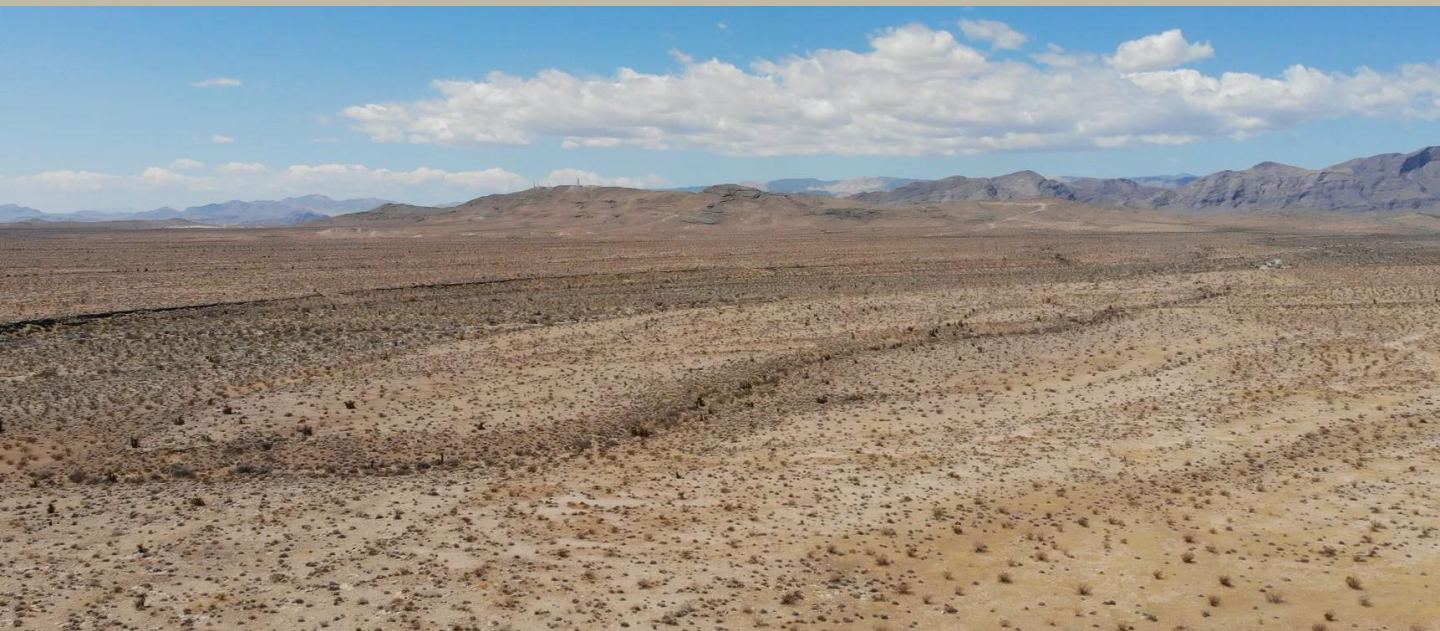


VOLUME 2

Draft

# Environmental Impact Statement

# Yahthumb Solar Project



*On Behalf of:*

**THE MOAPA BAND  
OF PAIUTE INDIANS**

**BUREAU OF INDIAN AFFAIRS**  
Bureau of Land Management  
Environmental Protection Agency  
US Fish and Wildlife Service  
Nevada Department of Wildlife  
Clark County

*July 2022*

**DRAFT  
ENVIRONMENTAL IMPACT STATEMENT  
(DEIS)**

**YATHUMB SOLAR  
PROJECT**

---

**On Behalf of:**

**THE MOAPA BAND  
OF PAIUTE INDIANS**

BUREAU OF INDIAN AFFAIRS  
BUREAU OF LAND MANAGEMENT  
ENVIRONMENTAL PROTECTION AGENCY  
US FISH AND WILDLIFE SERVICE  
NEVADA DEPARTMENT OF WILDLIFE  
CLARK COUNTY

July 2022

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## Scoping Report

**YAHTHUMB SOLAR PROJECT  
ENVIRONMENTAL IMPACT STATEMENT**

**SCOPING REPORT**



Bureau of Indian Affairs  
Western Regional Office  
2600 North Central Avenue  
Phoenix, AZ 85004

**August 2021**

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# 1.0 INTRODUCTION

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Yahthumb Solar Project LLC (Applicant) has entered into an agreement with the Moapa Band of Paiute Indians (Moapa Band or Band) to develop a solar project referred to as the Yahthumb Solar Project (Project) on the Moapa River Indian Reservation (Reservation) in Clark County, Nevada. The solar project would produce up to 138 MWs of solar energy generation using photovoltaic (PV) technology and incorporating battery energy storage systems (BESS). The proposed Yahthumb solar generating facilities would be constructed entirely within the Reservation within a lease study area of approximately 1,695 acres of tribal trust land. These lands are in the central part of the Reservation on lands set aside by the Moapa Band for the Project.

The Bureau of Indian Affairs (BIA), as lead agency, in cooperation with the Moapa Band, the Bureau of Land Management (BLM), Environmental Protection Agency (EPA), the US Fish and Wildlife Service (USFWS), Nevada Department of Wildlife (NDOW), and Clark County are preparing an Environmental Impact Statement (EIS) that will evaluate the development of the Project and associated facilities.

The National Environmental Policy Act (NEPA) scoping process is designed to inform and encourage involvement by all interested parties and to help agencies make better-informed decisions. This report summarizes all comments received during the scoping period for the EIS. The BIA and cooperating agencies will fully analyze the issues raised by these scoping comments to help shape the environmental analysis and alternatives to be considered in the Draft EIS.

The purpose of this report is to summarize issues raised by individuals, organizations, and agencies during the scoping comment period for this Project. This report also describes methods used for soliciting input, as well as how comments received were categorized by resource topic. A copy of each individual comment received is contained in **Appendix D** of this report.

## PROJECT DESCRIPTION

The proposed Yahthumb Solar Project would be constructed entirely within the Reservation on up to 1,695 acres of tribal trust land. These lands are all located in an area set aside by the Band exclusively for the Yahthumb Project.

These lands are at a central corner of the Reservation on lands set aside by the Moapa Band for the Project. The solar fields and associated facilities would be in Sections 29, 30, 31, and 32; Township 16 South, Range 64 East; Mount Diablo Base Meridian.

Major components of the solar site would include multiple blocks of solar PV panels mounted on tracking systems, H-beam or pad mounted inverters, transformers, collection lines, BESS, and a project substation. The Project would include a new generation interconnection (gen-tie) line approximately 8.5 to 11.5 miles long that would interconnect the solar project to the regional electrical grid at the existing Reid-Gardner Substation. This gen-tie line would parallel the recently constructed Eagle Shadow Mountain (ESM) gen-tie (NVN 97443) for nearly all its length. It would cross lands managed by the Bureau of Land Management (BLM) – both within a federally designated utility corridor on the Reservation and federal and private lands near the Reid-Gardner Substation.

Primary access to the Yahthumb site would be provided via an interchange on Interstate-15 to the existing Ute Road on the Reservation. This road would be upgraded as needed. Secondary access would be provided via an existing road within the designated utility corridor that would also be upgraded as needed.

The water supply required for the Project would be leased from the Moapa Band and drawn from the Moapa Band's existing water rights. The water would be delivered to the site via pipeline or truck. The Applicant is expected to operate the energy facilities for up to 30 years plus two 10-year options under the terms of the solar lease with the Moapa Band. The project is expected to be built to meet its power purchase agreement (PPA) for the output of the Project.

The EIS will focus on the Proposed Action as described above at the location on the Reservation selected by the Moapa Band. It will evaluate the Proposed Action and the No Action Alternative. Additional viable alternatives may be identified in response to issues raised during the scoping process.



## 2.0 SCOPING PROCESS AND SOLICITATION OF COMMENTS

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During the scoping period, the BIA informed the public, landowners, Government agencies, tribes, and interested stakeholders about the proposed Yahthumb Solar Project and solicited their comments.

The BIA announced the Project and the initiation of the scoping process, held public scoping meetings, and invited the public to comment and ask questions. The public scoping meetings were publicized in the Federal Register, on the Project website, in letters mailed to interested stakeholders, and through public notices/news releases published in local newspapers. These outreach and notification activities are described in more detail in the following subsections.

### FEDERAL REGISTER

The public scoping period officially began with the publication of the Notice of Intent (NOI) to prepare an EIS, which described the project, announced the public scoping meetings, and outlined the ways to provide comments. The NOI was published in the Federal Register on June 25, 2021. The NOI can be found in **Appendix A**.

### PROJECT WEBSITE

A Project website was established for access by anyone at any time during the EIS process. It provides Project information and an opportunity to submit comments. The website will remain active for the duration of the EIS process and can be accessed at <https://www.yahthumbsolarprojecteis.com/>.

### SCOPING NOTIFICATION LETTER

Scoping notification letters were sent by the BIA to Government agencies, elected officials, property owners near the proposed Project, various non-Governmental organizations, and other interested stakeholders. The scoping letter briefly explained the Project, identified the Federal review process, announced the public scoping meetings, and described the various ways to provide comments. Included with the scoping notification letter were two maps displaying the Project location.

Over 50 scoping letters and maps were mailed on June 25, 2021. The scoping letter, maps, and the Project mailing list can be found in **Appendix B**.

### NEWSPAPER ADVERTISEMENTS

A legal notice/public notice announcing the public scoping meetings was published in two local newspapers. The publications included:

- Las Vegas Review-Journal - on July 4 and 11, 2021
- Moapa Valley Progress - on July 7 and 14, 2021

Copies of the published legal notices/public notices can be viewed in **Appendix B**.

## METHODS FOR SUBMITTING COMMENTS

The BIA encouraged interested parties to submit comments through a variety of methods:

- Individual letters could be hand delivered or mailed via the U.S. Postal Service to Mr. Chip Lewis, Regional Environmental Protection Officer, BIA Western Regional Office, 2600 North Central Avenue, 4th Floor Mailroom, Phoenix, AZ 85004.
- Comments could be submitted on the “Getting involved” tab on the Project website via the “Submit comment here” comment form at [www.yahthumbsolarprojecteis.com](http://www.yahthumbsolarprojecteis.com) .
- Comments could also be provided via email or telephone to Mr. Chip Lewis at [chip.lewis@bia.gov](mailto:chip.lewis@bia.gov); telephone: (602) 379-6750.
- Comments could be provided at the public scoping meetings either orally or by filling out a comment form provided at on the Project website. A copy of the comment form from the website is provided in **Appendix C**.

See below for the details of the scoping meetings.

## 3.0 SCOPING MEETINGS

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### PUBLIC SCOPING MEETINGS

The BIA hosted two virtual public information and scoping meetings. These meetings provided a description of the NEPA process, information on the proposed Project, and the opportunity to provide public comments. The two virtual public scoping meetings were held at the times listed below.

