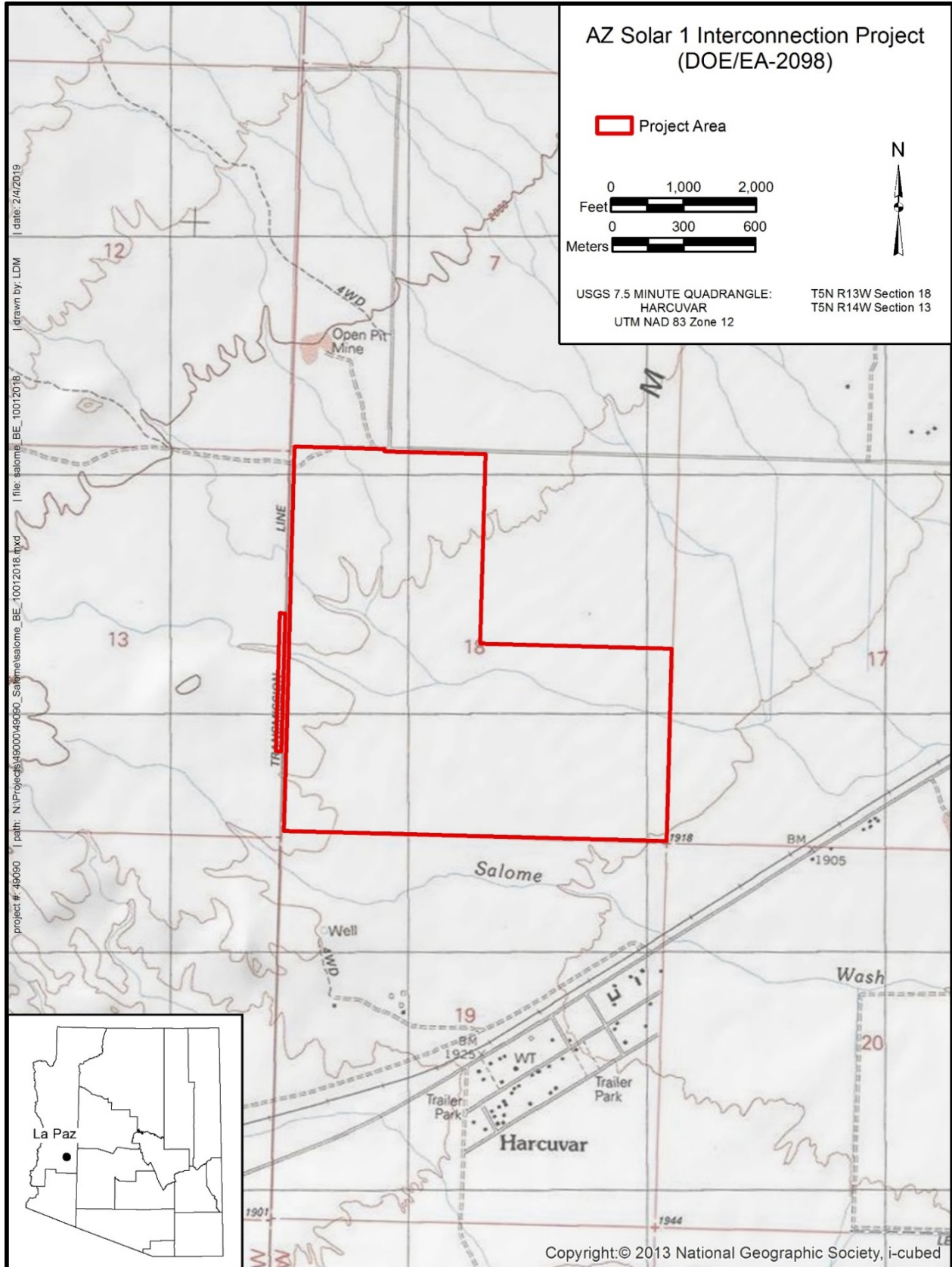


Figure 1. AZ Solar 1 Project Location and Action Area.

2.3 Species Evaluation

The potential for occurrence of each species was summarized according to the categories listed below. Because not all species are accommodated precisely by a given category (i.e., category definitions may be too restrictive), an expanded rationale for each category assignment is provided. Potential for occurrence categories are as follows:

- *Known to occur*—the species has been documented in the action area by a reliable observer.
- *May occur*—the action area is within the species' currently known range, and vegetation communities, soils, etc., resemble those known to be used by the species.
- *Unlikely to occur*—the action area is within the species' currently known range, but vegetation communities, soils, etc., do not resemble those known to be used by the species, or the action area is clearly outside the species' currently known range.

Those species listed by the USFWS were assigned to one of three categories of possible effect, following USFWS recommendations. The effects determinations recommended by USFWS are as follows:

- *May affect, is likely to adversely affect*—the proposed action is likely to adversely affect a species if 1) the species occurs in the action area; and 2) any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. In the event that the overall effect of the proposed action is beneficial to the listed species but also is likely to cause some adverse effects, then the proposed action “is likely to adversely affect” the listed species.
- *May affect, is not likely to adversely affect*—the appropriate conclusion when effects on a listed species are expected to be discountable, insignificant, or completely beneficial.

Beneficial effects are contemporaneous positive effects without any adverse effects on the species. **Insignificant effects** relate to the size of the impact and should never reach the scale where take occurs. **Discountable effects** are those extremely unlikely to occur. Based on best judgment, a person would not 1) be able to meaningfully measure, detect, or evaluate insignificant effects; or 2) expect discountable effects to occur.

- *No effect*—the action will have no effect on a species if 1) it has no likelihood of effect on a listed species or its designated critical habitat (including effects that may be beneficial, insignificant, or discountable);

Because species not listed as threatened or endangered are not protected under the authority of the ESA, impact determinations for these species do not follow the above USFWS recommendations. Instead, the impact determinations for any species listed as candidate or proposed for listing under the ESA are as follows:

- *No impact*—the project would have no impact on a species if 1) the species is considered unlikely to occur (range, vegetation, etc., are inappropriate); and 2) the species or its sign was not observed during surveys of the project area.
- *Beneficial impact*—the project is likely to benefit the species, whether it is currently present or not, by creating or enhancing habitat elements known to be used by the species.
- *May impact individuals but is not likely to result in a trend toward federal listing or loss of viability*—the project is not likely to adversely impact a species if 1) the species may occur but its presence has not been documented; and 2) project activities would not result in disturbance to areas or habitat elements known to be used by the species.

- *May impact individuals and is likely to result in a trend toward federal listing or loss of viability*—the project is likely to adversely impact a species if 1) the species is known to occur in the project area; and 2) project activities would disturb areas or habitat elements known to be used by the species, or would directly affect an individual.

3.0 RESULTS

3.1 Ecological Overview

The action area contains the Arizona Upland and Lower Colorado River subdivisions of the Sonoran Desertscrub biotic community, at elevations ranging between 1,919 and 1,983 feet above mean sea level (amsl) (Brown 1994). The action area is located within in the McMullen Valley northwest of the town of Salome, Arizona. The Granite Wash Mountains are approximately 2 miles to the west, the Harcuvar Mountains are 6 miles to the northeast, the Little Harquahala Mountains are approximately 3 miles to the east, and the Harquahala Mountains are 5 miles to the east.

No agaves (*Agave* sp.), aquatic habitats (including stock ponds), broadleaf deciduous riparian vegetation communities (i.e., communities containing willow [*Salix* spp.], cottonwood [*Populus* spp.], or ash [*Fraxinus* spp.], etc.), or potential bat roost sites (e.g., natural caves or mine features) occur in the action area.

3.2 Vegetation

The action area is primarily located on the bajadas of alluvial plains in the foothills of the Granite Wash Mountains, dominated by creosote bush (*Larrea tridentata*), with large areas of desert pavement. Native species present on the bajadas include triangle leaf bursage (*Ambrosia deltoidea*), ocotillo (*Fouquieria splendens*), white ratany (*Krameria grayi*), scarlet spiderling (*Boerhavia coccinea*), fiddleneck (*Amsinckia* sp.), pincushion flower (*Chaenactis fremontii*), needlegrass (*Achnatherum* sp.), desert Indianwheat (*Plantago ovata*), low woollygrass (*Dasyochloa pulchella*), crucifixion thorn (*Castela emoryi*), California barrel cactus (*Ferocactus cylindraceus* var. *cylindraceus*), Wiggin's cholla (*Cylindropuntia echinocarpa*), desert trumpet (*Eriogonum inflatum*), and devil's spineflower (*Chorizanthe rigida*). Saguaros (*Carnegiea gigantea*) are present at a low density within the action area.

Along the drainages located within the action area, vegetation largely consists of typical native xeroriparian species such as velvet mesquite (*Prosopis velutina*), yellow paloverde (*Parkinsonia microphylla*), catclaw acacia (*Senegalia greggii*), wolfberry (*Lycium* sp.), desertbroom (*Baccharis sarothroides*), desert globemallow (*Sphaeralcea ambigua*), saltgrass (*Distichlis spicata*), big galleta (*Pleuraphis rigida*), burrobrush (*Hymenoclea salsola*), Nevada jointfir (*Ephedra nevadensis*), turpentine bush (*Ericameria laricifolia*), fringed twinevine (*Funastrum cynanchoides*), and desert tobacco (*Nicotiana obtusifolia*).

At least 60 days prior to land-clearing, a Notice of Intent (NOI) must be submitted to the Arizona Department of Agriculture (ADA)³ per Arizona Native Plant Law (Arizona Revised Statutes 3-904) as administered by the ADA. Saguaro, California barrel, Wiggin's cholla, ocotillo, crucifixion thorn, velvet mesquite, and yellow paloverde are protected under this law. While these species are not required to be avoided or salvaged, should any be moved off-site, a permit must be obtained from the ADA.

³ Arizona Department of Agriculture. 2015. Arizona Native Plant Law. Available at: <https://agriculture.az.gov/sites/default/files/Native%20Plant%20Rules%20-%20AZ%20Dept%20of%20Ag.pdf>

Nonnative species observed include red brome (*Bromus rubens*), localized to an area along the northern portion of the action area adjacent to Hall Avenue. This species is not listed as noxious weed species by the ADA under Arizona Administrative Codes R3-4-244 and R3-4-245.

3.3 Species Evaluation

The USFWS (2018a) lists eight La Paz County species managed by their Endangered Species Program with the potential to occur in the action area (see Appendix A). The eight species include one mammal: Sonoran pronghorn (*Antilocapra americana sonoriensis*); three birds: southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), and Yuma ridgway’s rail (*Rallus obsoletus yumanensis*⁴); two reptiles: desert tortoise, Mojave population (*Gopherus agassizii*) and northern Mexican gartersnake (*Thamnophis eques megalops*); and two fish: bonytail chub (*Gila elegans*) and razorback sucker (*Xyrauchen texanus*). None of the eight species listed for La Paz County by USFWS are likely to occur in the action area. The action area is clearly beyond the known geographic or elevational range of these listed species, or it does not contain vegetation or landscape features known to support these species, or both. Habitat requirements, potential for occurrence, and possible effects on these eight species are summarized in Table 1. The action area does not occur in or near any federally proposed or designated critical habitat.

Table 1. Federally Listed Species Potentially Occurring in La Paz County, Arizona

Range or habitat information is from AZHGIS (2018); USFWS IPaC (USFWS 2018a); USFWS Arizona Ecological Services (USFWS 2018b); Brennan and Holycross (2006); Corman and Wise-Gervais (2005); Cornell Lab of Ornithology (2018); Page and Burr (1991); and Reid (2006).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Action area	Recommendation
Bonytail chub (<i>Gila elegans</i>)	USFWS E	Found in cool to warm water, mid-elevation streams and rivers with pools adjacent to swifter riffles and runs. In Arizona, this fish occurs at elevations between 1,210 and 7,220 feet amsl in two tributaries of the Little Colorado River, several tributaries of the Bill Williams River basin, the Salt River and four of its tributaries, the Verde River and five of its tributaries, Aravaipa Creek, and Eagle Creek.	Unlikely to occur. There is no perennial water in the action area or vicinity.	No effect.
Desert tortoise, Mojave population (<i>Gopherus agassizii</i>)	USFWS T	Occurs on primarily rocky, and often steep, hillsides and bajadas of Mojave and Sonoran deserts scrub, typically at elevations below 7,800 feet amsl. May occur, but is less likely to occur, in desert grassland, juniper woodland, and interior chaparral habitats and even pine communities. Its range in Arizona is north and west of the Colorado River, typically at elevations below 4,000 feet amsl.	Unlikely to occur. This species is limited to the area north and west of the Colorado River, far from the action area.	No effect.