Meeting Date / Time	Attendance
July 20, 2021 1:30PM Pacific	0*
July 21, 2021 5:30PM Pacific	1*
<b>Total Attendance</b>	<b>0</b>

*\*Note: These attendance numbers do not include individuals from BIA, Applicant, and their consultants.*

The virtual meetings could be accessed via a link on the project website ([www.yahthumb solarprojecteis.com](http://www.yahthumb solarprojecteis.com)). A PowerPoint presentation was posted to the project website prior to the virtual meetings. Those who were not able to live stream the presentation would be able to access the meeting presentation and join by telephone at (346) 248-7799, Passcode 9041407949#.

One public participant attended the July 21 virtual public meeting.

### PRESENTATION

At the meeting on July 21, a formal presentation was provided. The presentation opened with a welcome and introductions by Mr. Chip Lewis, the Environmental Protection Officer for the BIA, and project manager for the Yahthumb Project EIS.

Mr. Lewis provided an overview of the NEPA process followed by Randy Schroeder of ENValue (the EIS consultant) who presented the proposed Project with an overview of the technical aspects of the Yahthumb Project and a summary of the environmental issues identified to date. The scoping meeting presentation is provided in **Appendix C**.

The meeting presentation was recorded.

### INTERAGENCY SCOPING MEETING

During the afternoon of July 21, an interagency scoping was held virtually to explain the Project and solicit input. In addition to BIA, the meeting was attended by representatives from USFWS, BLM, EPA, NPS, and NDOW. **Appendix D** contains a summary of the discussion.

## 4.0 COMMENT EVALUATION

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### COMMENTS RECEIVED

The scoping period began on June 25, 2021 - the date the NOI was published in the Federal Register. In addition to oral comments received at the July 21 scoping meeting and interagency meeting, there were nine comment letters/forms received. All comments were evaluated and copies of them are contained in **Appendix D**.

### PROCESSING COMMENTS

Each comment document was read to identify key issues and coded accordingly. In some cases, a single comment document contained multiple comments that were identified by resource/issue categories. A matrix of the comments and identified issues are included in **Appendix D**.

### SUMMARIZATION

This report summarizes issue areas identified from the scoping comments received. For the purposes of this summary, all comments were given equal weight, regardless of whether they were mentioned once or mentioned several times. This report does not prioritize issue areas or track the number of comments each issue category received. The identified issues and areas of concern will be used to guide the environmental analysis for the EIS.

## 5.0 ISSUE SUMMARY

This section provides a summary of the key issues identified by the comments provided during scoping for the Yahthumb Solar Project. These issues will be addressed in the EIS analysis.

KEY ISSUES IDENTIFIED DURING SCOPING	
ISSUE TOPIC	ISSUE/COMMENT
Water Resources	Need to comply with relevant floodplain and stormwater requirements to minimize erosion and sediment production
	Avoid development within major washes
	Describe the amount and source of the water to be used during construction and operation
Soils	Should include measures to minimize grading and soil disturbance to the extent possible
Vegetation	Should include measures to minimize vegetation clearing to the extent possible
	Should include measures to control weeds to the extent possible
Cultural Resources	Determine whether the development could have potentials effects to significant cultural sites in the lease study area that would need to be mitigated or avoided
	Determine whether the project could impact the Old Spanish National Historic Trail
Socioeconomics	Describe the economic development opportunity for the Band
	Describe the jobs for tribal members and others in the region that would be created
Wildlife	Describe the potential impacts to threatened and endangered species (including the desert tortoise) and other sensitive wildlife species
	Consider measures that minimize impacts to desert tortoise habitat and connectivity such as fencing to allow tortoises to re-enter and utilize the site following construction
	Describe the potential impacts to avian species from construction and operation of the project
Visual Resources	Evaluate the impact the solar fields could have on views of the landscape
Air Quality/Public Health	Measures should be implemented to control and minimize fugitive dust and to prevent worker exposure to Coccidioides spores, if present
Regional Impacts	Identify impacts from other solar projects and other developments in the area
	Discuss trends of and collective impacts to key resources including desert tortoise

## 6.0 NEXT STEPS

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The BIA will develop the Draft EIS focusing on the identified issues including evaluating a range of reasonable alternatives, assessing potential impacts, and identifying possible mitigation measures. Once complete, the BIA will publicly circulate the Draft EIS for review and comment. During this period, the BIA will notify the public of the Draft EIS availability via a Notice of Availability (NOA) published in the Federal Register and public notices in the local papers. There will also be public meetings where those who are interested may comment on the Draft EIS.

Any public or stakeholder comments received on the Draft EIS will be addressed in the Final EIS. The availability of the Final EIS will also be announced via an NOA published in the Federal Register and public notices in the local papers.

The BIA anticipates providing periodic status updates as needed and publishing all project documents on the project website at [www.yahthumbsolarprojecteis.com](http://www.yahthumbsolarprojecteis.com).

# **Appendix A**

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Notice of Intent

to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

### Completed and Active Reviews

A list of all completed and currently active 5-year status reviews addressing species for which our Regional Office has lead responsibility is available at <http://www.fws.gov/pacific/ecoservices/angered/recovery/5year.html>.

### Authority

This document is published under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

**Hugh R. Morrison,**

*Acting Regional Director, U.S. Fish and Wildlife Service.*

[FR Doc. 2021-13534 Filed 6-24-21; 8:45 am]

BILLING CODE 4333-15-P

## DEPARTMENT OF THE INTERIOR

### Bureau of Indian Affairs

[212A2100DD/AAKC001030/  
A0A501010.999900253G]

### Environmental Impact Statement for the Yahthumb Solar Project on the Moapa River Indian Reservation, Clark County, Nevada

**AGENCY:** Bureau of Indian Affairs, Interior.

**ACTION:** Notice of intent.

**SUMMARY:** The Bureau of Indian Affairs (BIA), as lead agency in cooperation with the Moapa Band of Paiute Indians (Moapa Band), Bureau of Land Management (BLM), and other agencies, intend to prepare an Environmental Impact Statement (EIS) that will evaluate the development of the Yahthumb Solar Project (Project) on the Moapa River Indian Reservation (Reservation). This notice announces the beginning of the scoping process to solicit public comments and identify potential issues related to the EIS. The BIA requests comments concerning the scope of the analysis, and identification of relevant information, studies, and analyses. It also announces that two public scoping meetings will be held virtually to identify potential issues, alternatives, and mitigation to be considered in the EIS.

**DATES:** All comments must be received July 26, 2021. The draft EIS is scheduled for December 2021 and the final EIS is scheduled for May 2022 with a Record of Decision in June 2022. The dates of the public scoping meetings will be included in notices to be posted in the

*Las Vegas Sun, Las Vegas Review-Journal, and Moapa Valley Progress* 15 days before the meetings.

**ADDRESSES:** Send written comments to Mr. Chip Lewis, BIA Western Regional Office, 2600 North Central Avenue, 4th Floor Mailroom, Phoenix, Arizona 85004. Comments may also be sent via email to [Chip.Lewis@bia.gov](mailto:Chip.Lewis@bia.gov) or on the Projects website at [www.YahthumbSolarProjectEIS.com](http://www.YahthumbSolarProjectEIS.com). Please see the **SUPPLEMENTARY INFORMATION** section of this notice for directions on submitting comments. The public meetings can be joined online through the Projects website at [www.YahthumbSolarProjectEIS.com](http://www.YahthumbSolarProjectEIS.com).

### FOR FURTHER INFORMATION CONTACT:

Chip Lewis, BIA; telephone: (602) 379-6750; email: [Chip.Lewis@bia.gov](mailto:Chip.Lewis@bia.gov). Individuals who use telecommunication devices for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1-800-877-8339 between 8 a.m. and 8 p.m., Eastern Time, Monday through Friday.

### SUPPLEMENTARY INFORMATION:

#### I. Proposed Federal Action

##### A. Purpose and Need for the Proposed Action

The proposed Federal action, taken under 25 U.S.C. 415, is BIA's approval of the solar energy ground lease and related agreements entered into by the Moapa Band with Yahthumb Solar Project, LLC (Applicant). The agreements provide for construction, operation and maintenance (O&M), and decommissioning of a 138-megawatt (MW) alternating current (MWac) solar photovoltaic (PV) electricity generation facility located entirely on the Reservation and specifically on lands held in trust by the United States for the Moapa Band.

In addition, a transmission generation interconnection (gen-tie) line would be constructed to interconnect the Project to the regional electrical grid. Portions of this line would cross lands managed by BLM within a designated utility corridor on the Reservation and BLM land. The BIA and BLM would approve rights-of-way (ROWs) authorizing the construction and operation of the transmission line.

The purposes of the proposed Project are, among other things, to: (1) Help to provide a long-term, diverse, and viable economic revenue base and job opportunities for the Moapa Band; (2) meet the terms of the existing Power Purchase Agreement (PPA) for the output of the Project; (3) help Nevada and neighboring States to meet their State renewable energy needs; and (4)

allow the Moapa Band, in partnership with the Applicant, to optimize the use of the lease site while maximizing the potential economic benefit to the Tribe.

##### B. Preliminary Proposed Action and Alternatives

The Applicant plans to develop the Yahthumb Solar Project on the Reservation in Clark County, Nevada. The solar project would generate 138 MWs of solar energy generation, using PV technology, and would incorporate a battery energy storage system (BESS).

The proposed Yahthumb solar generating facility would be constructed on up to 1,400 acres within a lease study area of approximately 1,695 acres of Tribal trust land on the Reservation set aside by the Moapa Band for the Project. The solar field and associated facilities would be in parts of Sections 29, 30, 31, and 32 in Township 15 South, Range 65 East; Section 1 in Township 16 South, Range 64 East; and Section 6 in Township 16 South, Range 65, East Mount Diablo Base Meridian.

Major components of the solar site would include multiple blocks of solar PV panels mounted on single-axis tracking systems, associated inverter and transformer equipment, collection lines, BESS, a Project substation, and O&M facilities. Construction of the Project is expected to take approximately 14 months.

A gen-tie line approximately 8.5 to 10 miles long would interconnect the Project to the regional electrical grid at the existing Reid-Gardner Substation. This line would be built on the Reservation within a designated utility corridor that is managed by BLM, on BLM-managed Federal land, and on private land near the existing substation.

Primary access to the Yahthumb site would be provided via Interstate-15 to the existing Ute Road on the Reservation that would be upgraded as needed. Secondary access would be provided via an existing road within the designated utility corridor that would also be upgraded as needed. The water supply for the Project would be leased from the Moapa Band, drawn from the Band's existing water rights, and delivered to the site via a temporary water pipeline or by truck. Water will be needed during construction for dust control and a minimal amount will be needed during operations for administrative and sanitary water use and panel washings.