⁴ Listed as Yuma clapper rail (*Rallus longirostris yumanensis*) by USFWS (2018a, 2018b). Formerly considered a subspecies of clapper rail, it was changed to Ridgway’s rail (*Rallus obsoletus yumanensis*) in 2014 (Chesser et al. 2014).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Action area	Recommendation
Northern Mexican gartersnake (<i>Thamnophis eques megalops</i>)	USFWS T	This species is most abundant at elevations between 3,000 and 5,000 feet amsl in densely vegetated habitat surrounding cienegas, streams, and stock tanks, in or near water along streams in valley floors and generally open areas but not in steep mountain canyon stream habitat (Rosen and Schwalbe 1988). Considered extant in fragmented populations within the middle to upper Verde River drainage, middle to lower Tonto Creek, Cienega Creek, and a small number of isolated wetland habitats elsewhere in southeastern Arizona.	Unlikely to occur. There are no permanent aquatic habitats in the action area, and the action area is well outside the known geographic range of this species.	No effect.
Razorback sucker (<i>Xyrauchen texanus</i>)	USFWS E	Found in backwaters, flooded bottomlands, pools, side channels, and other slower-moving habitats at elevations below 6,000 feet amsl. In Arizona, populations are restricted to Lakes Mojave and Mead and the lower Colorado River below Havasu in the Lower Basin. In the Upper Basin, small remnant populations are found in the Green, Yampa, and main stem Colorado Rivers.	Unlikely to occur. There are no permanent aquatic habitats in the action area.	No effect.
Sonoran pronghorn (<i>Antilocapra americana sonoriensis</i>)	USFWS E/NEP	Found in Sonoran desertscrub within broad, intermountain alluvial valleys with creosote bush (<i>Larrea tridentata</i>)–ragweed (<i>Ambrosia</i> spp.) and paloverde (<i>Parkinsonia</i> spp.)–mixed cacti associations at elevations between 2,000 and 4,000 feet amsl. The only extant U.S. population is in southwestern Arizona.	Unlikely to occur. No pronghorn reintroductions have occurred in this area, and the action area is outside the currently known range for this species.	No effect.
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	USFWS E	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood (<i>Populus</i> spp.), willow (<i>Salix</i> spp.), boxelder (<i>Acer negundo</i>), saltcedar (<i>Tamarix</i> spp.), Russian olive (<i>Elaeagnus angustifolia</i>), buttonbush (<i>Cephalanthus</i> spp.), and arrowweed (<i>Pluchea sericea</i>) are present. Nests are found in thickets of trees and shrubs, primarily those that are 13 to 23 feet tall, among dense, homogeneous foliage. Habitat occurs at elevations below 8,500 feet amsl.	Unlikely to occur. There are no records of the species within 40 miles of the action area. There is no habitat for this species in or adjacent to the action area.	No effect.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	USFWS T	Typically found in riparian woodland vegetation (cottonwood, willow, or saltcedar) at elevations below 6,600 feet amsl. Dense understory foliage appears to be an important factor in nest site selection. The highest concentrations in Arizona are along the Agua Fria, San Pedro, upper Santa Cruz, and Verde River drainages and Cienega and Sonoita Creeks.	Unlikely to occur. There are no records of the species within 40 miles of the action area. There is no habitat for this species in or adjacent to the action area.	No effect.

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Action area	Recommendation
Yuma clapper rail (<i>Rallus longirostris yumanensis</i>)	USFWS E	In Arizona, found at elevations below 4,500 feet amsl in freshwater marshes, which are often dominated by cattails (<i>Typha</i> spp.), bulrushes (<i>Isolepis</i> spp.), and sedges (<i>Carex</i> spp.). Its range includes the Colorado River from Lake Mead to Mexico; the Gila and Salt Rivers upstream to the area of the Verde confluence; Picacho Reservoir; and the Tonto Creek arm of Roosevelt Lake. This species may be expanding into other suitable marsh habitats in western and central Arizona.	Unlikely to occur. There is no suitable habitat for this species in or adjacent to the action area. The action area is also outside the known range for this species.	No effect.

***USFWS Status Definitions**

E = Endangered. Endangered species are those in imminent jeopardy of extinction. The ESA specifically prohibits the take of a species listed as endangered under section 9. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

NEP = Non-Essential Experimental Population. Experimental populations of a species designated under Section 10(j) of the ESA that the USFWS, through the best available information, believes is not essential for the continued existence of the species. Regulatory restrictions are considerably reduced under an NEP designation.

T = Threatened. Threatened species are those in imminent jeopardy of becoming endangered. The ESA prohibits the take of a species listed as threatened under Section 9 of the ESA. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

The BLM-Lake Havasu Field Office (LHFO) Resource Management Plan (RMP) (BLM 2007) lists 26 plant and animal species included on the BLM Arizona Sensitive Species List AZ-IM-2006-002 (BLM 2007), and not already included in Table 1, with the potential to occur within the LHFO boundaries. Since 2007, twenty-one additional plant and animal species, identified as having the potential to occur within the Colorado River District Office (CRDO) boundaries, have been added to the BLM Arizona Sensitive Species List AZ-IM-2017-009 (BLM 2017), not including those already included in Table 1. Nineteen of these species have been observed or have the potential to occur within the action area (discussed in more detail below). These species include the Monarch butterfly (*Danaus plexippus plexippus*), desert tortoise (Sonoran population) (*Gopherus agassizii*), nine migratory bird species (American peregrine falcon [*Falco peregrinus anatum*], bald eagle [*Haliaeetus leucocephalus*], Bendire’s thrasher [*Toxostoma bendirei*], desert purple martin [*Progne subis hesperia*], ferruginous hawk [*Buteo regalis*], gilded flicker [*Colaptes chrysoides*], golden eagle [*Aquila chrysaetos*], Le Conte’s thrasher [*Toxostoma lecontei*], western burrowing owl [*Athene cunicularia hypogea*]), and eight bat species (California leaf-nosed bat [*Macrotus californicus*], cave myotis [*Myotis velifer*], greater western mastiff bat [*Eumops perotis californicus*], pallid bat [*Antrozous pallidus*], pocketed free-tailed bat⁵ [*Nyctinomops femorosaccus*], spotted bat [*Euderma maculatum*], Townsend’s western big-eared bat [*Corynorhinus townsendii*], and Yuma myotis⁶ [*Myotis yumanensis*]).

For the remaining twenty-eight species, the action area is clearly beyond the known geographic or elevational range of these species, or it does not contain vegetation or landscape features known to support these species, or both. Habitat requirements and potential for occurrence on these forty-seven species are summarized in Table 2.

⁵ This species was included in the LHFO RMP (BLM 2007) as Sensitive Species, but not included on the updated BLM Arizona Sensitive Species list (BLM 2017) for the BLM Colorado River District Office.

⁶ This species was included in the LHFO RMP (BLM 2007) as Sensitive Species, but not included on the updated BLM Arizona Sensitive Species list (BLM 2017) for the BLM Colorado River District Office.

Table 2. BLM Colorado River District Office Sensitive Species Potentially Occurring within the BLM Lake Havasu Field Office Boundaries, Arizona

Range or habitat information is from AZHGIS (2018); Brennan and Holycross (2006); Corman and Wise-Gervais (2005); Cornell Lab of Ornithology (2018); Page and Burr (1991); and Reid (2006).

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Action area	Recommendation
Monarch butterfly (<i>Danaus plexippus plexippus</i>)	This species can be found within Arizona year-round, though distribution varies based on season and elevation. Breeding habitat consists of the presence of native milkweeds, migrating habitat consists of nectar plants, and overwintering habitat generally consists of a grove of trees that provide protection from low temperatures and wind.	May occur. Plants observed within the project area include native milkweed species (such as fringed twinevine) and nectar plants, and therefore may provide suitable breeding and migratory habitat for this species.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove milkweed and other nectar plants from the project area; however, undeveloped lands immediately adjacent (to the north and west of the project area) consist of similar habitat.
Desert tortoise (Sonoran population) (<i>Gopherus agassizii</i>)	Within Arizona, the Sonoran population of desert tortoise is found south and east of the Colorado River, and north and east to Roosevelt Lake and the middle San Pedro River drainage. Habitat consists of Mojave and Sonoran desert scrub, primarily on rocky slopes and bajadas in paloverde-mixed cactus associations. The Sonoran population burrows in loose soil below rocks and boulders, occasionally vegetation, and caliche cutbanks in washes (in the Lower Colorado River Valley subdivision of the Sonoran desert), between 510-5,300 ft amsl. Adequate shelter is one of the most important habitat features for this population.	May occur. While the project area does not contain suitable burrowing habitat, this species has been documented within 5 miles of the project area and suitable habitat is present adjacent to the project area to the west and northwest. Desert tortoise may enter the project area while dispersing between areas of more suitable habitat.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove cover for dispersing tortoise from the project area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project area) consist of similar habitat and could provide movement corridors.
American peregrine falcon (<i>Falco peregrinus anatum</i>)	This species is found across Arizona, wherever sufficient prey is available near nesting habitat. This species is strongly associated with steep, sheer cliffs near water or other habitat that supports avian prey in abundance.	May occur. The project area does not contain steep cliffs and the desert scrub community would not support an abundance of avian prey species; therefore, the project area would not provide suitable nesting or foraging habitat for this species. It is possible that this species may pass through the project area while moving between areas of more suitable habitat.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. As the project area does not provide suitable breeding or foraging habitat, impacts would be limited to potential intermittent disturbance to individuals moving past the project area.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Within Arizona, this species is found in the central and northern portions of the state. Habitat during both breeding and wintering consists of areas adjacent to open water with unimpeded views. Throughout its range, the species selects large roost trees that are open and accessible, though in arid regions will nest on cliffs.	May occur. There are no permanent waterbodies or man-made water sources nor tall trees or cliffs located within the project area or in the vicinity; therefore, the project area would not provide suitable breeding or foraging habitat for this species. It is possible that this species may pass through the project area while moving between areas of more suitable habitat.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. As the project area does not provide suitable breeding or foraging habitat, impacts would be limited to potential intermittent disturbance to individuals moving past the project area.