The Applicant is expected to operate the energy facility for up to 56 and a half years under the terms of the solar lease with the Moapa Band. The Project is being built to meet the power purchase agreement (PPA) for its output.



The EIS will focus on the Proposed Action as described above at the location on the Reservation selected by the Moapa Band. It will evaluate the Proposed Action and the No Action Alternative. Additional viable alternatives may be identified in response to issues raised during the scoping process.

### C. Summary of Expected Impacts

Potential impacts to be addressed in the EIS analysis may include, but would not be limited to, impacts on water resources, biological resources, threatened and endangered species, cultural resources, Native American religious concerns, aesthetics, and traffic. In addition to those resource topics identified above, Federal, State, and local agencies, along with other stakeholders that may be interested or affected by the BIA's decision on the proposed Projects, are invited to participate in the scoping process to identify additional issues to be addressed.

### D. Anticipated Permits and Authorizations

In addition to the land lease and ROWs to be approved by BIA and the ROWs to be approved by BLM, the Project would also require other permits and authorizations. These could include a Utility Environmental Protection Act (UEPA) permit from the Public Utilities Commission of Nevada and/or dust control and special use permits from Clark County.

## II. EIS Preparation

### A. Lead and Cooperating Agencies

BIA will prepare the EIS in cooperation with the Moapa Band, BLM, Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), and possibly the National Park Service (NPS), Nevada Department of Wildlife (NDOW), and Nevada Department of Transportation (NDOT). The resulting EIS will aim to (1) provide agency decision makers, the Moapa Band, and the general public with a comprehensive understanding of the impacts of the proposed development of the solar field on the Reservation; (2) describe the impacts of increased development on the Reservation; and (3) identify and propose mitigation measures that would minimize or prevent significant adverse impacts.

### B. Schedule for the Decision-Making Process

The EIS will provide a framework for BIA and BLM to make determinations and to decide whether to take the aforementioned Federal actions. The

Records of Decision (RODs) to be issued by the BIA and BLM are currently scheduled for June 2022.

### C. Nature of Decision To Be Made

The BIA and the BLM decisions, if approved, would assist in addressing the management objectives in the Energy Policy Act of 2005 (Title II, Section 211) and Secretarial Order 3285A1 (March 11, 2009) that established the development of environmentally responsible renewable energy as a priority for the Department of the Interior.

Because the BIA has a jurisdictional trust responsibility over Indian lands and the BLM has land management responsibilities under FLPMA, the Project is a major Federal action and must comply with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*). Because most of the Projects would be located on tribal trust lands, the BIA is the lead federal agency. The BIA and BLM will use this EIS to make their respective decisions and the other cooperating parties will use this information to support their analyses and decisions, as needed.

## III. Public Scoping Process

This notice of intent initiates the scoping process, which guides the development of the EIS.

### A. Public Scoping Meetings

Two public scoping meetings will be conducted virtually to further describe the Projects and identify potential issues and alternatives to be considered in the EIS. The public meetings can be joined online through the Projects website at [www.YahthumbSolarProjectEIS.com](http://www.YahthumbSolarProjectEIS.com). Those unable to live stream the presentation would be able to access the meeting presentation on the project website and could join by telephone. Additionally, the live presentation will be recorded and made accessible for viewing throughout the scoping period. During the virtual meetings, a short presentation will be provided and team members will be available to discuss and answer questions. The PowerPoint presentation will be posted to the Project website and printed copies will be made available at the BLM Las Vegas Field Office and the Moapa River Indian Reservation Tribal Hall prior to the meetings. The dates of the public scoping meetings will be included in notices to be posted in the *Las Vegas Sun*, *Las Vegas Review-Journal*, and *Moapa Valley Progress* 15 days before the meetings.

### B. Directions for Preparing Comments

Please include your name, return address, and the caption "EIS, Yahthumb Solar Project," on the first page of any written comments. It is important that reviewers provide their comments in such manner that they are useful to the agency's preparation of the EIS. Therefore, please clearly articulate your concerns and contentions. Interested parties are invited to identify potential alternatives, issues to be analyzed, mitigation measures, and other information to be considered in the EIS.

### C. Directions for Submitting Comments

Please submit comments by the date listed in the **DATES** section of this notice to the address listed in the **ADDRESSES** section of this notice. You may also submit comments at the public scoping meetings.

### D. Public Comment Availability

Written comments, including names and addresses of respondents, will be available for public review at the BIA Western Regional Office, at the mailing address shown in the **ADDRESSES** section during regular business hours, 8 a.m. to 4:30 p.m., Monday through Friday, except holidays. Before including your address, telephone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

## IV. Authority

This notice is published in accordance with section 1503.1 of the Council on Environmental Quality regulations (40 CFR 1500 *et seq.*) and the Department of the Interior Regulations (43 CFR part 46) implementing the procedural requirements of the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*), and in accordance with the exercise of authority delegated to the Principal Deputy Assistant Secretary—Indian Affairs by part 209 of the Department Manual.

**Bryan Newland,**

*Principal Deputy Assistant Secretary—Indian Affairs.*

[FR Doc. 2021–13578 Filed 6–24–21; 8:45 am]

**BILLING CODE 4337–15–P**

## **Appendix B**

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### Scoping Notifications and Mailing List

## Appendix B – Scoping Notifications and Mailing List

In addition to the NOI, the public was formed about the scoping period and public meetings by one or more of the following notifications:

- Public notification via U.S. Mail:
  - Mailing list
  - Scoping letter
  - Project overview maps
- Newspaper advertisements
  - Las Vegas Review Journal
  - Moapa Valley Progress

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## Scoping Letter



United States Department of the Interior  
BUREAU OF INDIAN AFFAIRS  
Western Region  
2600 N. Central Avenue, Fourth Floor Mailroom  
Phoenix, AZ 85004-3050

**DEPARTMENT OF THE INTERIOR**

Bureau of Indian Affairs

Notice of Intent to Prepare an Environmental Impact Statement (EIS) for the proposed Yahthumb Solar Project on the Moapa River Indian Reservation, Clark County, Nevada

**AGENCY:** Bureau of Indian Affairs, Interior

**ACTION:** Notice

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**SUMMARY:** The Bureau of Indian Affairs (BIA), as lead agency, in cooperation with the Moapa Band of Paiute Indians (Moapa Band), Bureau of Land Management (BLM), and other agencies, intend to prepare an Environmental Impact Statement (EIS) that will evaluate the development of the Yahthumb Solar Project (Project) on the Moapa River Indian Reservation (Reservation).

This notice announces the beginning of the scoping process to solicit public comments and identify potential issues related to the EIS. It also announces that two public scoping meetings will be held virtually to identify potential issues, alternatives, and mitigation to be considered in the EIS.

**DATES:** Written comments on the scope of the EIS or implementation of the proposal must arrive by July 26, 2021. The public scoping meetings will be held on July 20 at 1:30 PM Pacific and on July 21, 2021 at 5:30 PM Pacific.

The virtual meetings can be accessed via a link on the project website ([www.YahthumbSolarProjectEIS.com](http://www.YahthumbSolarProjectEIS.com)). A PowerPoint presentation will be posted to the project website prior to the virtual meetings. Those who cannot live stream the presentation would be able to access the meeting presentation and can join by telephone at (346) 248-7799, Passcode 9041407949#. Each meeting will begin at the scheduled start time with introductions and a brief presentation followed by an open forum to ask questions or make statements. The meeting will continue until all questions have been answered. Additionally, the live presentation will be recorded and made accessible for viewing throughout the scoping period.

**ADDRESSES:** You may mail, email, or hand carry written comments to Mr. Chip Lewis, BIA Western Regional Office, 2600 North Central Avenue, 4th Floor Mailroom, Phoenix, Arizona 85004; telephone: (602) 379-6750; email: [Chip.Lewis@bia.gov](mailto:Chip.Lewis@bia.gov). You can also provide comments via the project website at [www.YahthumbSolarProjectEIS.com](http://www.YahthumbSolarProjectEIS.com).

**SUPPLEMENTARY INFORMATION:** The proposed Federal action, taken under 25 U.S.C. 415, is BIA's approval of the solar energy ground lease and related agreements entered into by the Moapa Band with Yahthumb Solar Project, LLC (Applicant). The agreements provide for construction, operation and maintenance), and decommissioning of solar photovoltaic electricity generation located entirely on the Reservation and specifically on lands held in trust by BIA for the Moapa Band. In addition, a transmission generation interconnection (gen-tie) line would be constructed to interconnect the Project to the regional electrical grid. Portions of the line would cross lands managed by BLM within a designated utility corridor on the Reservation and BLM-managed federal land. The BIA and BLM would approve rights-of-way authorizing the construction and operation of the gen-tie line and access roads.

The Applicant plans to develop up to 138 megawatts of solar energy generation incorporating battery energy storage systems. The proposed Yahthumb solar generating facility would be constructed on the Reservation within a lease study area of approximately 1,695 acres of tribal trust land. These lands have been set aside by the Moapa Band for the Project.

**AUTHORITY:** This notice is published in accordance with 40 CFR 1501.7 of the Council of Environmental Quality regulations and 43 CFR 46.235 of the Department of the Interior Regulations implementing the procedural requirements of the NEPA (42 U.S.C. 4321 et seq.), and in accordance with the exercise of authority delegated to the Principal Deputy Assistant Secretary-Indian Affairs by part 209 of the Department Manual.