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Action area	Recommendation
*Bendire's thrasher (<i>Toxostoma bendirei</i>)	This species is found in various dry, semi-open habitats across Arizona, but is most common in the Sonoran desert, semidesert grasslands, and adjacent to farmland. Nests in low growth, commonly within dense shrubs, trees, or cacti.	May occur. This species has been observed in the vicinity of the project areaaction area, and the project areaaction area contains suitable habitat for this species.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove nesting and foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.
Desert purple martin (<i>Progne subis hesperia</i>)	Within Arizona, this species is found in open deserts. Habitat consists of lowland desert with giant saguaro cactus, and nesting habitat consists of tree cavities, abandoned woodpecker holes, and crevices in rocks.	May occur. This species has been observed in the vicinity of the project areaaction area, and the project areaaction area contains suitable nesting habitat (saguaros) for this species.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove nesting (saguaro) and foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat and contains saguaros.
Gilded flicker (<i>Colaptes chrysoides</i>)	Within Arizona, this species is found in the Sonoran desert. Habitat consists of giant cactus forests of southwestern deserts, and nesting habitat consists of cavities in saguaro cacti.	Known to occur. This species has been observed within the project areaaction area, and the project areaaction area contains suitable nesting habitat (saguaros) for this species.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove nesting (saguaro) and foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat and contains saguaros.
Golden eagle (<i>Aquila chrysaetos</i>)	This species ranges across Arizona. Habitat consists of open country, particularly in mountainous areas. Nesting habitat consists of rock ledges, cliffs, and large trees at elevations between 4,000 and 10,000 ft amsl.	May occur. The project areaaction area is not within the elevational range of nesting habitat for this species but may provide foraging habitat. Suitable nesting habitat may be present in the mountains adjacent to the project areaaction area.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Action area	Recommendation
Ferruginous hawk (<i>Buteo regalis</i>)	Within Arizona, this species is found across the state between September and April, but breeding range is restricted to the Colorado Plateau. Habitat consists of open country such as grasslands, shrub-steppes and deserts at elevations between 3,500 and 6,000 ft amsl and may utilize agricultural areas for foraging.	Unlikely to occur. The action area is outside of the elevational range for the species and is not within range of breeding areas; therefore, it would not provide suitable breeding or foraging habitat. It is possible that this species may pass through the action area while moving between areas of more suitable habitat.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. As the action area does not provide suitable breeding or foraging habitat, impacts would be limited to potential intermittent disturbance to individuals moving past the action area.
Le Conte's thrasher (<i>Toxostoma lecontei</i>)	Within Arizona, this species is found in the western and west-central portions of the state. Habitat consists of desert flats with sparse growth of saltbush, and on creosote flats with occasional mesquite or cholla cactus. Nests in low growth, primarily in dense cholla but also in other low shrubs.	May occur. This species has been observed in the vicinity of the project areaaction area, and the project areaaction area contains suitable habitat for this species.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove nesting and foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.
Western burrowing owl (<i>Athene cunicularia hypugea</i>)	This species is found generally year-round across most of Arizona where suitable habitat occurs. Habitat consists of open areas in grasslands, deserts, and agricultural lands between 650 and 6,140 ft amsl, and occasionally in open areas near human habitation. Presence of this species is usually associated with borrowing mammals.	May occur. This species has been observed in the vicinity of the project areaaction area, and the project areaaction area contains suitable nesting (burrows) and foraging habitat for this species.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove nesting and foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.
California leaf-nosed bat (<i>Macrotus californicus</i>)	Within Arizona, this species can be found south of the Mogollon Plateau though there have been summer observations in northwestern MohaveMojave County. Habitat consists of Sonoran desertscrub between 160-3,980 ft amsl. Roosting sites primarily include mines, caves, and rock shelters.	May occur. The project areaaction area does not contain suitable roosting sites (such as mines, caves, or rock shelters) but could provide suitable foraging habitat for this species. Suitable roosting habitat may be available in the project vicinity, as numerous historic mines are present in the surrounding mountains. This species has been documented within 5 miles of the project areaaction area	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Action area	Recommendation
Cave myotis (<i>Myotis velifer</i>)	Range within Arizona consists of areas south of the Mogollon Plateau. Habitat consists of desert floodplains and rocky canyonlands. Roosting sites include mines, caves, tunnels, bridges, and buildings within a few miles of water.	May occur. The project areaaction area does not contain suitable roosting sites (such as mines, bridges, or buildings) but could provide suitable foraging habitat for this species. Suitable roosting habitat may be available in the project vicinity, as numerous historic mines are present in the surrounding mountains. This species has been documented within 5 miles of the project areaaction area.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.
Greater western mastiff bat (<i>Eumops perotis californicus</i>)	This species is found across most of Arizona. Habitat consists of Sonoran desertscrub near cliffs between 240 and 8,475 feet amsl, particularly rocky, rugged canyons with abundant crevices. Roosting sites include deep crevices in rock outcroppings and cliff faces, tunnels, and tall buildings with vertical faces to drop off from and take flight.	May occur. The project areaaction area does not contain suitable roosting sites (such as canyons with deep crevices) but may provide suitable foraging habitat for this species. Suitable roosting habitat may be available in the project vicinity, as a rock outcropping is present approximately 1-mile northwest of the project areaaction area.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.
Pallid bat (<i>Antrozous pallidus</i>)	This species is found across most of Arizona, though in winter is usually found in the southern part of the state. A wide variety of habitat types are utilized, and include coniferous and non-coniferous forests, brushy terrain, rocky canyons, open farmlands, and deserts. Roosting sites include rock crevices, buildings, and occasionally in mines, caves, and hollow trees.	May occur. The project areaaction area does not contain suitable roosting sites (such as rock crevices or buildings) but could provide suitable foraging habitat for this species. Suitable roosting habitat may be available in the project vicinity, as a rock outcropping is present approximately 1 mile northwest of the project areaaction area.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.
*Pocketed free-tailed bat (<i>Nyctinomops femorosaccus</i>)	This species is found across central and southern Arizona. Habitat consists of desert scrub and arid lowlands between 190-7,520 ft amsl. Roosting sites include high rock crevices on rugged cliffs, slopes, and tall rocky outcrops.	May occur. The project areaaction area does not contain suitable roosting sites (such as rugged cliffs) but could provide suitable foraging habitat for this species. Suitable roosting habitat may be available in the project vicinity, as a rock outcropping is present approximately 1 mile northwest of the project areaaction area.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Action area	Recommendation
Spotted bat (<i>Euderma maculatum</i>)	This species is locally distributed across Arizona. Habitat is varied, but in Arizona most observations have occurred in dry, rough desertscrub and some in ponderosa pine communities between 110 to 8,670 ft amsl. Roosting sites are poorly known, but likely consist of crevices and cracks on cliff faces. Observations of this species generally occur around cliffs and water sources.	May occur. The project areaaction area does not contain suitable roosting sites (such as cliffs) but could provide suitable foraging habitat for this species. Suitable roosting habitat may be available in the project vicinity, as a rock outcropping is present approximately 1-mile northwest of the project areaaction area.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.
Townsend's western big-eared bat (<i>Corynorhinus townsendii</i>)	This species is found across most of Arizona. Habitat is varied, ranging from desertscrub to coniferous woodland between 550 and 7,250 ft amsl, though generally found in dry uplands. Roosting sites include limestone caves, mines, lava tubes, structures, and tree hollows. Presence of this species is highly associated with available roosting habitat.	May occur. The project areaaction area does not contain suitable roosting sites (such as caves or mines) but may provide suitable foraging habitat for this species. Suitable roosting habitat may be available in the project vicinity, as numerous historic mines are present in the surrounding mountains.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.
*Yuma myotis (<i>Myotis yumanensis</i>)	This species is found across most of Arizona, except for the northeastern and southeastern corners of the state, and winters in the Lower Colorado River area. Habitat is varied, and includes riparian, desertscrub, moist woodlands, and forests between 180-4,940 ft amsl, close to cliffs and rocky walls near water. Roosting sites include caves, mines, buildings, and bridges.	May occur. The project areaaction area does not contain suitable roosting sites (such as caves or buildings) but may provide suitable foraging habitat for this species. Suitable roosting habitat may be available in the project vicinity, as numerous historic mines are present in the surrounding mountains.	May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.

* Species that are included in the LHFO RMP (BLM 2007) as Sensitive Species, but not included on the updated BLM Arizona Sensitive Species list (BLM 2017) for the BLM Colorado River District Office.

BLM Sensitive Species that May be Impacted by the Action

MONARCH BUTTERFLY

This species is a BLM Sensitive species. Monarch butterfly are a migratory species, and habitat needs vary depending on season and migratory status. Generally, habitat can be identified for breeding, migratory, and overwintering. Key components required for breeding and migratory habitat include nectar sources in the form of native milkweeds (for larvae) and/or other flowers (for adults), and trees or shrubs for shading and roosting. Components required for overwintering habitat is more specific and consists of a grove of trees that produce the necessary microclimate for monarch survival. Suitable grove conditions include temperatures above freezing, high humidity, dappled sunlight, access to water and nectar, and protection from high winds and storms (WAFWA 2018). Site visits identified native milkweed species (fringed twinevine) within action area boundaries, which could provide suitable breeding and migratory habitat. Vegetation clearing activities will remove milkweed and other nectar plants from the project area; however, undeveloped lands immediately adjacent (to the north and west of the action area) consist of

similar habitat that could be utilized by this species. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

SONORAN DESERT TORTOISE

This species is a BLM Sensitive species, as well as the subject of a Candidate Conservation Agreement (CCA) (USFWS et al. 2015). The CCA exists between the USFWS and several other entities, including the BLM. Sonoran desert tortoise can be found on primarily upland and sloping bajada landforms, between about 500-4,100 ft amsl, throughout much of southern and western Arizona and Sonora, Mexico. Habitat generally consists of Mojave Desert scrub and the Arizona Upland and Lower Colorado River Valley subdivisions of the Sonoran Desert (USFWS et al. 2015), though it may occasionally be found utilizing chaparral or oak scrub habitats. Sonoran desert tortoises are active (outside burrows) during spring and late summer (generally March through October). The primary activity season in late summer (late June through September) coincides with monsoonal rainfall, when water and new plant growth (forage) are available (USFWS et al. 2015). Tortoise may be active for short periods at any time of year when suitable environmental conditions occur. Important habitat elements include burrows and soils suitable for burrowing. Burrows are constructed below rocks, boulders, or shrubs on semi-open slopes or the banks of washes, though tortoises may also shelter in rocky crevices or shelves (e.g., caliche) in washes and packrat middens (USFWS et al. 2015). Desert tortoises spend much of their time in burrows, either during inactive seasons or during inactive diurnal periods for thermoregulation, nesting, and protection from predators. The availability of suitable burrowing habitat is a limiting factor in the distribution of Sonoran desert tortoise.

BLM has categorized Sonoran desert tortoise habitat into three habitat area categories, which are used to provide for protection and management of these areas and desert tortoise populations on BLM-administered lands. The goals of these categories are defined in Table 3.

Table 3.5-2. BLM Sonoran Desert Tortoise Habitat Area Categories within the Analysis Area

Category	Goal	Project Area	Percent of the Project Area
I	Maintain stable, viable populations and protect existing tortoise habitat values; increase populations, where possible.	N/A	N/A
II	Maintain stable, viable populations and halt further declines in tortoise habitat values.	N/A	N/A
III	Limit tortoise habitat and population declines to the extent possible by mitigating impacts.	246.5 acres	51%
Uncategorized	Does not contain habitat.	237 acres	49%

Source: BLM, 1988

The criteria used to categorize tortoise habitats include the following: (1) importance of the habitat to maintaining viable populations, (2) resolvability of conflicts, (3) tortoise population density, and (4) population status (stable, increasing, decreasing) (BLM 1988). The action area consists of 246.5 acres of Category III Sonoran desert tortoise habitat and 237 acres of uncategorized area. Category II habitat areas are located approximately 0.6 mile directly west of the action area. This species has been observed within 5 miles of the action area (AZHGIS 2018). Sonoran desert tortoise was identified as a species with high potential to be present within the action area; however, individuals were not observed within the action area during multiple site visits and the action area does not contain suitable burrowing habitat. Vegetation clearing activities will remove cover for dispersing tortoise from the project area; however, undeveloped lands immediately adjacent (to the north, west, and east of the action area) consist of similar habitat and could provide movement corridors for this species. Conservation measures would be

implemented for biological resources, including conducting protocol surveys for Sonoran desert tortoise prior to surface disturbance, relocation of any tortoises within the project area, following Arizona Game and Fish Department guidelines for monitoring and handling of tortoises, establishment of avoidance areas, and boundary fencing. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

AMERICAN PEREGRINE FALCON

In addition to being a BLM sensitive species, this species is also protected under the Migratory Bird Treaty Act (MBTA), discussed in more detail in Section 4.0. The American peregrine falcon occurs across Arizona, wherever sufficient prey is available near nesting habitat. Nesting habitat consist of steep, sheer cliffs near water or other habitat that supports avian prey in abundance. This species also nests in urban areas where tall buildings provide similar nesting habitat as tall cliffs (Corman and Wise 2005, AGFD 2002a). Suitable nesting habitat is likely present in the mountainous portions of the analysis area, but distance to nearest surface water makes this habitat less favorable. The arid desertscrub community does not support an abundance of avian prey species, particularly as the action area does not contain permanent surface waters, and would therefore not provide suitable foraging habitat. Use of the action area by this species is likely limited to passing through while moving between areas of more suitable habitat. As the action area does not provide suitable breeding or foraging habitat, impacts would be limited to potential intermittent disturbance to individuals moving past the action area. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

BALD EAGLE

In addition to being a BLM sensitive species, this species is also protected under the MBTA, discussed in more detail in Section 4.0, and the Bald and Golden Eagle Protection Act (BGEPA). Within Arizona, this species is found in the central and northern portions of the state. Habitat during both breeding and wintering consists of areas adjacent to open water with unimpeded views. Throughout its range, the species selects large roost trees that are open and accessible, though in arid regions will nest on cliffs (AGFD 2011). There are no permanent waterbodies or man-made water sources, nor tall trees or cliffs, located within the action area or in the vicinity; therefore, the action area would not provide suitable breeding or foraging habitat for this species. As the action area does not contain permanent surface waters it would not likely provide suitable foraging habitat for this species. Use of the action area by this species is likely limited to passing through while moving between areas of more suitable habitat. As the action area does not provide suitable breeding or foraging habitat, impacts would be limited to potential intermittent disturbance to individuals moving past the action area. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

GOLDEN EAGLE

In addition to being a BLM sensitive species, this species is also protected under the MBTA, discussed in more detail in Section 4.0, and the BGEPA. This species ranges across Arizona. Habitat consists of open country, particularly in mountainous areas. Nesting habitat consists of rock ledges, cliffs, and large trees at elevations between 4,000 and 10,000 ft amsl (AGFD 2002b). Golden eagles are year-round residents throughout most of their range in the western United States; however, in the southwest, golden eagles are more common during winter months because of an influx of migrants from other breeding areas. Breeding occurs from late January through August (Pagel et al. 2010). Golden eagles are a wide-ranging species, particularly outside of the nesting season. Suitable nesting habitat is likely present in the mountainous portions of the analysis area. Use of the action area by this species is likely limited to foraging and/or passing through while moving between areas of more suitable habitat. Vegetation clearing activities will remove foraging habitat from the action area; however, undeveloped lands immediately adjacent (to the

north, west, and east of the action area) consist of similar habitat. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

FERRUGINOUS HAWK

In addition to being a BLM sensitive species, this species is also protected under the MBTA, discussed in more detail in Section 4.0. Within Arizona, this species is found across the state between September and April, but breeding range is restricted to the Colorado Plateau. Habitat consists of open country such as grasslands, shrub-steppes and deserts at elevations between 3,500 and 6,000 ft amsl and may utilize agricultural areas for foraging. This species is known to nest on the Colorado Plateau in portions of northern Arizona, though it winters throughout much of Arizona (AGFD 2013). As the action area is outside of the known range of nesting habitat, use of the action area by this species is likely limited to flying over it and/or foraging while moving between areas of more suitable habitat. Vegetation clearing activities will remove foraging habitat from the action area; however, undeveloped lands immediately adjacent (to the north, west, and east of the action area) consist of similar habitat. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

WESTERN BURROWING OWL

In addition to being a BLM sensitive species, this species is also protected under the MBTA, discussed in more detail in Section 4.0. This species is found generally year-round across most of Arizona where suitable habitat occurs. Habitat consists of open areas in grasslands, deserts, and agricultural lands between 650 and 6,140 ft amsl, and occasionally in open areas near human habitation. Presence of this species is usually associated with borrowing mammals. While this species is generally uncommon in desert habitats, it can be found in much higher densities near agricultural lands or riparian habitats where prey tends to be more abundant (AGFD 2001). This species has been observed in the vicinity of the action area in McMullen Valley (Ebird 2019), and suitable foraging and nesting (burrows) habitat is present throughout much of the action area; however, neither individuals nor sign of the species were observed during site visits. May impact individuals but is not likely to result in a trend toward federal listing or loss of viability. Vegetation clearing activities will remove nesting and foraging habitat from the project areaaction area; however, undeveloped lands immediately adjacent (to the north, west, and east of the project areaaction area) consist of similar habitat.

BENDIRE'S THRASHER

In addition to being a BLM sensitive species, this species is also protected under the MBTA, discussed in more detail in Section 4.0. This species is found in various dry, semi-open habitats across Arizona, but is most common in the Sonoran desert, semidesert grasslands, and habitats adjacent to farmland. Nesting habitat consists of low growth, commonly nesting within dense shrubs, trees, or cacti (Corman and Wise 2005). This species has been observed in the vicinity of the action area in McMullen Valley (Ebird 2019), and the action area contains suitable foraging and nesting habitat for this species. Vegetation clearing activities will remove nesting and foraging habitat from the action area; however, activities would be required to comply with the MBTA and would therefore not impact this species nesting or rearing periods, and undeveloped lands immediately adjacent (to the north, west, and east of the action area) consist of similar habitat. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

DESERT PURPLE MARTIN

In addition to being a BLM sensitive species, this species is also protected under the MBTA, discussed in more detail in Section 4.0. Within Arizona, this species is found in open deserts. Habitat consists of lowland desert with giant saguaro cactus, and nesting habitat consists of tree cavities, abandoned woodpecker holes, and crevices in rocks. Desert purple martin generally use saguaro cactus for nesting.

This species is an aerial forager, typically feeding on insects over water (Corman and Wise 2005). Suitable nest sites (saguaro cacti) are present throughout the action area, but distance to nearest surface water makes this habitat less favorable, as more suitable foraging habitat is not available within or directly adjacent to the action area. Vegetation clearing activities will remove nesting (saguaro) and foraging habitat from the action area; however, activities would be required to comply with the MBTA and would therefore not impact this species nesting or rearing periods, undeveloped lands immediately adjacent (to the north, west, and east of the action area) consist of similar habitat and contains saguaros. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

GILDED FLICKER

In addition to being a BLM sensitive species, this species is also protected under the MBTA, discussed in more detail in Section 4.0. Within Arizona, this species is found in the Sonoran desert. Habitat consists of giant cactus forests of southwestern deserts and cottonwood-willow riparian woodlands, and nesting habitat consists of cavities in saguaro cacti and large trees. The gilded flicker is a year-round resident of these habitats (Corman and Wise 2005). This species has been observed within the action area during site visits, and the action area contains suitable nesting habitat (saguaros) for this species. Vegetation clearing activities will remove nesting (saguaro) and foraging habitat from the action area; however, activities would be required to comply with the MBTA and would therefore not impact this species nesting or rearing periods, undeveloped lands immediately adjacent (to the north, west, and east of the action area) consist of similar habitat and contains saguaros. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

LECONTE'S THRASHER

In addition to being a BLM sensitive species, this species is also protected under the MBTA, discussed in more detail in Section 4.0. Within Arizona, this species is found in the western and west-central portions of the state. Habitat consists of desert flats with sparse growth of saltbush, and on creosote flats with occasional mesquite or cholla cactus. Nesting habitat consists of low growth, primarily in dense cholla but also in other low shrubs (Corman and Wise 2005). This species has been observed in the vicinity of the action area (Ebird 2019), and the action area contains suitable foraging and nesting habitat for this species. Vegetation clearing activities will remove nesting and foraging habitat from the action area; however, activities would be required to comply with the MBTA and would therefore not impact this species nesting or rearing periods, and undeveloped lands immediately adjacent (to the north, west, and east of the action area) consist of similar habitat. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

BATS

Eight BLM Sensitive bat species have the potential to occur within the action area. These special status bat species are insectivorous, catching prey either on the wing or on the ground, and generally forage over open shrublands, such as those found across the analysis area. Ideal foraging areas for many of the special status bat species are adjacent to water, where prey is more plentiful. Foraging distance from roosts range from 1 mile (for the pallid bat) up to 20 miles (for the spotted bat) for these special status bat species (Maxwell 2015). All special status bat species require roosting habitat that may consist of cliffs, crevices, caves, mines, and buildings (Harvey et al. 2011). There are numerous mines, rocky crevices, and cliff faces in the mountainous areas within the analysis area that could provide suitable roosting habitat for these species; however, the action area does not contain any of these habitat elements that could provide suitable roosting habitat, nor does it contain permanent water sources. Use of the action area by special status bat species is likely limited to foraging. Vegetation clearing activities will remove foraging habitat from the action area; however, undeveloped lands immediately adjacent (to the north, west, and east of

the action area) consist of similar habitat. The proposed action may impact individuals but is not likely to result in a trend toward federal listing or loss of viability.

Two species (the California leaf-nosed bat and the cave myotis), as well as an unidentified bat colony, have been observed within 5 miles of the action area (AZHGIS 2018).

4.0 ADDITIONAL REGULATIONS

Most bird species, their nests, and eggs are protected under the Migratory Bird Treaty Act of 1918, as amended. The MBTA prohibits “take” of migratory birds—more than 1,000 species (50 Code of Federal Regulations 10 and 21)—their parts, eggs, or nests. *Take* is defined by the MBTA as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.” A federal permit is not needed to destroy an *inactive* (without eggs or nestlings present) bird nest, provided it is not an eagle or federally listed species’ nest.

Eight species protected by the MBTA were detected during the July 24, 2018 and January 16, 2019 site visits: common raven (*Corvus corax*), ladder-backed woodpecker (*Dryobates scalaris*), turkey vulture (*Cathartes aura*), cactus wren (*Campylorhynchus brunneicapillus*), gilded flicker (*Colaptes chrysoides*), loggerhead shrike (*Lanius ludovicianus*), black-tailed gnatcatcher (*Polioptila melanura*), and lesser nighthawk (*Chordeiles acutipennis*).

No active nests were observed during the field reconnaissance, although these site visit occurred outside the active breeding period for many species, and inactive nests were observed in trees and shrubs. Holes in saguaros located within the action area may also provide nesting habitat, and a large inactive nest was observed in a saguaro in the southeastern portion of the action area. Numerous mammal burrows located throughout the action area may also provide nesting habitat for the western burrowing owl; however, individual owls or sign of owls was not observed during the site visits. Construction activities would need to be conducted in compliance with the MBTA.

There are 22 migratory bird species listed as Birds of Conservation Concern (BCC) for La Paz County by the USFWS (2018a), nine of which are also BLM special status species (and discussed above). Two BCC species are identified as having a high potential to occur within the action area, Costa’s hummingbird (*Calypte costae*) and Gila woodpecker (*Melanerpes uropygialis*) (USFWS 2018b). Although these BCC species do not receive protection under the ESA, they have been identified as species, subspecies, or populations that are likely to be listed in the future if conservation measures are not taken. One of these species were observed during site reconnaissance (gilded flicker). Additionally, habitat components are present for several other BCC species, and these species could potentially occur within the action area.

5.0 LIMITATIONS AND WARRANTY

Within the limitations of schedule, budget, and scope of work, SWCA warrants that this study was conducted in accordance with accepted environmental science practices, including the technical guidelines, evaluation criteria, and species’ listing status in effect at the time this evaluation was performed, as outlined in the species evaluation.

The results and conclusions of this report represent the best professional judgment of SWCA scientists and are based on information provided by the project proponent and on information obtained from agencies and other sources during the course of the study. No other warranty, expressed or implied, is made. This report should be reviewed by the appropriate regulatory agencies prior to any detailed site-planning or construction activities.

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APPENDIX A

**BLM Colorado River District Office Sensitive Species Unlikely to Occur
within the BLM Lake Havasu Field Office Boundaries, Arizona**

Table A-1. BLM Colorado River District Office Sensitive Species Unlikely to Occur within the BLM Lake Havasu Field Office Boundaries, Arizona

Range or habitat information is from AZHGIS (2018); Brennan and Holycross (2006); Corman and Wise-Gervais (2005); Cornell Lab of Ornithology (2018); Page and Burr (1991); and Reid (2006).

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Action area	Determination of Impact
Kingman springsnail (<i>Pygulopsis conica</i>)	This species is restricted to localities in the Black Mountains near Kingman in Mohave County. Habitat consists of springs.	Unlikely to occur. There are no springs located within the action area or in the vicinity and the action area is outside of the known range for this species.	No impact.
Desert sucker (<i>Catostomus clarki</i>)	Within Arizona, this species occurs throughout the Gila River basin and in tributaries of the Bill Williams River. Habitat includes flowing rivers and streams with deep rocky or gravelly pools between 480-8,840 ft amsl.	Unlikely to occur. There are no perennial waterbodies located within the action area or in the vicinity.	No impact.
Longfin dace (<i>Agosi chrysogaster</i>)	Within Arizona, this species occurs primarily in the Gila and Bill Williams drainages and has been introduced into the Virgin River basin. Habitat includes low-elevation desert streams to cool, clear mountain streams, generally at elevations below 5,000 ft amsl.	Unlikely to occur. There are no perennial waterbodies located within the action area or in the vicinity.	No impact.
Speckled dace (<i>Rhinichthys osculus</i>)	Within Arizona, this species is found within the Colorado, Bill Williams, and Gila River drainages. Habitat consists of riffles, runs, and pools of cool flowing headwaters, creeks, and small to medium rivers with mostly rocky substrates..	Unlikely to occur. There are no perennial waterbodies located within the action area or in the vicinity.	No impact.
Sonora sucker (<i>Catostomus insignis</i>)	Within Arizona, this species is widespread in the Gila and Bill Williams basins. Habitat includes warm water rivers to cool streams with deep and quiet waters and rocky or gravelly pools between 950-6,500 ft amsl.	Unlikely to occur. There are no perennial waterbodies located within the action area or in the vicinity.	No impact.
*Banded Gila monster (<i>Heloderma suspectum cinctum</i>)	This species can be found mainly in northwestern Arizona (around the Arizona Strip), with populations immediately adjacent in Utah, Nevada, and California. Individuals have also been observed in northwest Maricopa and southwest Yavapai counties. Habitat consists of undulating rocky foothills, bajadas, and canyons in Sonoran desert, the edge of Mojave desert, and rarely in desert grasslands and oak woodlands up to 5,000 ft amsl. Gila monster winter in highland rocky outcrops and spend warmer months underground in lower bajadas and valleys;	Unlikely to occur. While this species has been documented within 5 miles of the action area (see Appendix C), the action area does not contain areas of rocky highlands that would be suitable for wintering Gila monster. The nearest rocky outcropping is located approximately 1 mile northeast of the action area; therefore, it is unlikely that this species would enter the action area while dispersing through areas of more suitable habitat.	No impact.
*Chuckwalla (<i>Sauromalus ater</i>)	Within Arizona, this species is found across the western part of the state. Habitat consists of creosote communities near cliffs, boulders, or rocky slopes between 1,000 and 2,500 ft amsl. Chuckwalla use rocks and crevices in rocky desert, lava flows, hillsides, and outcrops as basking sites and for shelter, respectively.	Unlikely to occur. The action area does not contain rocky areas with crevice habitat that could provide sheltering habitat for chuckwalla. The nearest rocky outcropping is located approximately 1 mile northeast of the action area; therefore, it is unlikely that this species would enter the action area while dispersing through areas of more suitable habitat.	No impact.