Mr. Bryan Bowker  
Director, Western Region  
Bureau of Indian Affairs

Date: 6/25/21

---

Mailing List

Last	Title	Organization/Affiliation	Address 1	Address 2	City	State	Zip
		Center for Biological Diversity	PO Box 710		Tucson	AZ	85702-0710
		Center for Energy Efficiency and Renewable Technologies	1100 11th Street, Suite 311		Sacramento	CA	95814
	Community Development	City of Mesquite	10 E. Mesquite Blvd.		Mesquite	NV	89027
		Clark County Department of Comprehensive Planning	Clark County Government Center	500 South Grand Central Parkway	Las Vegas	NV	89155
		Clark County Regional Flood Control District	600 South Grand Central Parkway	Suite 300	Las Vegas	NV	89106-4511
		Conservation District of Southern Nevada	5820 South Pecos Road A-400		Las Vegas	NV	89120
		Department of Air Quality and Environmental Management	Clark County Desert Conservation Program	500 South Grand Central Parkway	Las Vegas	NV	89155-5201
		Desert Tortoise Council	4654 East Avenue S	#257B	Palmdale	CA	93552
		Environmental Defense Fund	1107 9th Street	Suite 1070	Sacramento	CA	95814
Shoemaker		Federal Aviation Administration	Air Traffic Airspace Branch, ASW-520	2601 Meacham Blvd.	Fort Worth	TX	76137-0520
	President	Friends of Gold Butte	12 W. Mesquite Blvd.	Suite 106	Mesquite	NV	89027
		Friends of Nevada Wilderness	PO Box 33155		Las Vegas	NV	89133
		FTV Comm C/O Level 3	1025 Eldorado Way		Broomfield	CO	80023
		Great Basin Resource Watch	P.O. Box 207		Reno	NV	89504
		Great Basin Transmission, Care of LS Power	5000 Hopyard Road	Suite 480	Pleasanton	CA	94588
		Holly Energy Partners	P.O. Box 1260		Artesia	NM	88211
		Intermountain Power Project	P.O. Box 111		Los Angeles	CA	90051
		Kern River Gas Transmission Company	2755 East Cottonwood Parkway	Suite 300	Salt Lake City	UT	84121
	Real Estate Group	KRoad Moapa Solar, LLC	c/o First Solar Electric, LLC	135 Main St. 6th Floor	San Francisco	CA	94105
		Lahontan Audubon Society	Board of Trustees	P.O. Box 2304	Reno	NV	89505
Holloway	Manager	Los Angeles Department of Water and Power	Environmental Planning and Assessment	111 N. Hope Street, Room 1044	Los Angeles	CA	90012
		Natural Resource Conservation Service	5820 South Pecos Road	Building A, Suite 400	Las Vegas	NV	89120
		Natural Resources Defense Council	1314 Second Street		Santa Monica	CA	90401
		Nellis Air Force Base	6020 Beale Ave	Suite 135	Nellis AFB	NV	89191
		Nevada Clean Energy Campaign	755 N Roop St #202		Carson City	NV	89701
		Nevada Conservation League	2275 Renaissance Drive	Suite A	Las Vegas	NV	89128
		Nevada Department of Air Quality and Environmental Management	Clark County Government Center	500 South Grand Central Parkway	Las Vegas	NV	89156
		Nevada Department of Conservation and Natural Resources	901 S. Stewart St., suite 1003		Carson City	NV	89701
		Nevada Department of Transportation	1263 South Stewart Street		Carson City	NV	89712
Hardenbrook	Supervisory Habitat Biologist	Nevada Department of Wildlife	Southern Region	3373 Pepper Lane	Las Vegas	NV	89120
		Nevada Division of Environmental Protection	901 South Stewart Street, Suite 4001		Carson City	NV	89701-5249
		NV Energy	Environmental Department	PO Box 98910	Las Vegas	NV	89151-0001
		NV Energy	Corporate Headquarters	6226 West Sahara Avenue	Las Vegas	NV	89146
		Nevada Environmental Coalition, Inc	10720 Button Willow Drive		Las Vegas	NV	89134
		Nevada Natural Resource Education Council	901 S Stewart St		Carson City	NV	89702-4741
		Nevada State Historic Preservation Office	901 South Stewart	Suite 5004	Carson City	NV	89701
		Nevada Wilderness Project	Southern Nevada Office	PO Box 33155	Las Vegas	NV	89133
		Nevada Wildlife Federation	PO Box 71238		Reno	NV	89570
	Conservation Committee	Red Rock Audubon Society	PO Box 96691		Las Vegas	NV	89193
Bakrania, EIT	Senior Engineer	Geosyntec Consultants, Inc.	9480 South Eastern Ave, Suite 217		Las Vegas	NV	89123
		Sierra Club	3828 Meadows Lane		Las Vegas	NV	89107
		Sierra Nevada Alliance	PO Box 7989		South Lake Tahoe	CA	96158
		Sierra Pacific Power Company	P.O. Box 10100		Reno	NV	89520
		Southern Nevada Water Authority	1001 S. Valley View Blvd		Las Vegas	NV	89153
		The Conservation Alliance	PO Box 1275		Bend	OR	97709
		The Nature Conservancy	8329 West Sunset Road	Suite 200	Las Vegas	NV	89113
		Union Pacific Railroad Company	1400 Douglas Street		Omaha	NE	68179
		US Army Corps of Engineers	St. George Regulatory Office	321 N Mall Drive, Suite L-101	St. George	UT	84790
		Western Resource Advocates	204 North Minnesota Street	Suite A	Carson City	NV	89703
		Friends of Nevada Wilderness	8180 Placid St.		Las Vegas	NV	89123
Shaw	Nevada Director	Old Spanish Trail Association	P.O.Box 68		Blue Diamond	NV	89004
Brittner	Executive Director	Old Spanish Trail Association	Email: ostamgr@gmail.com				
Felmler	President	Old Spanish Trail Association	178 Glory View Drive		Grand Junction	CO	81503
Emmerich		Basin and Range Watch	P.O Box 70		Beatty	NV	89002

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## Newspaper Notices



AFFIDAVIT OF PUBLICATION

STATE OF NEVADA)  
COUNTY OF CLARK) SS:

ENVALUE LLC  
2514 TOURNAMENT DR  
CASTLE ROCK CO 80108

Account # 179051  
Ad Number 0001153531

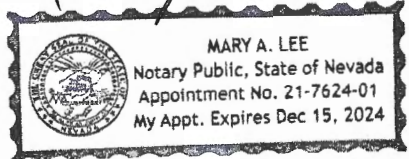
Leslie McCormick, being 1st duly sworn, deposes and says: That she is the Legal Clerk for the Las Vegas Review-Journal and the Las Vegas Sun, daily newspapers regularly issued, published and circulated in the City of Las Vegas, County of Clark, State of Nevada, and that the advertisement, a true copy attached for, was continuously published in said Las Vegas Review-Journal and / or Las Vegas Sun in 2 edition(s) of said newspaper issued from 07/04/2021 to 07/11/2021, on the following days:

07 / 04 / 21  
07 / 11 / 21

*[Signature]*  
\_\_\_\_\_  
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 12th day of July, 2021

Notary *[Signature]*  
\_\_\_\_\_



**Public Meeting Announcement**

The U.S. Bureau of Indian Affairs (BIA) and the Moapa Band of Paiute Indians invite you to attend a scoping meeting to help identify the range and scope of issues related to the proposed Yahthumb Solar Project (Project). The issues identified during the scoping process will be considered and addressed during preparation of an Environmental Impact Statement (EIS).

**Please plan to attend one of the following virtual meetings:**

**Tuesday, July 20, 2021  
at 1:30 PM Pacific**

**Wednesday, July 21, 2021  
at 5:30 PM Pacific**

The virtual meetings can be accessed via a link on the project website ([www.YahthumbSolarProjectEIS.com](http://www.YahthumbSolarProjectEIS.com)). A PowerPoint presentation will be posted to the project website prior to the virtual meetings. Those who cannot live stream the presentation would be able to access the meeting presentation and can join by telephone at (346) 248-7799, Passcode 9041407949#. Each meeting will begin at the scheduled start time with introductions and a brief presentation followed by an open forum to ask questions or make statements. The meeting will continue until all questions have been answered. Additionally, the live presentation will be recorded and made accessible for viewing throughout the scoping period.

Yahthumb Solar Project, LLC (Applicant) plans to develop a 138-megawatt solar project using photovoltaic technology and incorporating battery energy storage systems. The Project would be located entirely on the Moapa River Indian Reservation (Reservation) in Clark County, approximately 30 miles northeast of Las Vegas. The Project would include a transmission generation interconnection (gen-tie) line and portions of this line would cross lands managed by Bureau of Land Management (BLM) within a designated utility corridor on the Reservation and BLM-managed federal land. The BIA would approve the solar lease and BIA and BLM would approve rights-of-way authorizing the construction and operation of the gen-tie line and access roads.

For more information on how to participate, contact Mr. Chip Lewis, Regional Environmental Protection Officer, at [Chip.Lewis@bia.gov](mailto:Chip.Lewis@bia.gov) (602.379.6750) or Mr. Randy Schroeder at [rschroeder@envalue.us](mailto:rschroeder@envalue.us).

**PUB: July 4, 11, 2021  
LV Review-Journal**

AFFIDAVIT OF PUBLICATION

STATE OF NEVADA)  
COUNTY OF CLARK) SS:

ENVALUE LLC  
2514 TOURNAMENT DR  
CASTLE ROCK CO 80108

Account # 179051  
Ad Number 0001153531

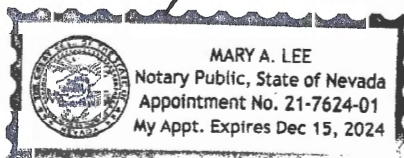
Leslie McCormick, being 1st duly sworn, deposes and says: That she is the Legal Clerk for the Las Vegas Review-Journal and the Las Vegas Sun, daily newspapers regularly issued, published and circulated in the City of Las Vegas, County of Clark, State of Nevada, and that the advertisement, a true copy attached for, was continuously published in said Las Vegas Review-Journal and / or Las Vegas Sun in 2 edition(s) of said newspaper issued from 07/04/2021 to 07/11/2021, on the following days:

07 / 04 / 21  
07 / 11 / 21

*[Signature]*  
/s/ \_\_\_\_\_  
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 12th day of July, 2021

*[Signature]*  
Notary \_\_\_\_\_



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PUB: July 4, 11, 2021  
LV Review-Journal

# The PROGRESS

An independent, locally-owned newspaper serving the communities of northeast Clark County

LAURA ROBISON  
PO BOX 430  
Overton, NV 89040  
Office: (702) 397-6246  
Fax: (702) 397-6247  
progress2@mvdsl.com

## AFFIDAVIT OF PUBLICATION

State of Nevada, Clark County

I, Laura R. Robison, Office Manager of The Progress, a weekly newspaper published in Moapa Valley, Clark County, Nevada, being duly sworn hereby certify that the following advertisement appeared in The Progress:

public meeting announcement  
yahthumb scoping meeting  
for ENValue LLC

A copy of the above described advertising is hereon attached.  
It was published in The Progress on this date(s):

7-7-2021 + 7-14-2021

Signed before a Notary Public:

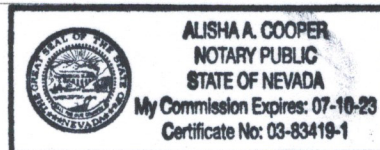
Signature: Laura R Robison Date: 7-14-2021

State of Nevada, County of Clark

This instrument was acknowledged before me Alisha A-Cooper (notary public)

On 14 July 2021 (date) by Laura R Robison (person signing document)

Alisha A-Cooper  
Notary Public Signature



## **Appendix C**

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### Meeting Materials

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# Meeting Presentation

# Yahthumb Solar Project

## Environmental Impact Statement (EIS)

SCOPING MEETINGS

JULY 20 AND 21, 2021



# The NEPA Process

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- Chip Lewis
  - Regional Environmental Protection Officer
  - Bureau of Indian Affairs (BIA) (Western Region)
  
- Contact Information:
  - BIA
  - Western Region
  - Branch of Environmental Quality Services (EQS)
  - 2600 North Central Avenue
  - 4<sup>th</sup> Floor Mailroom
  - Phoenix, AZ 85004
  - (602) 379-6750
  - chip.lewis@bia.gov*



# Proposed Action

---

- **Who has proposed:** Yahthumb Solar Project, LLC and Moapa Band of Paiute Indians
- **What is proposed:** Development of a 138-MW PV solar project on up to 1,695 acres on the Moapa River Indian Reservation (Reservation) with ROWs for transmission gen-ties, access road, and potential temporary water pipeline on both tribal and BLM-managed lands.
- **Where:** Clark County, NV 30 miles northeast of Las Vegas
- **Why:** Provide economic development and other benefits such as jobs and a revenue source for the Moapa Band of Paiute Indians and help meet goals for renewable energy.