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Action area	Determination of Impact
Flat-tailed horned lizard (<i>Phrynosoma mcallii</i>)	Within Arizona, this species is found in the Yuma Desert west of the Gila Mountains and south of Interstate 8. Habitat consists of sparsely vegetated sandy flats between 155-540 ft amsl.	Unlikely to occur. The action area does not contain sandy flats and is located outside of the known range for this species.	No impact.
Mojave fringe-toed lizard (<i>Uma scoparia</i>)	Within Arizona, this species is found on the western edge of the state near Parker, including Cactus Plain, Bouse Dunes, Bouse Wash, Butler Valley, La Posa Plain, Parker Valley, and the Buckskin and Mesquite Mountains. Habitat consists of windblown sands, dunes, flats, riverbanks, and washes in creosote scrub communities between 425-2,905 ft amsl.	Unlikely to occur. The action area is located approximately 45 miles southeast of the community of Parker, outside of the known range for the species, and contains gravelly soils; therefore, the action area would not provide suitable habitat for this species.	No impact.
Sonora mud turtle (<i>Kinosternon sonoriense sonoriense</i>)	Within Arizona, is found across most of southeastern and central Arizona below the Mogollon Rim. Habitat consists of permanent waterbodies such as rivers, streams, creeks, ditches, ponds, springs, waterholes and stock ponds in communities that range from desert to woodland.	Unlikely to occur. There are no perennial waterbodies located within the action area or in the vicinity.	No impact.
*Rosy boa (<i>Charina trivirgata</i>)	Within western Arizona, this species is found from the Cerbat Mountains south to the Gila Mountains, and east to the Cabeza Prieta National Wildlife Refuge. Localities include the Hualapai, Harcuvar, Harquahala, Dome Rock, Buckskin, Castle Dome, Cerbat, and Kofa Mountains. Habitat consists of rocky areas in desert mountain ranges, particularly in canyons with intermittent or perennial streams.	Unlikely to occur. Although the action area is near the Harcuvar and Harquahala Mountains, the action area consists of rocky bajadas in a desert valley and does not contain rocky areas near intermittent or perennial streams.	No impact.
Yuman Desert fringe-toed lizard (<i>Uma rufopunctata</i>)	Within Arizona, this species is found south of the Gila River, in the Mohawk and Yuma dune systems and in the Pinta Sands in Pima County. Habitat consists of sparsely vegetated fine windblown sand dunes, flats, riverbanks, and washes of creosote deserts between 190-900 ft amsl.	Unlikely to occur. The action area is located outside of the known range for the species and contains gravelly soils; therefore, the action area would not provide suitable habitat for this species.	No impact.
Arizona toad (<i>Anaxyrus microscaphus</i>)	Within Arizona, this species is found in canyons and floodplains south of the Mogollon Rim, as well as East Clear Creek. Habitat consists of rocky streams, canyons, and flood plains in the pine-oak belt up to 8,000 ft amsl, and also in lower deserts such as the Aqua Fria River.	Unlikely to occur. There are no perennial waterbodies located within the action area or in the vicinity.	No impact.
Lowland leopard frog (<i>Lithobates yavapaiensis</i>)	Within Arizona, this species is found in the central and southeastern portion of the state, largely below the Mogollon Rim, and are absent from the lower Colorado River. Habitat consists of aquatic systems, both natural and man-made, in desert grasslands to pinyon-juniper between 480-6,200 ft amsl. Known to utilize deep mud cracks, existing burrows, and rock fissures in semi-permanent aquatic systems.	Unlikely to occur. There are no perennial or intermittent waterbodies or man-made water sources located within the action area or in the vicinity.	No impact.
Relict leopard frog (<i>Lithobates onca</i>)	Within Arizona, this species is found in the Virgin River drainage of northwestern Arizona. Habitat consists of permanent streams, springs, and spring-fed wetlands below 1,970 ft amsl.	Unlikely to occur. There are no perennial waterbodies located within the action area or in the vicinity.	No impact.

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Action area	Determination of Impact
California black rail (<i>Laterallus jamaicensis coturniculus</i>)	Within Arizona, this species is found locally and only in the extreme southwest portion of the state along the Colorado River. Habitat in Arizona consists of narrow belts of shallow water along shorelines where emergent and shoreside vegetation intergrade.	Unlikely to occur. The action area does not contain permanent water sources and is outside of the known range for the species.	No impact.
*Gray vireo (<i>Vireo vicinior</i>)	Habitat for this species consists of brushy mountain slopes, mesas, open chaparral, scrub oak, and juniper. Nesting habitat consists of dry thorn scrub, chaparral, pinyon-juniper scrub, oak-juniper scrub, and sagebrush and mesquites of arid foothills and mesas between 3,000-6,500 ft amsl.	Unlikely to occur. While this species has been observed south of the action area in the Harquahala Mountains, the action area does not contain suitable habitat and is outside of the elevational range for the species.	No impact.
Northern goshawk (<i>Accipiter gentilis atricapillus</i>)	Within Arizona, this species is found on high, forested mountains and plateaus above 6,000 ft amsl. Habitat consists of primarily ponderosa pine, mixed-species forest, spruce-fir woodlands, and some riparian communities.	Unlikely to occur. The action area is outside of the elevational range for this species, and does not contain forested vegetation; therefore, the action area would not provide suitable nesting or foraging habitat for this species.	No impact.
Pinyon jay (<i>Gymnorhinus cyanocephalus</i>)	Within Arizona, this species is found on the Colorado Plateau and south to central Arizona. Habitat consists of pinyon-juniper woodlands, ponderosa pine, sagebrush, scrub oak, and chaparral.	Unlikely to occur. The action area consists of creosote desert scrub and would not provide suitable habitat for this species.	No impact.
*White-faced ibis (<i>Plegadis chichi</i>)	Within Arizona, this species winters along the lower Colorado River and may use other areas of the state during migration; breeding has not been confirmed in Arizona. Habitat consists of freshwater marshes (particularly in cattail and bulrush marshes), swamps, ponds, and rivers between 206-215 ft amsl, though the species will utilize flooded hay meadows, agricultural fields, and estuarine wetlands.	Unlikely to occur. The action area does not contain intermittent or perennial water sources, nor agricultural land that may become flooded.	No impact.
Allen's big-eared bat (<i>Idionycteris phylotis</i>)	This species is found across most of Arizona, except for the southwestern deserts, and is most common on the southern Colorado Plateau, the Mogollon Rim, and adjacent mountain ranges. Habitat consists of ponderosa pine, pinyon-juniper, Mexican woodland, and riparian habitats near boulder piles, rocky outcrops, or lava flows at elevations between 1,320-9,800 ft amsl. Roosting sites include caves and abandoned mine shafts.	Unlikely to occur. The action area largely consists of creosote desert scrub which would not provide suitable foraging habitat for this species, nor does it contain caves or abandoned mine shafts which would provide suitable roosting habitat.	No impact.
Arizona myotis (<i>Myotis lucifugus occultus</i>)	Habitat consists of ponderosa pine and oak-pine woodland near water, though may also occur in wooded riparian areas in desert areas. Most common at elevations of 3,200 to 9,000 feet amsl, but also occurs much lower along the Lower Colorado River. Roosting sites include snags and buildings.	Unlikely to occur. The action area is outside of the normal elevational range of the species and does not contain the habitat elements (such as a river and riparian vegetation) that would provide suitable habitat at lower elevations.	No impact.
*Big free-tailed bat (<i>Nyctinomops macrootis</i>)	This species is found across most of Arizona, with most observations located in northern and some in southeastern Arizona. Habitat consists of rugged, rocky areas and riparian habitats between 1,800-8,500 ft amsl. Roosting sites include rock crevices in cliffs, caves, buildings, and occasionally holes in trees.	Unlikely to occur. The action area is located in a valley and does not contain rugged, rocky areas or riparian habitats and is outside of the known range of the species.	No impact.

Common Name (Species Name)	Range or Habitat Requirements	Potential for Occurrence in Action area	Determination of Impact
*Western red bat (<i>Lasiurus blossevillii</i>)	In Arizona, this species is generally found in south central to southern and southeastern Arizona, though there are a few observations from the Colorado River near Bill Williams and the Grand Canyon. Habitat consists of riparian and wooded areas between 580-2,196 ft asml. Roosting sites include primarily cottonwood trees, other leafy trees and shrubs, saguaro boots, and occasionally cave-like locations.	Unlikely to occur. The action area does not contain riparian habitat nor wooded areas with leafy trees or shrubs and therefore would not provide suitable roosting or foraging habitat for this species.	No impact.
*Western yellow bat (<i>Lasiurus xanthinus</i>)	In Arizona, this species is found in riparian canyons of the Chiricahua, Santa Catalina, Kofa, Galiuro, and Peloncillo mountains; portions of the Hassayampa River, Parker and Cibola Valleys, and Mittry Lake; and in Glendale, Maricopa County. Habitat consists of broad-leaved deciduous riparian communities and fan palms between 550-6,000 ft asml. Roosting sites in leafy vegetation and dead leaf skirts of palm trees.	Unlikely to occur. The action area does not contain canyons with broad-leaved deciduous riparian vegetation nor palm trees and therefore would not provide roosting or foraging habitat for this species.	No impact.
*Desert bighorn sheep (<i>Ovis canadensis nelsoni</i>)	Historic range for this species included all mountain ranges and plateau slopes in northern, southern, and western Arizona. Habitat consists of sparsely vegetated mountainous terrain and grassy basins between 90-4,500 ft asml.	Unlikely to occur. The action area does not contain mountainous terrain nor grassy basins and therefore would not provide suitable breeding or foraging habitat for this species.	No impact.
Desert Christmas tree (<i>Pholisma arenarium</i>)	Within Arizona, this species is found in La Paz County, east and southeast of the community of Parker on Cactus Plain. Habitat consists of sandy soils in desert and chaparral communities between 325-820 ft asml, specifically along the edges of washes and on low dunes. This species is a parasitic plant and attaches to the roots of shrubs such as <i>Hymenoclea</i> , <i>Eriodictyon</i> , <i>Isocoma</i> , <i>Chrysothamnus</i> , and <i>Ambrosia</i> .	Unlikely to occur. The action area is located approximately 45 miles southeast of the community of Parker, contains gravelly soils, and outside of the elevational range of this species; therefore, the action area would not provide suitable habitat for this species.	No impact.
Joshua tree (<i>Yucca brevifolia</i>)	Within Arizona, this species is found in the western portion of the state. Habitat consists of hot, dry sites on flats, mesas, bajadas, and gentles slopes in Mojave desertscrub up to 3,600 ft asml.	Unlikely to occur. The action area is located in Sonoran desert scrub and this species was not observed during site visits.	No impact.

* Species that are included in the LHFO RMP (BLM 2007) as Sensitive Species, but not included on the updated BLM Arizona Sensitive Species list (BLM 2017) for the BLM Colorado River District Office.

APPENDIX B

USFWS IPaC Species List for La Paz County



United States Department of the Interior



FISH AND WILDLIFE SERVICE

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http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

In Reply Refer To:

July 23, 2018

Consultation Code: 02EAAZ00-2018-SLI-1047

Event Code: 02EAAZ00-2018-E-02327

Project Name: Salome Solar

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The Fish and Wildlife Service (Service) is providing this list under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The list you have generated identifies threatened, endangered, proposed, and candidate species, and designated and proposed critical habitat, that may occur within one or more delineated United States Geological Survey 7.5 minute quadrangles with which your project polygon intersects. Each quadrangle covers, at minimum, 49 square miles. In some cases, a species does not currently occur within a quadrangle but occurs nearby and could be affected by a project. Please refer to the species information links found at:

http://www.fws.gov/southwest/es/arizona/Docs_Species.htm

<http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf> .

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to consult with us if their projects may affect federally listed species and/or designated critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, we recommend preparing a biological evaluation similar to a Biological Assessment to determine whether the project may

affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If the Federal action agency determines that listed species or critical habitat may be affected by a federally funded, permitted or authorized activity, the agency must consult with us pursuant to 50 CFR 402. Note that a "may affect" determination includes effects that may not be adverse and that may be beneficial, insignificant, or discountable. You should request consultation with us even if only one individual or habitat segment may be affected. The effects analysis should include the entire action area, which often extends well outside the project boundary or "footprint." For example, projects that involve streams and river systems should consider downstream effects. If the Federal action agency determines that the action may jeopardize a proposed species or adversely modify proposed critical habitat, the agency must enter into a section 7 conference. The agency may choose to confer with us on an action that may affect proposed species or critical habitat.

Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend considering them in the planning process in the event they become proposed or listed prior to project completion. More information on the regulations (50 CFR 402) and procedures for section 7 consultation, including the role of permit or license applicants, can be found in our Endangered Species Consultation Handbook at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>.

We also advise you to consider species protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668 et seq.). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the Service. The Eagle Act prohibits anyone, without a permit, from taking (including disturbing) eagles, and their parts, nests, or eggs. Currently 1026 species of birds are protected by the MBTA, including species such as the western burrowing owl (*Athene cunicularia hypugea*). Protected western burrowing owls are often found in urban areas and may use their nest/burrows year-round; destruction of the burrow may result in the unpermitted take of the owl or their eggs.

If a bald eagle (or golden eagle) nest occurs in or near the proposed project area, you should evaluate your project to determine whether it is likely to disturb or harm eagles. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles:

<https://www.fws.gov/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf>

<https://www.fws.gov/birds/management/managed-species/eagle-management.php>.

The Division of Migratory Birds (505/248-7882) administers and issues permits under the MBTA and Eagle Act, while our office can provide guidance and Technical Assistance. For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following: <https://www.fws.gov/birds/policies-and-regulations/incidental-take.php>. Guidance for minimizing impacts to migratory birds for communication tower projects (e.g. cellular, digital

television, radio, and emergency broadcast) can be found at:
<https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php>.