# Environmental Impact Statement

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## **EIS Process**

Public input and documentation of environmental impacts that would result from implementation of the Proposed Action to meet the requirements of the National Environmental Policy Act (NEPA) – published in Code of Federal Regulations (CFR 1500-1508). In addition, this analysis could be used to satisfy the requirements of other relevant environmental and cultural resource laws and requirements.



# Involved Agencies

- **Lead Federal Agency**

- U.S. Department of the Interior, Bureau of Indian Affairs

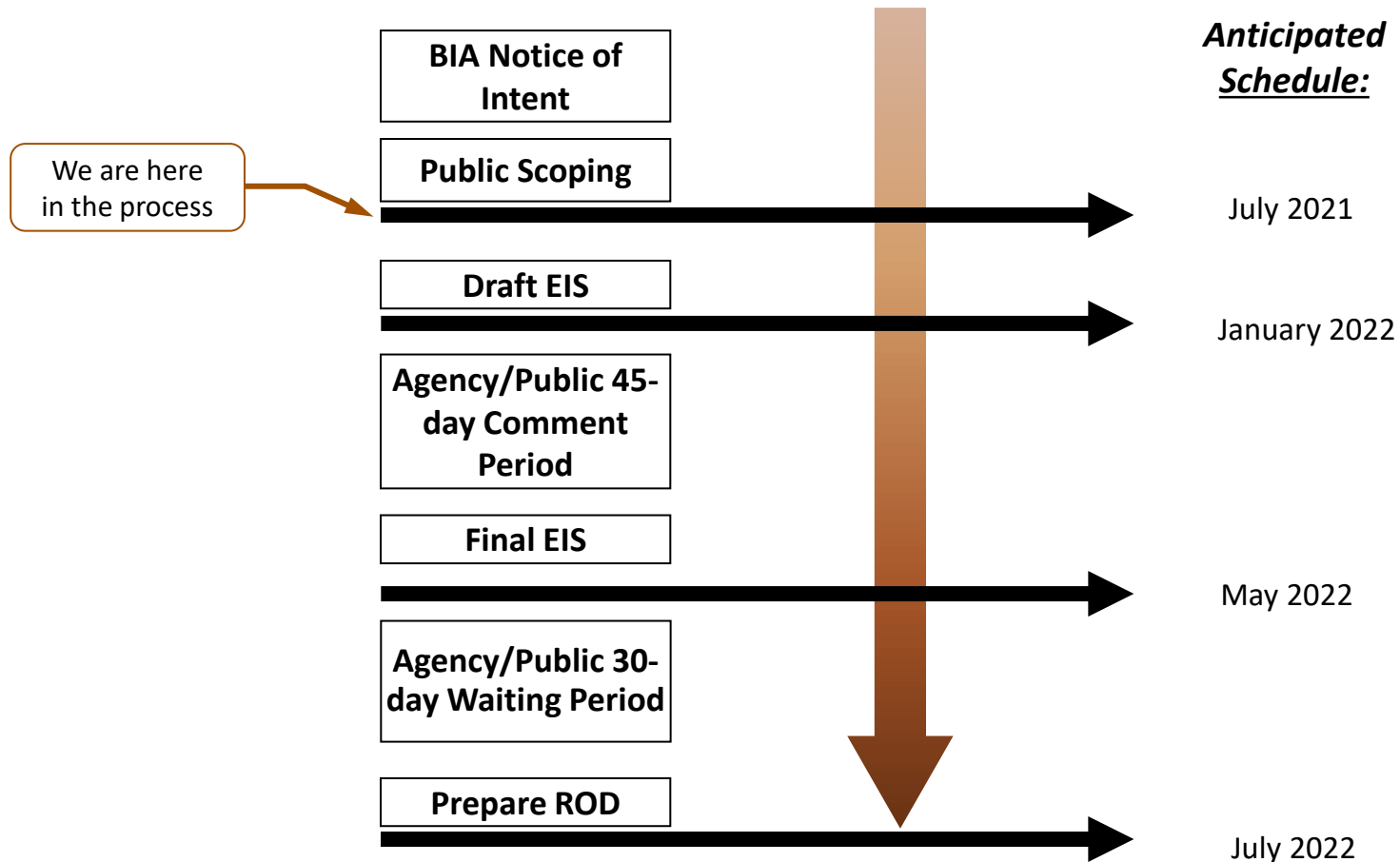
- **Cooperating Agencies**

- Moapa Band of Paiute Indians (Moapa Band)
- Bureau of Land Management (BLM)
- Environmental Protection Agency (EPA)
- US Air Force (USAF)
- US Fish and Wildlife Service (USFWS)
- National Park Service (NPS)
- Nevada Department of Wildlife (NDOW)
- Clark County





# EIS Process/Schedule





# How to Participate

---

- Submit comment verbally at the end of the presentation
  
- Submit comment via mail:
  - Chip Lewis
  - BIA
  - Western Region
  - Branch of Environmental Quality Services (EQS)
  - 2600 North Central Avenue
  - 4<sup>th</sup> Floor Mailroom
  - Phoenix, AZ 85004
  
- Submit comment via email to:
  - [chip.lewis@bia.gov](mailto:chip.lewis@bia.gov)
  
- Submit comment via the Project Website at:
  - [www.YahthumbSolarProjectEIS.com](http://www.YahthumbSolarProjectEIS.com)

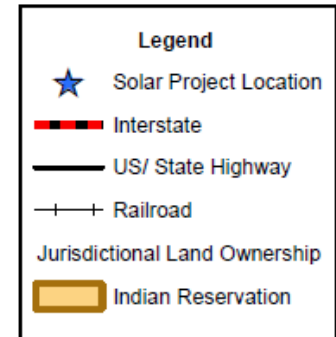
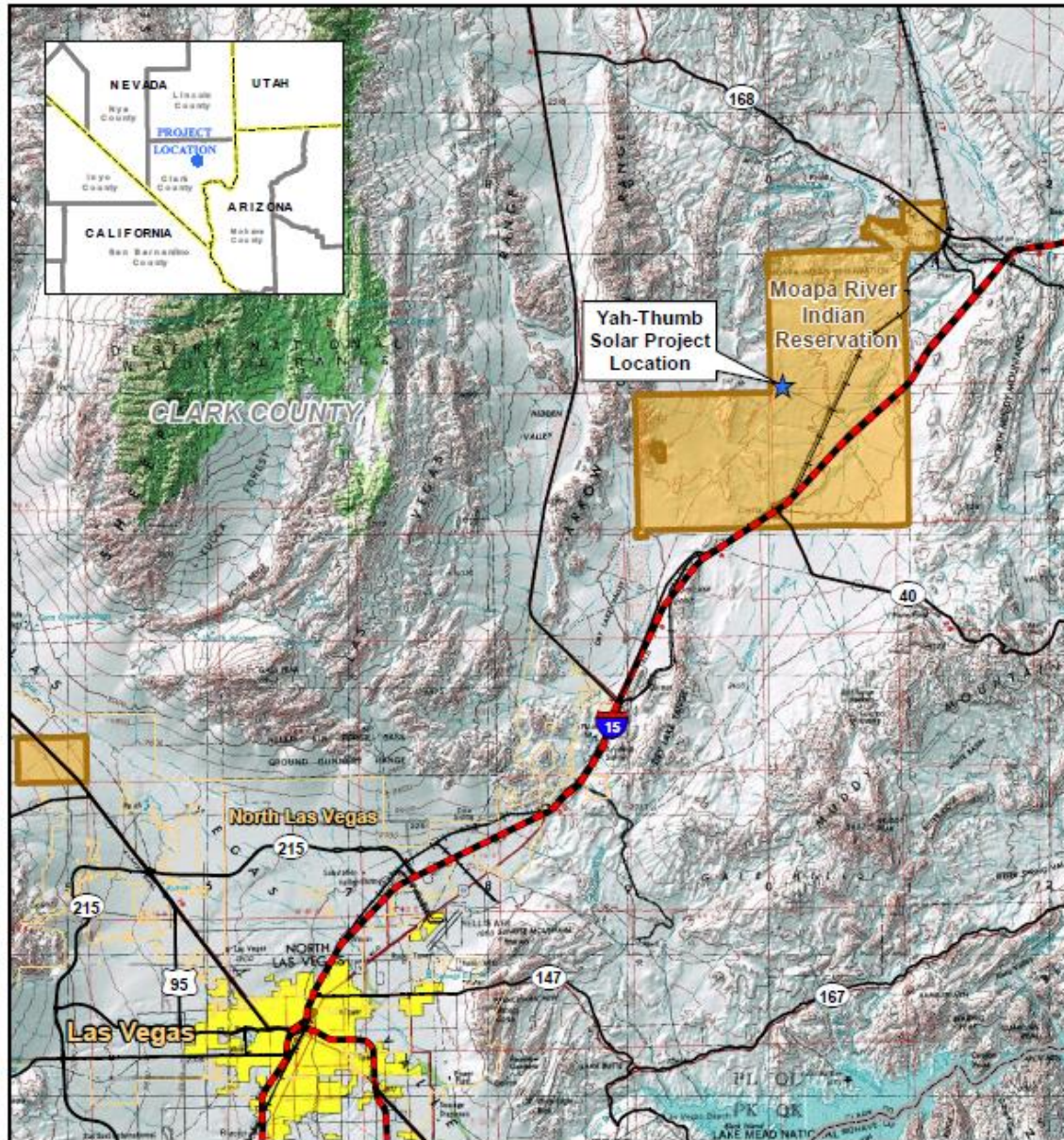


# Project Description

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## **Yahthumb Solar Project**

# Project Location



Clark County, Nevada

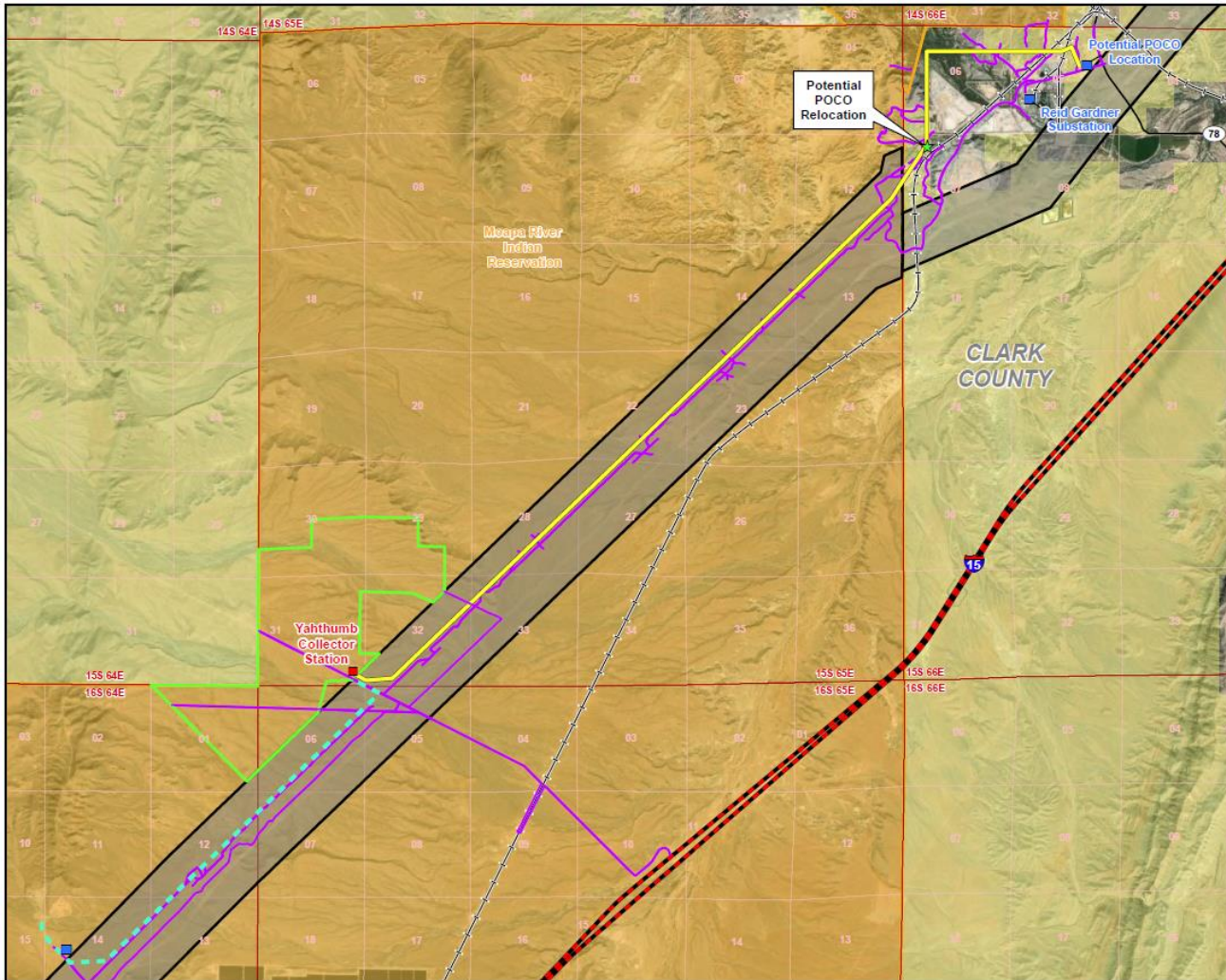
Approximately 30 miles  
northeast of Las Vegas



# Yahthumb Solar Project Description

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- 138-MW PV solar project on up to 1,400 acres within a 1,695-acre lease study area on Reservation
- Battery Energy Storage System (BESS)
- Gen-tie line to interconnect at existing Reid-Gardner Substation
  - ROW from BLM
- Improvement to existing road on Reservation for access
- Water provided by Moapa Band
  - Piped or trucked from off-site well or on-site well



- Legend**
- Project Components**
- Substation
  - Yahthumb Collector Station
  - ★ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Access Road
  - Temporary Water Pipeline
  - Yah-Thumb Solar Site
- General Features**
- Interstate
  - Major Highway
  - Railroad
  - Stream / River
  - Designated Utility Corridor
  - Township
  - Section
- Land Jurisdiction**
- Bureau of Land Management Land
  - Indian Land

Study Area
<b>Township, Range, Section*</b>
T15S, R65E – Sections 29, 30, 31, and 32
T16S, R64E – Section 1
T16S, R65E – Section 6
<small>*Mount Diablo Baseline and Meridian, Nevada</small>





# PV Solar Field

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- Solar arrays
- Inverters (converts DC to AC current)
- Battery Energy Storage System (BESS)
- Electrical collection system
- Operation & Maintenance Building on site
- Fencing around the solar arrays



# PV Solar Field Components

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# Yahthumb Solar Project Off-Site ROWs

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- Rights-of-Way (ROWs) for transmission gen-tie line, access road, and water pipeline
  - Gen-tie line to existing Reid-Gardner Substation
    - Within designated utility corridor and federal land managed by BLM, private lands
  - Improvement to existing access road on Reservation and within designated utility corridor
  - Potential temporary water pipeline



# Potentially Impacted Resources

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- Biological Resources
  - Desert Tortoise
  - Desert Vegetation
  - Avian Species
- Cultural Resources
- Visual Resources
- Water Resources
- Socioeconomics



# Comments / Questions

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? ? ? ? ?

- Contact Information:

Chip Lewis  
BIA, Western Region  
Branch of Environmental Quality Services  
2600 North Central Avenue  
4<sup>th</sup> Floor Mailroom  
Phoenix, AZ 85004  
(602) 379-6750  
*chip.lewis@bia.gov*

- Project Website:

[www.YahthumbSolarProjectEIS.com](http://www.YahthumbSolarProjectEIS.com)

## **Appendix D**

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### Scoping Comments Received

## YATHUMB SOLAR PROJECT

### SUMMARY OF SCOPING COMMENTS

Commentor	Comment #	Issue Category	Comment
Environmental Protection Agency	A-1	Water Quality	Construction would require a construction stormwater discharge permit (NPDES permit)
	A-2	Water Quality	Avoid floodplains in 3 major drainages on the site
	A-3	Biology	Minimize grading to the greatest extent practicable
	A-4	Biology	Utilize desert tortoise fencing
	A-5	Air Quality Health & Safety	Utilize dust control to avoid worker health impacts
	A-6	Biology	Prevent and control the spread of invasive/noxious weeds
	A-7	Biology	Monitor and reduce impacts to birds
Basin & Range Watch	B-1	Air Quality Health & Safety	Fugitive dust will result from grading or mowing and could affect air quality and lead to Valley Fever
	B-2	Climate Change	The loss of soil crust and living organisms will contribute to climate change by removing carbon sequestering living organisms
	B-3	Biology	Solar Panels will create a lake effect resulting in bird fatalities
	B-4	Biology	The project will remove habitat for rare and native plants like Nye milkvetch and Threecorner milkvetch
	B-5	Biology	The project will remove habitat for and kill kit foxes, American badgers, kangaroo rats, desert iguanas, horned lizards, and hundreds of other Mojave Desert species
	B-6	Biology	Mowing vegetation has not been a proven mitigation to insure the survival of the desert tortoises
	B-7	Biology	The project site is located between two recovery units and considered an important connectivity corridor or least cost pathway for desert tortoise. The Yahthumb Solar Project is proposed for the crucial linkage in the Northeastern Mojave Recovery Unit
	B-8	Visual Resources	The project will create a large, unsightly visual impact which will be visible from dozens of miles away
National Park Service	C-1	Cultural Resources	The project area, at its closes point, is approximately 3.8 miles from the designated alignment of the Old Spanish National Historic Trail (NHT). Please take any impacts to this nationally significant cultural resource into consideration in your analysis

## YATHUMB SOLAR PROJECT

### SUMMARY OF SCOPING COMMENTS

Commentor	Comment #	Issue Category	Comment
Interagency Meeting Comments	D-1	Water Quality	A stormwater permit (general permit) is required for solar projects - EPA issues a discharge permit for tribal lands
	D-2	Realty	All the project components on BLM must be itemized - the gen-tie, access routes, water pipeline, and other infrastructure. Anything that will need to be in the BLM ROW grant needs to be clearly identified as BLM responsibility in the ROD.
	D-3	Biology	Confirm the location of the desert tortoise reserve identified for previous projects relative to the Yahthumb location and how it could be affected by what is being proposed for desert tortoise for the Yahthumb project.
	D-4	Biology	Confirm whether there would be overlap of the construction phases of other projects and whether moving desert tortoise for multiple projects could occur at the same time
Bryan Dixon	E	-	General support
Nevada Department of Wildlife	F-1	Biology	We anticipate considerations and best management practices for special status species like the desert tortoise, Gila monster, migratory birds, and aquatic species associated with the Muddy River system.
NV Division of Water Resources	G-1	Water Use	Water shall not be used from any source unless the use of that water is authorized through a permit or temporary change application or waiver issued by the State Engineer
NV State Historic Preservation Office	H-1	Cultural Resources	If BIA intends to utilize the public scoping to comply with NEPA) and the NHPA Section 106 process, SHPO recommends the inclusion of a clear statement of the intent to comply with both NHPA and NEPA public notification requirements
NV State Clearinghouse	I	-	Confirmation of no comments





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105-3901

July 26, 2021

Mr. Chip Lewis  
BIA Western Regional Office  
2600 North Central Avenue  
4<sup>th</sup> Floor Mailroom  
Phoenix, Arizona 85004

Subject: Scoping comments for the proposed Yahthumb Solar Project on the Moapa River Indian Reservation, Clark County, Nevada

Dear Chip Lewis:

The U.S. Environmental Protection Agency has reviewed the Federal Register Notice published on June 25, 2021 requesting comments on the Bureau of Indian Affairs' decision to prepare an Environmental Impact Statement for the subject project. Our comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508) and our NEPA review authority under Section 309 of the Clean Air Act. EPA is a NEPA cooperating agency on the project.

The proposed solar photovoltaic (PV) project would be located on up to 1,400 acres of tribal trust land and would have a capacity of up to 138 megawatts. Major components of the solar site would include multiple blocks of solar PV panels mounted on single-axis tracking systems, associated inverter and transformer equipment, collection lines, battery energy storage systems, a Project substation, and operation and maintenance facilities. A transmission generation interconnection (gen-tie) line approximately 8.5 to 10 miles long would be constructed to interconnect the Project to the regional electrical grid at the existing Reid-Gardner Substation.

The EPA has the following recommendations for your consideration in preparing the Draft EIS.