Activities that involve streams (including intermittent streams) and/or wetlands are regulated by the U.S. Army Corps of Engineers (Corps). We recommend that you contact the Corps to determine their interest in proposed projects in these areas. For activities within a National Wildlife Refuge, we recommend that you contact refuge staff for specific information about refuge resources.

If your action is on tribal land or has implications for off-reservation tribal interests, we encourage you to contact the tribe(s) and the Bureau of Indian Affairs (BIA) to discuss potential tribal concerns, and to invite any affected tribe and the BIA to participate in the section 7 consultation. In keeping with our tribal trust responsibility, we will notify tribes that may be affected by proposed actions when section 7 consultation is initiated.

We also recommend you seek additional information and coordinate your project with the Arizona Game and Fish Department. Information on known species detections, special status species, and Arizona species of greatest conservation need, such as the western burrowing owl and the Sonoran desert tortoise (*Gopherus morafkai*) can be found by using their Online Environmental Review Tool, administered through the Heritage Data Management System and Project Evaluation Program <https://www.azgfd.com/Wildlife/HeritageFund/>.

For additional communications regarding this project, please refer to the consultation Tracking Number in the header of this letter. We appreciate your concern for threatened and endangered species. If we may be of further assistance, please contact our following offices for projects in these areas:

Northern Arizona: Flagstaff Office 928/556-2001

Central Arizona: Phoenix office 602/242-0210

Southern Arizona: Tucson Office 520/670-6144

Sincerely,
/s/ Steven L. Spangle Field Supervisor

Attachment

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arizona Ecological Services Field Office

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

(602) 242-0210

Project Summary

Consultation Code: 02EAAZ00-2018-SLI-1047

Event Code: 02EAAZ00-2018-E-02327

Project Name: Salome Solar

Project Type: POWER GENERATION

Project Description: Solar development

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/33.67220659971044N113.93291980145226W>



Counties: La Paz, AZ

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Sonoran Pronghorn <i>Antilocapra americana sonoriensis</i> Population: U.S.A. (AZ), Mexico No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4750	Experimental Population, Non-Essential

Birds

NAME	STATUS
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is proposed critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened
Yuma Clapper Rail <i>Rallus longirostris yumanensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3505	Endangered

Reptiles

NAME	STATUS
Desert Tortoise <i>Gopherus agassizii</i> Population: Wherever found, except AZ south and east of Colorado R., and Mexico There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4481	Threatened
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> There is proposed critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7655	Threatened

Fishes

NAME	STATUS
Bonytail Chub <i>Gila elegans</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1377	Endangered
Razorback Sucker <i>Xyrauchen texanus</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/530	Endangered

Critical habitats

There are 5 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Bonytail Chub <i>Gila elegans</i> https://ecos.fws.gov/ecp/species/1377#crithab	Final
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i> https://ecos.fws.gov/ecp/species/7655#crithab	Proposed
Razorback Sucker <i>Xyrauchen texanus</i> https://ecos.fws.gov/ecp/species/530#crithab	Final
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> https://ecos.fws.gov/ecp/species/6749#crithab	Final
Yellow-billed Cuckoo <i>Coccyzus americanus</i> https://ecos.fws.gov/ecp/species/3911#crithab	Proposed

APPENDIX C

AZGIS Online Environmental Review Tool

Note: The Section 508 amendment of the Rehabilitation Act of 1973 requires that the information in federal documents be accessible to individuals with disabilities. The agency has made every effort to ensure that the information in the Biological Evaluation is accessible. However, this appendix is not fully compliant with Section 508, and readers with disabilities are encouraged to contact Arizona Game and Fish at customerservice@azgfd.gov or (602) 942-3000 if they would like access to the information.

Arizona Environmental Online Review Tool Report



Arizona Game and Fish Department Mission

To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Salome Solar

User Project Number:

TBD

Project Description:

Salome Solar

Project Type:

Energy Storage/Production/Transfer, Energy Production (generation), photovoltaic solar facility (new)

Contact Person:

Meggan Dugan

Organization:

SWCA Environmental Consultants

On Behalf Of:

PRIVATE

Project ID:

HGIS-07742

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

Locations Accuracy Disclaimer:

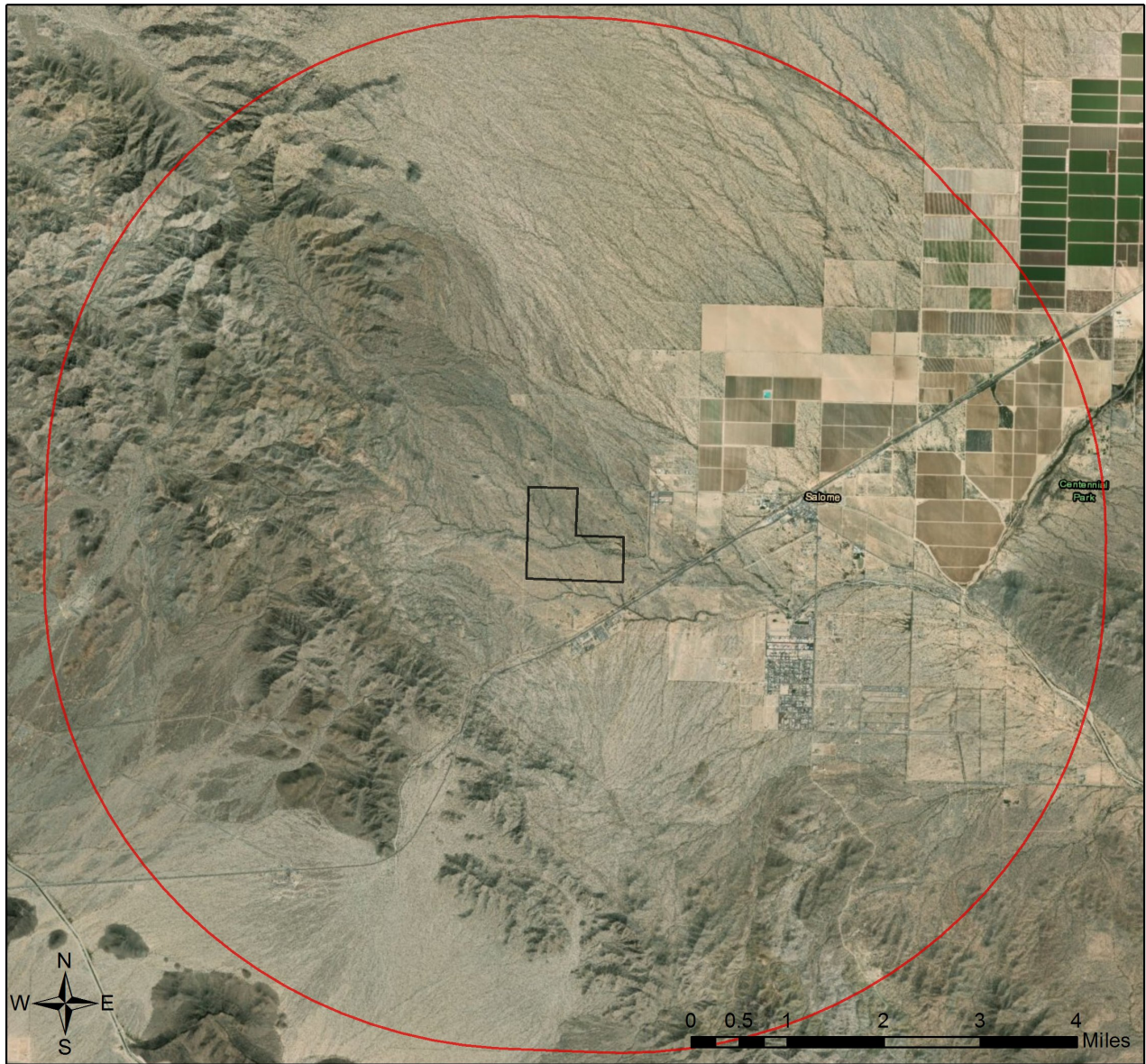
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.



Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366
Or
PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Salome Solar