- **Clean Water Act compliance: The National Pollutant Discharge Elimination System (NPDES) Construction General Permit**

The DEIS should note that, under the Federal Clean Water Act, any construction project disturbing a land area of one or more acres requires a construction stormwater discharge permit (NPDES permit) for the control of polluted runoff to downstream waters. It is not realistic to assume all stormwater would infiltrate into the onsite desert soils as is being purported for the construction of the adjacent Eagle Shadow Mountain solar project on the Reservation. In fact, desert environments typically produce more runoff and erosion per unit area than in temperate regions for a given intensity of rainfall due to sparse vegetation cover and poorly developed soils

with little organic matter<sup>1</sup>; therefore, the operator should obtain coverage under the Construction General Permit (CGP). See <https://www.epa.gov/npdes/stormwater-discharges-construction-activities> for more information on the CGP and how to file a Notice of Intent (NOI), which is a request for coverage under the CGP. The NOI is similar to a permit application, in that it contains information about the proposed discharges and serves as the operator's notice to EPA that the operator intends the discharges to have coverage under the CGP. By signing and submitting the NOI, the operator is certifying that a Storm Water Pollution Prevention Plan (SWPPP) has been developed, that the discharges meets all of the conditions specified in the CGP, and that the operator intends to continue to meet those requirements. The NOI should be filed at least 14 days prior to site disturbance. The DEIS should document that the project operator will obtain coverage under the CGP or the DEIS should explain why coverage is not required. The DEIS should also discuss specific mitigation measures that may be necessary or beneficial in reducing adverse impacts to water quality and downstream aquatic resources.

- 2 • **Avoid floodplains in 3 major drainages on the site.** The project site encompasses three major drainages in the designated 100-yr floodplain that drain to the California Wash which flows to the Muddy River. We recommend avoiding development in the 100-year floodplain as a minimum design standard, but strongly recommend providing as generous a buffer along the major tributaries as space allows, which would minimize water quality impacts, facilitate wildlife movement, and adapt to climate change effects from increased intensity of storms. Because of the adjacent solar projects being planned in this area of the Reservation, impacts at this site could affect projects downstream. We request the preliminary hydrological study be included in the appendices.
- 3 • **Minimize grading to the greatest extent practicable.** Based on information presented during the project's interagency scoping meeting on July 21, 2021, we understand that grading will be minimized, and vegetation protected to the extent possible. This is important, since grading alters soil stability and enables erosion. Minimizing grading and soil disruption will benefit several resources including water quality, air quality and worker health, and native vegetation from direct and indirect impacts from invasive weed species. Please identify the strategy for grading and protecting vegetation (mowing, crush and roll, etc.) in the project description.
- 4 • **Utilize desert tortoise fencing.** We also understand that desert tortoise fencing will be utilized. This fencing will allow tortoise to reenter the site upon completion. Discuss the cumulative impacts to this species from solar projects on and off the Reservation when identifying the reasonably foreseeable environmental trends for this species and the other planned actions in the area (40 CFR 1502.15).
- 5 • **Utilize dust control to avoid worker health impacts.** While the project area is in attainment for the National Ambient Air Quality Standard (NAAQS) for particulate matter 10 microns in diameter or smaller (PM<sub>10</sub>); fugitive dust is still a pollutant of concern that would be generated during construction that could impact human health, and dust control Best Management Practices should be utilized and enforced. Dust control is also important since the project site is located in an area that the Centers for Disease Control has determined is suspected endemic for *Coccidioides immitis*, a fungus causing Valley Fever in humans, and ground disturbing activities could result in dispersal of *Coccidioides* spores.

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<sup>1</sup> Levick, L., et al. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest. U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

6

- **Rigorously prevent and control the spread of invasive/noxious weeds.** Ensure the Weed Management Plan includes the latest information regarding the effectiveness of existing control measures including those utilized at the K-Road Solar project and in the utility corridor. Because of the widespread construction in the area and the pre-existing dense presence of weed species, we recommend a monitoring component be included in the Plan.

7

- **Monitor and reduce impacts to birds.** Discuss impacts to birds from the “lake effect”, where birds may mistake the PV panels for water resulting in unexpected deaths from collisions with the solar panels. State whether this phenomenon has occurred at the operational K-Road facility and describe measures to minimize potential impacts. With more projects being planned for large areas of the Reservation, cumulative impacts should be discussed. We recommend that the Bird and Bat Conservation Strategies include avian mortality monitoring and adaptive management measures.

We appreciate the opportunity to provide comments on the preparation of the DEIS. If you have any questions, please contact me at (415) 947-4178 or [vitulano.karen@epa.gov](mailto:vitulano.karen@epa.gov).

Sincerely,

Karen Vitulano  
Environmental Review Branch

cc: Laura Watters, Chairwoman, Moapa Band of Paiute Indians  
Terri Bohl, Moapa Band of Paiute Indians



**From:** [no-reply@editmysite.com](mailto:no-reply@editmysite.com)  
**To:** [Randy Schroeder](#)  
**Subject:** New Form Entry: Yahthumb Getting Involved Form  
**Date:** Tuesday, July 13, 2021 1:42:46 PM

You've just received a new submission to your [Yahthumb Getting Involved Form](#).  
[Mark as Spam](#)

#### Submitted Information:

---

**Name**

Kevin Emmerich

**Address**

P.O. Box 70  
Beatty, Nevada USA 89003

**Email**

[atomicquailranch@gmail.com](mailto:atomicquailranch@gmail.com)

**Comment**

Greetings,

To: Chip Lewis

re: Comments on scoping for the Yahthumb Solar Project on the Moapa River Indian Reservation, Clark County, Nevada

These comments are for the scoping for the Yahthumb Solar Project.

We are sending you these comments because you have requested it.

Basin and Range Watch is a 501(c)(3) non-profit working to conserve the deserts of Nevada and California and to educate the public about the diversity of life, culture, and history of the ecosystems and wild lands of the desert. Federal and many state agencies are seeking to open up millions of acres of unspoiled habitat and public land in our region to energy development. Our goal is to identify the problems of energy sprawl and find solutions that will preserve our natural ecosystems, open spaces, and quality of life for local communities. We support energy efficiency, better rooftop solar policy, and distributed generation/storage

alternatives, as well as local, state and national planning for wise energy and land use following the principles of conservation biology.

A 1,600 acre project will impact 2.5 square miles of Mojave Desert Habitat. This is undeveloped habitat and a project of this size will have big impacts and will result in a great loss of biological diversity. This project will kill a large quantity of living organisms. This is a net loss and mitigation will not make up for it. The amount of large scale solar built in the area should make you consider rejecting this proposal.

The following subjects should be reviewed in the Draft Environmental Impact Statement:

1. Fugitive dust will result in the grading or mowing of 2.5 square miles of habitat. The loss of biological soil crust, old growth desert plants and caliche all contribute to fugitive dust. This can lead to Valley Fever which will even be worse during the Covid-19 crisis. The project is hugging the 7,100 acre Gemini Project which is expected to have large air quality impacts.

1

2. The loss of so much soil crust and so many living organisms will contribute to climate change by removing 2.5 square miles of carbon sequestering living organisms.

2

3. Solar Panels will create a lake effect and several solar projects including the Desert Sunlight Solar Project in California have resulted in multiple bird fatalities. The project will be near the Muddy River and Colorado River and will kill birds.

3

4. The project will remove habitat for rare and native plants like Nye milkvetch and Threecorner milkvetch. This project is located in the habitat of Threecorner milkvetch, one of Nevada's most endangered plants. It's one of the only species recognized as Endangered by the state of Nevada. It was recognized as worthy of Endangered Species Listing and a 12 month status review. Gemini Solar will already remove 700 acres of the habitat, How much of that habitat is on the Yahthumb site? The listing petition can be viewed here: [basinandrangewatch.org/Threecorner Milkvetch Petition-April25.pdf](https://basinandrangewatch.org/Threecorner%20Milkvetch%20Petition-April25.pdf)

4

5. The project will remove habitat for and kill kit foxes, American badgers, kangaroo rats, desert iguanas, horned lizards, and hundreds of other Mojave Desert species.

5

6. Mowing vegetation has not been a proven mitigation to insure the survival of the desert tortoises. The BLM and Moapa Reservation have already approved close to 20 square miles of solar projects which are pushing the Threatened desert tortoise closer to extinction.

6

The desert tortoise has seen close to a 50 percent decline on much of its range since 2010. Gemini Solar is expected to remove 1,200 tortoises. This one probably will impact about 500 including juveniles and hatchlings.

Desert Tortoise: The 2017 and 2018 desert tortoise for the proposed nearby Gemini Solar Project surveys found 172 live tortoises, and based on density calculations, estimate that the project site contains 273 live tortoises. In addition to the live tortoises, biologists observed 2,774 desert tortoise burrows, 391 pallets, 323 carcasses, and 241 scats. Because of the high number of tortoises found here, we recommended that BLM and US Fish and Wildlife Service consider designating this area as new Critical Habitat and an Area of Critical Environmental Concern, since so many Critical Habitat Units are now no longer viable (see discussion below).

The project site is located between two recovery units and is considered an important connectivity corridor or least cost pathway due to suitable topography. The surrounding Areas of Critical Environmental Concern (ACEC's) that contain designated desert tortoise Critical Habitat include the Mormon Mesa, Gold Butte, and Coyote Springs Desert Wildlife Management Areas.

The Yahthumb site is close to the Moapa Solar Project which was concluded to have an even higher population density than the Gemini site. Recent modeling by Sanchez-Rameriz et al. (2018) using single nucleotide polymorphism markers and spatial data consistently associated genetic connectivity with least-cost distance, based on multiple landscape features associated with tortoise habitat, despite landscape distance. Spatial and landscape genetics identified cluster 5 as tortoise inhabiting northeastern Mojave Desert in California, through southern Nevada, to southwestern Utah.

The Yahthumb Project could contribute to disconnecting this genetic population and fragment habitats, which have already undergone major development pressures.

The cumulative impacts have stacked up in this region for the desert tortoise. The area has a major Interstate highway running through it and there are also several transmission utility corridors in the area. The Dry Lake South Solar Energy Zone (Designated Leasing Area) has filled up 3,000 acres and BLM wants to approve the Dry Lake East DLA which would be built on over 1,500 acres hugging a mountain range. The Moapa Solar Project was built on almost 2,000 acres very close by and there is a proposal to build 7,000 acre Gemini Solar Project on BLM lands as well. This project would be close to 10 square miles in size and 260 tortoises are estimated to be on the development site, the Red Flats Solar Project near Glendale would be 4,000 acres, the Ayia Solar Project on 900 acres of the Moapa Reservation and the Red Flats Solar Project on 2,000 acres near the Moapa Reservation. Eagle Shadow Mountain would be 3,500 acres as would the Southern Bighorn Project.

To the southwest is Las Vegas, Nevada which is experiencing a big economic urban growth boom now and thousands of acres of undeveloped public lands are being converted to housing subdivisions under the Clark County Multi Species Habitat Conservation Plan. Recently, the county passed a resolution which approved the transfer of nearly 40,000 acres of BLM lands to the county which would be used for housing

subdivisions. If the Senate and Congress agree to this, that would add considerably to the cumulative loss of tortoise habitat in the region.