Aerial Image Basemap With Locator Map



-  Project Boundary
-  Buffered Project Boundary

Project Size (acres): 466.21

Lat/Long (DD): 33.7751 / -113.6554

County(s): La Paz

AGFD Region(s): Yuma

Township/Range(s): T5N, R13W

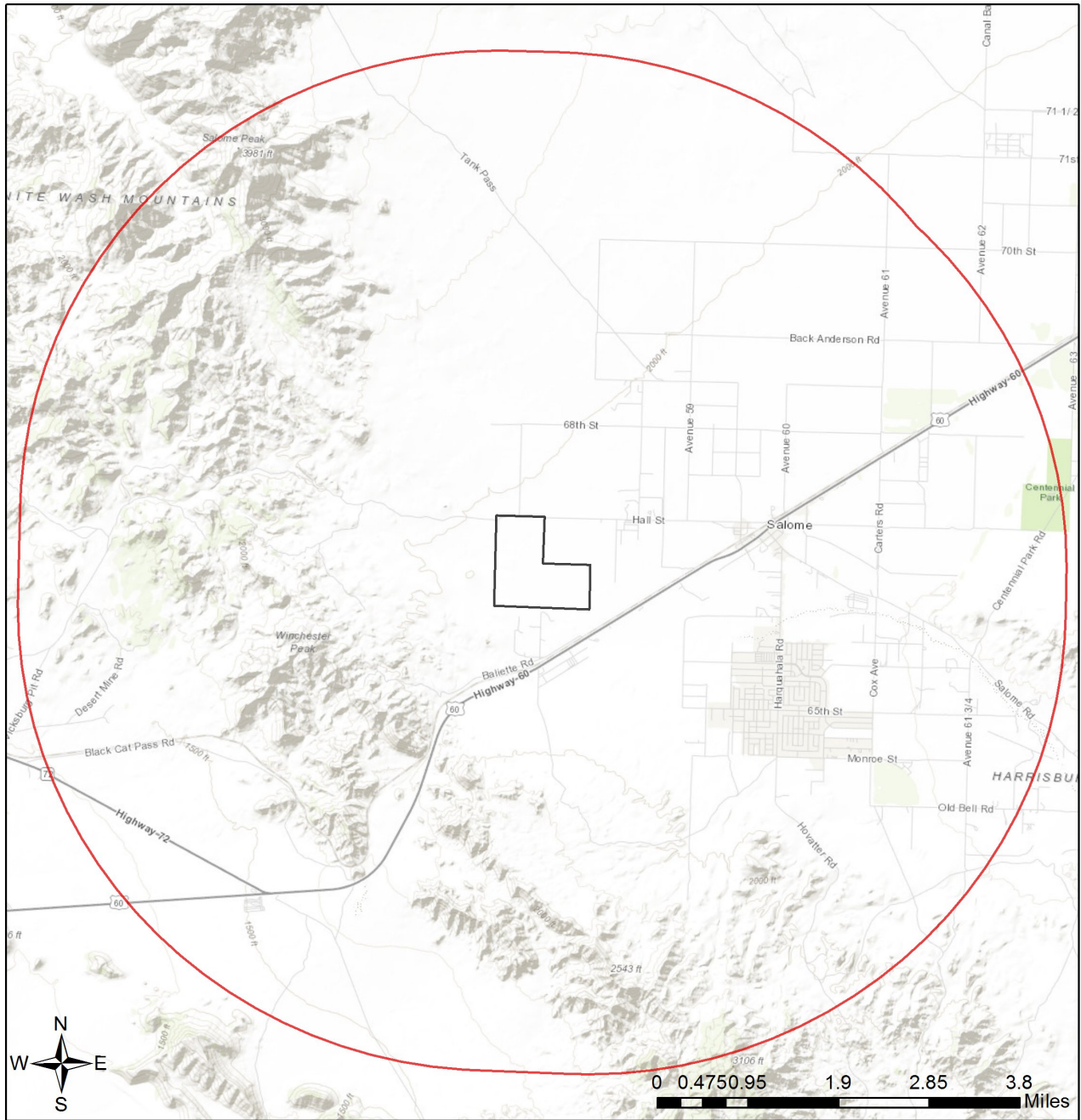
USGS Quad(s): HARCUVAR

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, ©



Salome Solar

Web Map As Submitted By User



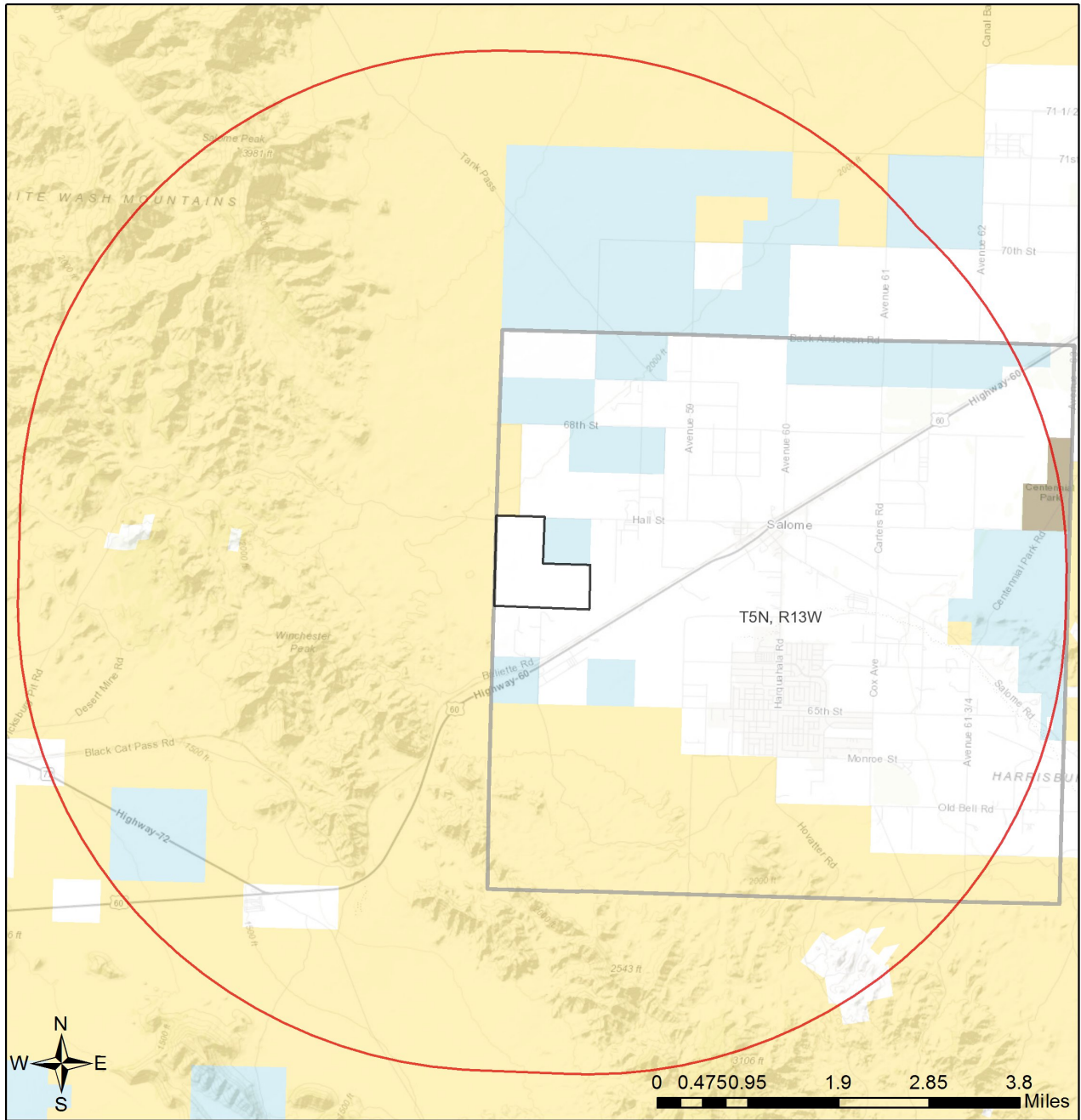
- Project Boundary
- Buffered Project Boundary

Project Size (acres): 466.21
 Lat/Long (DD): 33.7751 / -113.6554
 County(s): La Paz
 AGFD Region(s): Yuma
 Township/Range(s): T5N, R13W
 USGS Quad(s): HARCUVAR

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Salome Solar

Topo Basemap With Township/Ranges and Land Ownership



- | | |
|---------------------------|--------------------------|
| Project Boundary | Military |
| Buffered Project Boundary | Mixed/Other |
| Township/Ranges | National Park/Mon. |
| Land Ownership | |
| AZ Game and Fish Dept. | State and Regional Parks |
| BLM | State Trust |
| BOR | US Forest Service |
| Indian Res. | Wildlife Area/Refuge |

Project Size (acres): 466.21
 Lat/Long (DD): 33.7751 / -113.6554
 County(s): La Paz
 AGFD Region(s): Yuma
 Township/Range(s): T5N, R13W
 USGS Quad(s): HARCUIVAR

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Special Status Species and Special Areas Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Bat Colony						
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Heloderma suspectum cinctum	Banded Gila Monster	SC				1A
Heloderma suspectum	Gila Monster					1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/>

**Species of Greatest Conservation Need
 Predicted within 5 Miles of Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisi	Harris' Antelope Squirrel					1B
Anaxyrus microscaphus	Arizona Toad	SC		S		1B
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Calypte costae	Costa's Hummingbird					1C
Colaptes chrysoides	Gilded Flicker			S		1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Incilius alvarius	Sonoran Desert Toad					1B
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolni	Lincoln's Sparrow					1B
Melospiza aberti	Abert's Towhee		S			1B
Micrathene whitneyi	Elf Owl					1C
Micruroides euryxanthus	Sonoran Coralsnake					1B

**Species of Greatest Conservation Need
 Predicted within 5 Miles of Project Vicinity based on Predicted Range Models**

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Myiarchus tyrannulus	Brown-crested Flycatcher					1C
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Oreoscoptes montanus	Sage Thrasher					1C
Oreothlypis luciae	Lucy's Warbler					1C
Ovis canadensis mexicana	Mexican Desert Bighorn Sheep					1B
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus longimembris	Little Pocket Mouse	No Status				1B
Phrynosoma solare	Regal Horned Lizard					1B
Sphyrapicus nuchalis	Red-naped Sapsucker					1C
Spizella atrogularis	Black-chinned Sparrow					1C
Spizella breweri	Brewer's Sparrow					1C
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Thomomys bottae subsimilis	Harquahala Southern Pocket Gopher	SC				1B
Toxostoma lecontei	LeConte's Thrasher			S		1B
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox	No Status				1B

Species of Economic and Recreation Importance Predicted within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Ovis canadensis mexicana	Mexicana Desert Bighorn Sheep					1B
Pecari tajacu	Javelina					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Energy Storage/Production/Transfer, Energy Production (generation), photovoltaic solar facility (new)

Project Type Recommendations:

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife. Guidelines for many of these can be found at: <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, canted, or cut to ensure that light reaches only areas needing illumination.

Minimize potential introduction or spread of exotic invasive species. Invasive species can be plants, animals (exotic snails), and other organisms (e.g., microbes), which may cause alteration to ecological functions or compete with or prey upon native species and can cause social impacts (e.g., livestock forage reduction, increase wildfire risk). The terms noxious weed or invasive plants are often used interchangeably. Precautions should be taken to wash all equipment utilized in the project activities before leaving the site. Arizona has noxious weed regulations (Arizona Revised Statutes, Rules R3-4-244 and R3-4-245). See Arizona Department of Agriculture website for restricted plants, <https://agriculture.az.gov/>. Additionally, the U.S. Department of Agriculture has information regarding pest and invasive plant control methods including: pesticide, herbicide, biological control agents, and mechanical control, <http://www.usda.gov/wps/portal/usdahome>. The Department regulates the importation, purchasing, and transportation of wildlife and fish (Restricted Live Wildlife), please refer to the hunting regulations for further information <https://www.azgfd.com/hunting/regulations>.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

For any powerlines built, proper design and construction of the transmission line is necessary to prevent or minimize risk of electrocution of raptors, owls, vultures, and golden or bald eagles, which are protected under state and federal laws. Limit project activities during the breeding season for birds, generally March through late August, depending on species in the local area (raptors breed in early February through May). Conduct avian surveys to determine bird species that may be utilizing the area and develop a plan to avoid disturbance during the nesting season. For underground powerlines, trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herptef fauna (snakes, lizards, tortoise) from entering ditches. In addition, indirect affects to wildlife due to construction (timing of activity, clearing of rights-of-way, associated bridges and culverts, affects to wetlands, fences) should also be considered and mitigated.

Based on the project type entered, coordination with State Historic Preservation Office may be required (<http://azstateparks.com/SHPO/index.html>).

Based on the project type entered, coordination with U.S. Fish and Wildlife Service (Migratory Bird Treaty Act) may be required (<http://www.fws.gov/southwest/es/arizona/>).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

PEP@azgfd.gov

Project Location and/or Species Recommendations:

HDMS records indicate that one or more listed, proposed, or candidate species or Critical Habitat (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at <http://www.fws.gov/southwest/es/arizona/> or:

Phoenix Main Office

2321 W. Royal Palm Rd, Suite 103
Phoenix, AZ 85021
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office

201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office

SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that Sonoran Desert Tortoise have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: <https://www.azgfd.com/wildlife/nongamemanagement/tortoise/>

APPENDIX E

Visual Simulations and Contrast Rating Forms



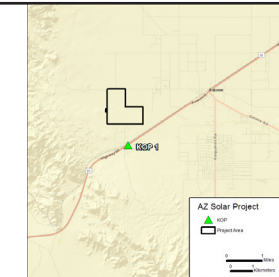
KOP 1: Iron Horse Grill, US-60, Harcuvar, Arizona - Winter / Midday - Existing



KOP 1: Iron Horse Grill, US-60, Harcuvar, Arizona - Winter / Midday - Proposed

AZ Solar 1 Interconnection Project

KOP 1: Harcuvar, Arizona
 Winter / Midday
Proposed and Existing



Base Photographic Documentation

Date	01/22/2019
Time (24H)	11:04
Longitude	113°39'9.19"W
Latitude	33°45'39.14"N
Viewpoint Elevation (ft.)	1,934
Camera Height (ft.)	4.5
Camera Heading(deg.)	347

Camera Information

Camera Make & Model	Nikon D5100
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	AF-S Nikkor 18-55 mm
Lens Focal Length	36mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth	152 SSE
Sun Elevation	31
Lighting Angle on Project	Right lit
Weather Conditions	Clear
Avg. Predicted Visibility	10 miles
Temperature (°F)	57
Humidity (%)	25

Proposed Infrastructure Information

Distance to Project	0.56 (mile/ft)
Make & Model	NEXTracker MRT First Solar S6
Max. Height (ft)	8
Support Structure Ht. (ft)	4.5

Photo simulation Created Using:
 ArcGIS; Adobe Photoshop; Sketch Up;
 Google Earth Pro





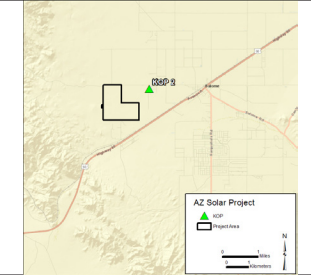
KOP 2: Western Sky Airpark Runway Entrance - Winter / Midday - Existing



KOP 2: Western Sky Airpark Runway Entrance - Winter / Midday - Proposed

AZ Solar 1 Interconnection Project

KOP 2: Western Sky Airpark Runway Entrance
Winter / Midday
Proposed and Existing



Base Photographic Documentation

Date	01/22/2019
Time (24H)	12:25
Longitude	33°46'52.72"N
Latitude	113°38'25.95"W
Viewpoint Elevation (ft.)	1,943
Camera Height (ft.)	4.5
Camera Heading(deg.)	233

Camera Information

Camera Make & Model	Nikon D5100
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	AF-S Nikkor 18-55 mm
Lens Focal Length	36mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth	174 S
Sun Elevation	34
Lighting Angle on Project	Right lit
Weather Conditions	Clear
Avg. Predicted Visibility	10 miles
Temperature (°F)	57
Humidity (%)	25

Proposed Infrastructure Information

Distance to Project	0.56 (mile/ft)
Make & Model	NEXTracker MRT
	First Solar S6
Max. Height (ft)	8
Support Structure Ht. (ft)	4.5

Photo simulation Created Using:
ArcGIS; Adobe Photoshop; Sketch Up;
Google Earth Pro





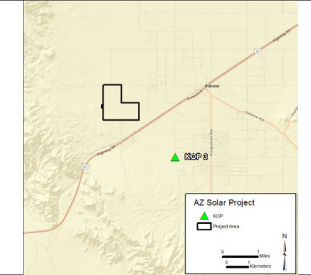
KOP 3: Avenue 59 and 69th Street- Southwest of Indian Hills Airpark - Winter / Midday - Existing



KOP 3: Avenue 59 and 69th Street- Southwest of Indian Hills Airpark - Winter / Midday - Proposed

AZ Solar 1 Interconnection Project

KOP 3: Avenue 59 and 69th Street- Southwest of Indian Hills Airpark
 Winter / Midday
Proposed and Existing



Base Photographic Documentation

Date	01/22/2019
Time (24H)	11:57
Longitude	113°37'40.45"W
Latitude	33°45'15.38"N
Viewpoint Elevation (ft.)	1,922
Camera Height (ft.)	4.5
Camera Heading(deg.)	307

Camera Information

Camera Make & Model	Nikon D5100
Camera Sensor Size	23.6mm x 15.6mm
Lens Make & Model	AF-S Nikkor 18-55 mm
Lens Focal Length	36mm
Crop Factor	1.53

Sun and Weather Information

Sun Azimuth	163 SSE
Sun Elevation	35
Lighting Angle on Project	Right lit
Weather Conditions	Clear
Avg. Predicted Visibility	10 miles
Temperature (°F)	57
Humidity (%)	25

Proposed Infrastructure Information

Distance to Project	1.42 (mile/ft)
Make & Model	NEXTracker MRT
Quantity	First Solar S6
Max. Height (ft)	8
Support Structure Ht. (ft)	4.5

Photo simulation Created Using:
 ArcGIS; Adobe Photoshop; Sketch Up;
 Google Earth Pro



**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

VISUAL CONTRAST RATING WORKSHEET

Date January 22, 2019

District
Colorado River District

Resource Area
Private/ BLM- Lake Havasu Field Office

Activity (program) Photovoltaic Energy Generation,
Transmission Connection and ROW

SECTION A. PROJECT INFORMATION

1. Project Name Salome Solar- AZ Solar 1	4. Location Township 5N	5. Location Sketch Along US-60 within a restaurant parking lot looking north. The business is south of the highway between Sharon Street and 1 st Street in Harcuvar, Arizona. It is 2.7 miles west of the intersection of Salome Road and US-60 in Salome, Arizona.
2. Key Observation Point KOP 1- Iron Horse Grill, US-60, Harcuvar, Arizona	Range 13W	
3. VRM Class Class III & IV	Section 18	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

1. LANDWATER		2. VEGETATION		3. STRUCTURES	
FORM	Foreground- simple, moderate, smooth Midground-wide, few, bold, smooth Background- jagged, amorphous, contrasting	FORM	Foreground- low, simple, patchy Midground- diverse, irregular, amorphous Background- indistinct, few	FORM	Foreground- geometric, horizontal and vertical, diverse, strip, contrasting, Midground and Background- contrasting, cubic, bold, asymmetrical
LINE	Fore- smooth, simple, continuous Mid- flowing, smooth, horizontal Back- complex, rugged, converging	LINE	Fore- simple, broken, hard Mid- complex, irregular, subangular Back- weak, broken, irregular	LINE	Fore- parallel, simple, horizontal and vertical, broken, straight, bold Mid and back- angular, geometric, smooth, simple, regular, horizontal
COLOR	Fore-warm muted greys Mid-monotone warm browns and greys Back- dark dull harmonious browns and blues	COLOR	Fore- saturated cool grey greens and dull yellows Mid-monotone warm browns greens Back- muted dull dark blue greens	COLOR	Fore and mid- dark dull grey black with cool greys, contrasting dull yellow, vibrant vivid red, glaring brilliant cool light greys Back- contrasting vibrant light greys
TEXTURE	Fore-smooth, directional, ordered Mid-uniform, striped, smooth Back-rough, coarse, contrasting	TEXTURE	Fore- ordered, contrasting, directional Mid-dense, continuous, medium Back- sparse, gradational	TEXTURE	Fore- ordered, contrasting, directional Mid-scattered, clumped, contrasting Back- sparse, contrasting, random

SECTION C. PROPOSED ACTIVITY DESCRIPTION

1. LANDWATER		2. VEGETATION		3. STRUCTURES	
FORM		FORM		FORM	PV- definite, flat, geometric, simple Interconnection-tall, few, narrow, definite to indistinct, linear
LINE		LINE		LINE	PV-bold, regular, geometric, broken Interconnection- simple, converging, geometric, straight, weak
COLOR		COLOR		COLOR	PV- cool deep blues, soft dull grey Interconnection- subtle dull cool gray
TEXTURE		TEXTURE		TEXTURE	PV- smooth, contrasting, clumped, ordered Interconnection- clumped, discontinuous, contrasting

SECTION D. CONTRAST RATING SHORT TERM LONG TERM

1. DEGREE OF CONTRAST	2. Does project design meet visual resource management objectives? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Explain on reverse side)														
	3. Additional mitigating measures recommended? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Explain on reverse side)														
	Evaluator's Names														
	Date														
	ELEMENTS														
Form									X						
Line									X						
Color											X				
Texture											X				

J. Grams
E. Hunt

1-22.2019

SECTION D. (Continued)

Comments from item 2.

The project infrastructure would contrast the natural landscape's existing forms, lines, colors, and textures while mimicking the form and line of the contrasting, geometric, and irregular structures that are existing in this view. The degree of visual modification that this Project would generate meets the management objectives of Class III and IV. These classes consider the visual value of the project area to have moderate to the minimal visual value. The proposed changes would create a range of weak to strong contrast in the existing view.

From this KOP the array's large scale, low simple geometric lines and forms, and the interconnection and substation's geometric vertical elements and geometric forms would contrast against the existing rugged, amorphous mountains, dense desert vegetation, and the simple valley landforms. The various cool bright blue hues of the panels are like the distant subtle cool hues within the mountains in the background and contrast against the natural environment like the existing structures. This KOP view illustrates a typical view from the road where the proposed semitransparent matte gray fence around the project area and existing vegetation would break the project's strong and linear lines and forms. Broken bold, geometric lines and forms of existing structures in the view would dilute the emphasis of the strong contrast of the project in relationship to the natural organic landscape.

Additional Mitigating Measures (See item 3)

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

Date January 22, 2019

District
Colorado River District

Resource Area
Private/ BLM- Lake Havasu Field Office

Activity(program) Photovoltaic Energy Generation,
Transmission Connection and ROW

VISUAL CONTRAST RATING WORKSHEET

SECTION A. PROJECT INFORMATION

1. Project Name Salome Solar- AZ Solar 1	4 Location Township 5N	5 Location Sketch Western Sky Airpark is a neighborhood 1.7 miles west on Hall Avenue from US-60 in Salome, Arizona. The KOP is located at the northeaster intersection of the western terminus of Bonanza Avenue at the intersection of the community's private runway.
2 Key Observation Point KOP 2- Runway entrance, Western Sky Airpark, Salome, Arizona	Range 13W	
3 VRM Class Class III & IV	Section 18	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Foreground- simple, moderate, smooth Midground-low, bold, smooth Background- jagged, amorphous, contrasting	Foreground- low, simple, patchy Midground- diverse, irregular, amorphous Background- indistinct, patchy	Foreground- geometric, simple, low, flat. Midground- contrasting, cubic, irregular. Background- angular, geometric, contrasting, few
LINE	Fore- smooth, simple, continuous Mid- flowing, smooth, curvilinear Back- complex, rugged, converging	Fore- simple, broken, semicircular Mid- complex, irregular, diagonal and vertical. Back- weak	Fore- converging, simple, smooth, bold Mid- angular, simple, geometric Back-simple, broken
COLOR	Fore-warm muted greys Mid-monotone warm browns and greys Back- dark dull browns and blues	Fore- cool greens and yellows Mid-monotone subtle warm greens Back- muted dark blue greens	Fore and mid- dull monotone dark gray, contrasting cool vivid greys, warm dull greys, warm dull dark browns. Back- contrasting cool vivid greys
TEXTURE	Fore-smooth, directional Mid-uniform, gradational, smooth Back-rough, coarse, contrasting	Fore-smooth, striated and clumped Mid- continuous, dense, nondirectional Back- gradational, coarse, subtle	Fore- ordered, contrasting, directional Mid and back-random, contrasting, discontinuous, sparse, patchy

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM			PV- definite, flat, geometric, simple, low Interconnection-tall, few, indistinct, linear
LINE			PV-regular, geometric, broken, horizontal Interconnection- simple, geometric, straight, weak
COLOR			PV- cool deep blues, soft dull grey Interconnection- subtle dull cool gray
TEXTURE			PV- smooth, contrasting, clumped, ordered Interconnection- clumped, contrasting

SECTION D. CONTRAST RATING **SHORT TERM** **LONG TERM**

1.	DEGREE OF CONTRAST	FEATURES												2. Does project design meet visual resource management objectives? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Explain on reverse side)
		LANDWATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
		X								X				
		X								X				
ELEMENTS	Form											X	3. Additional mitigating measures recommended? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Explain on reverse side)	
	Line											X		
	Color								X					
	Texture										X			
											Evaluator's Names		Date	
											J. Grams		1-22.2019	
											E. Hunt			

SECTION D. (Continued)

Comments from item 2.

The project infrastructure would contrast the natural landscape's existing forms, lines, colors, and textures while mimicking the form and line of the contrasting, geometric, and irregular structures that are existing in this view. The degree of visual modification that this Project would generate meets the management objectives of Class III and IV. These classes consider the visual value of the project area to have moderate to the minimal visual value. The proposed changes to this view range from weak to moderate visual contrast to the existing view.

From this view the photovoltaic panels' low simple geometric lines and the substation and interconnection's geometric vertical elements would contrast against the existing amorphous and simple forms of the desert vegetation and landforms. The visual impact of the contrast it would bring this view would be weakened by viewer's distance to the project and the existing natural vegetation between the viewer and the project. The intermittent screening from the vegetation would break up the project's simple bold lines while the existing structures (which includes existing transmission poles, fences, and RV trailers) in the view are similar to the proposed project's contrasting form and texture. The dark cool hues of the panels would contrast the surrounding warm greys and greens but would be balanced with the subtle cool hues within the surrounding mountains.

Additional Mitigating Measures (See item 3)

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

Date January 22, 2019

District
Colorado River District

Resource Area
Private/ BLM- Lake Havasu Field Office

Activity (program) Photovoltaic Energy Generation,
Transmission Connection and ROW

VISUAL CONTRAST RATING WORKSHEET

SECTION A. PROJECT INFORMATION

1. Project Name Salome Solar- AZ Solar 1	4. Location Township 5N	5. Location Sketch The KOP is located 1 mile west of Harquahala Road along 65 th Street in Salome, Arizona. Via vehicular roads it is 1.4 miles southwest of the entrance of Indian Hills Airpark and 3 miles southwest from the intersection of Salome Road and US-60. The KOP is directly 1.15 miles southeast of US-60.
2. Key Observation Point KOP 3- Avenue 59 and 65 th Street, Indian Hills neighborhood, Salome Arizona	Range 13W	
3. VRM Class Class III & IV	Section 18	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Foreground- simple, moderate, smooth Midground-low, bold, smooth Background- jagged, amorphous, contrasting	Foreground- low, simple, patchy Midground- diverse, irregular, amorphous Background- indistinct, few	Foreground- geometric, diverse, low Midground- contrasting, cubic, vertical, diverse. Background- angular, geometric, contrasting
LINE	Fore- smooth, simple, continuous Mid- flowing, smooth, curvilinear Back- complex, rugged, converging	Fore- simple, broken, hard Mid- complex, irregular, subangular Back- weak, broken, irregular	Fore- converging, simple, angular Mid- angular, geometric, bold Back- simple, geometric, broken
COLOR	Fore- warm muted greys Mid- monotone warm browns and greys Back- dark dull browns and blues	Fore- saturated cool greens and yellows Mid- monotone warm browns greens Back- muted dull dark yellow greens	Fore and mid- glaring brilliant cool greys, dull monotone warm gray Back- contrasting light white and gray
TEXTURE	Fore- smooth, directional Mid- uniform, gradational, smooth Back- rough, coarse, contrasting	Fore- random, patchy, striated Mid- continuous, uniform, dense, fine Back- gradational, coarse, subtle	Fore- ordered, contrasting, directional Mid- directional, random, contrasting Back- sparse, stippled

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM			PV- bold, low, geometric, simple Interconnection- few, geometric, definite to indistinct, linear
LINE			PV- bold, regular, geometric, simple, hard, angular Interconnection- simple, straight, weak, vertical
COLOR			PV- cool deep blues, soft dull grey Interconnection- subtle dull cool gray
TEXTURE			PV- smooth, contrasting, clumped, ordered, uniform Interconnection- clumped, discontinuous, contrasting

SECTION D. CONTRAST RATING **SHORT TERM** **LONG TERM**

1.	DEGREE OF CONTRAST	FEATURES												2. Does project design meet visual resource management objectives? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Explain on reverse side)
		LANDWATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	
ELEMENTS	Form									X			3. Additional mitigating measures recommended? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Explain on reverse side)	
	Line								X					
	Color								X					
	Texture								X					
Evaluator's Names											Date			
J. Grams E. Hunt											1-22-2019			

SECTION D. (Continued)

Comments from item 2.

The project infrastructure would contrast the natural landscape's existing forms, lines, colors, and textures while mimicking the form and line of the contrasting, geometric, and irregular structures that are existing in this view. The degree of visual modification that this Project would generate meets the management objectives of Class III and IV. These classes consider the visual value of the project area to have moderate to the minimal visual value. The proposed changes create a moderate to strong contrast to the existing view.

From this view the array's low simple geometric lines and forms and the interconnection's geometric vertical elements and geometric substation forms would contrast against the existing dense warm vegetation, amorphous shape of the mountains, simple form of the desert valley. The dark cool hues of the solar panels would contrast the surrounding warm greys and greens but mimic the subtle cool hues within the surrounding mountains. The visual impact of the project in the view would be weakened by the natural vegetation in the fore and middleground that breaks up the project's simple bold lines and the existing structures that have similar contrasting form and texture.

Additional Mitigating Measures (See item 3)