To the north in the St. George, Utah area, the Northern Corridor highway project is proposed to slice directly through the Red Cliffs Tortoise Preserve, further leading to unmitigated mortality. At this rate of growth, there will not be much left for the tortoise if BLM approves the Gemini Solar Project. There is also a proposal to build the 9,200 acre Battle Born Solar Project in Mormon Mesa. The Moapa Paiute have opposed Battle Born Solar and raised many concerns about Gemini, but the same habitat occurs on the Yahthumb Project site.

At the most recent Desert Tortoise Management Oversight Group (MOG) meeting in Las Vegas, NV, Raul Morales, Deputy Director at Nevada of planning and resources for BLM said on February 27, 2019, that only one Recovery Unit is in an upward trend, and that the MOG needs to consider the future. The Yahthumb Solar Project is proposed for the crucial linkage in the Northeastern Mojave Recovery Unit, in addition to a contiguous high-quality habitat block-- these blocks are becoming increasingly rare. Fragmentation is an increasing threat. Cumulative development projects, solar proposals, urbanization, and a proposed airport is in the linkage near Jean threaten the functionality of this linkage corridor. The Clark County lands bill could further remove linkages. The connectivity between Recovery Units needs to be better protected.

7. The project will create a large, unsightly visual impact which will be visible from dozens of miles away. It will cross Highway 15. It will be next to Gemini Solar. The BLM has recognized that Gemini Solar will have strong, negative visual impacts along the Valley of Fire Road.

8. The cumulative impact from all the solar projects have reduced the biological diversity of the region.

9. Solar Projects create about 200 construction jobs for just over a year and eventually only result in about 5 to 10 full time jobs. Is the loss of all the biodiversity worth that?

10.: The Band of Moapa Paiutes did oppose both Gemini and Battle Born Solar. Would not the Yahthumb Project have similar impacts?

Thank you,

Kevin Emmerich Basin and Range Watch P.O. Box 70, Beatty, NV 89002

References:

Hagerty, B. E. and Tracy, C. R. 2010. Defining population structure for the Mojave Desert tortoise. *Conserv. Genet.* 11, 1795–1807. Sanchez-Ramirez, S., Y. Rico, K. H. Berry, T. Edwards. A. E. Karl, B. T. Henen, and R. W. Murphy. 2018. Landscape limits gene flow and drives population structures in Agassiz's desert tortoise (*Gopherus agassizii*). *Nature Online Scientific Reports.*

**Would you like to be included on our mailing list? Add me to your mailing list**

1



The National Park Service, National Trails Office appreciates the opportunity to comment on the Notice of Intent to prepare an Environmental Impact Statement for the Yahthumb Solar Project on the Moapa Indian Reservation. The project area, at its closest point, is approximately 3.8 miles from the designated alignment of the Old Spanish National Historic Trail (NHT). Please take any impacts to this nationally significant cultural resource into consideration in your analysis. The geospatial data for the designated alignment of the Old Spanish NHT can be located at the following link: <https://irma.nps.gov/DataStore/Reference/Profile/2244633>

As federal trail administrators, we would like to be included as a consulting party under Section 106 and included in the NEPA process as federal trail administrators. If you have any questions or to request additional information, please contact Meg Frisbie, Cultural Resources Specialist, National Trails Office, at (505) 470-0426 or [margaret\\_frisbie@nps.gov](mailto:margaret_frisbie@nps.gov)



## Yahthumb Solar Project EIS Cooperating Agency Scoping Meeting

Meeting held virtually
Date: July 21, 2021
Time: 2:00 pm Pacific Time
Microsoft Teams Meeting Phone: +1 480-645-9961 Code: 145779837#

### Attendees

Name	Position
<b>Bureau of Indian Affairs (BIA)</b>	
Chip Lewis	Regional Environmental Protection Officer
Garry Cantley	Regional Archaeologist
Christina Varela	Realty Specialist
<b>Bureau of Land Management (BLM)</b>	
Matthew Klein	Environmental Planning Coordination, Southern Nevada
Beth Ransel	Supervisory Project Manager
Vivian Browning	Realty Specialist, Southern Nevada DO, Energy & Infrastructure
Kelsey Bynum	Realty Specialist, Southern Nevada DO, Energy & Infrastructure
<b>Environmental Protection Agency (EPA)</b>	
Karen Vitulano	U.S. EPA Region 9
<b>National Park Service (NPS)</b>	
Margaret Frisbie	National Trails, cultural resources
<b>U.S. Fish and Wildlife Service (USFWS)</b>	
Kelly Douglas	Senior Biologist, Southern Nevada Field Office
Glen Knowles	Southern Nevada Field Supervisor
<b>Nevada Department of Wildlife (NDOW)</b>	
Jasmine Kleiber	Technical Review Program and Renewable Energy Program
Brad Hardenbrook	Supervisory Habitat Biologist, Southern Nevada
<b>Consultants</b>	
Randy Schroeder, ENValue	NEPA lead
Patricia McCabe, Logan Simpson	BIA NEPA support
Lisa Young, Logan Simpson	BIA NEPA support

### Meeting Notes

Chip Lewis (BIA) and Randy Schroeder (ENValue) provided a presentation describing the proposed project, then turned the time over to ask questions or provide comments.

### Questions and Comments

Chip pointed out that there are very little tortoises on the project, and there were no eligible cultural sites on the solar lease area.

Vivian Browning (BLM) asked when the applicant will be filing their application with BLM. Randy Schroeder indicated that the application and Plan of Development (POD) are complete, but they are required to allow NV Energy time to review. NV Energy is in the process of review right now. Randy indicated that the Point of Change Ownership (POCO) location could change. The application and POD should be submitted to BLM within the next few weeks.

Karen Vitulano (EPA) indicated that there is a concept that a stormwater permit is not required for these solar projects, which is not correct. EPA issues a discharge permit for tribal lands (general permit). 8minute Energy decided they did not need one (for the Southern Bighorn Solar Project) because they said the rain would infiltrate into the ground. Karen indicated that this is not correct, especially in desert environments where there typically is more erosion because of sparse vegetation and poorly developed soil. For the solar projects that drain into California Wash, it is a hard sell that there would not be runoff leaving the site. Karen encourages Arevon to apply for a Construction General Permit, especially since the EPA enforcement staff is aware of the situation and if they don't apply they could be subject to enforcement action. Karen will provide this in a comment.

1

Karen asked if a map is available with all the projects on the Reservation. Lisa Young shared her screen showing a map depicting all the solar projects on the reservation. Chip will send a copy of the map to the cooperating agencies.

Chip noted that Yahthumb is a Paiute word for creosote, though the spelling may not be correct.

Glen Knowles (USFWS) indicated that he assumes that the procedures for desert tortoise from the other solar projects would be carried forward for this project, and Chip confirmed this is the case.

Karen mentioned a recent press release or article from the head of DOI (Deb Haaland) that came out regarding all the solar projects on the Moapa River Indian Reservation. Christina Varela (BIA) sent a link to the press release in the chat (<https://www.doi.gov/pressreleases/interior-department-advances-two-solar-energy-projects-tribal-lands>). Karen will send copy of the article.

Matthew Klein requested that the proponent keep a good accounting of all the project components and which portions are on BLM, and that the documents itemize how much of the gen-tie, access routes, water pipeline, and other infrastructure, will be on BLM. He requested that anything that will need to be in the ROW grant to be clearly identified as BLM in the ROD. Matt wants to make sure the project components are fully disclosed and analyzed. BLM would also like KMZs or GIS shapefiles of the project components. Chip responded that he would keep BLM in the loop throughout the process and Randy will provide GIS files. Chip also indicated that, as each chapter is prepared and after BIA has reviewed, the chapters will be provided to the cooperating agencies so that by the time the chapters get to the draft EIS, they will be ready to go. Chip indicated that this is the process that BIA has been following for the other solar projects, and this will continue. Chip indicated that BLM is welcome to provide feedback throughout this process to ensure BLM needs are met. Vivian indicated that she had previously sent an email to the applicant a list of all the information that is needed in the application and suggested that the sooner BLM gets this information the better to facilitate commenting on the drafts.

2

Karen asked about the desert tortoise reserve from previous projects and where the reserve is located in relation to Yahthumb, and what is being proposed for desert tortoise on the Yahthumb project. Chip showed the location of the desert tortoise reserve which was created for the K-Road Solar Project. Chip

3

described that since K-Road, the process is a little different. He explained that the big thing now is that vegetation is now mowed or driven over and crushed, and the fence is raised to allow movement of tortoise back in the area after construction, so for this project we don't need a designated desert tortoise reserve. Glen indicated that it depends on the number of tortoise involved, but they generally like to leave tortoise habitat in place which is important to maintain connectivity through the Reservation and through these solar sites, because the area is somewhat restricted by the Eagle Shadow Mountain and other solar projects and the Interstate-15 corridor. He explained that for Yahthumb we are early in the stage in figuring out where the tortoises are and how to develop the translocation plan, but it may be a short distance translocation plan where the tortoises would be moved off-site during construction and then allowed to move back in to the site after construction. Karen asked if the tortoise reserve is fenced, and Chip responded that it is not. Chip indicated that most of the tortoises have been in the southern portion of the project and there were none in the northern portion, and there were only about a dozen tortoise found for the whole solar site.

Karen asked about the overlap of the construction phases and whether construction would be conducted at the same time with other projects and moving the tortoise for multiple projects at the same time. Chip indicated that there could be overlap on construction with the other projects, though it can vary. For Eagle Shadow Mountain (ESM) and Arrow Canyon we thought they would overlap, but ESM is wrapping up and Arrow Canyon is not starting for another several weeks. He explained that the density of tortoise are such that we can typically just move them outside the project area and that the projects are not like K-Road where there were so many tortoise and the solar site was graded down to dirt, so it was a whole different situation. Karen asked if ESM would overlap with Southern Bighorn. Chip said no, ESM is almost finished and for Southern Bighorn we just signed Record of Decision and they don't have their lease approved yet, so they are several months out.

Karen asked if Yahthumb already has a Power Purchase Agreement (PPA). Randy indicated that yes, the applicant does have a PPA. Chip referenced Aiya Solar and the Arrow Canyon Solar predecessor, they moved forward with the EIS without a PPA and nothing ever came out of the projects after the EISs were complete. Chip explained that solar developers have learned their lesson and that it's best to move forward after a PPA is in place, but the hard part is it puts pressure on the agencies to complete the EIS in time due to the timing constraints with the PPA.

Karen asked if Aiya Solar would be rehabbed into a different project. Chip indicated that Aiya is coming back, but the tribe will be part owner, it is proposed as half the size, and it is with a different developer, but BIA has not received an official application yet. BIA and USFWS is currently trying to figure out if they can approve the project under the prior NEPA and Endangered Species Act consultation but it is still in the pre-planning stages.

Garry Cantley (BIA) confirmed that only isolates were found in the solar field and that Old Spanish Trail is 4 miles away.

Chip closed the meeting and indicated that he is available any time to discuss. He thanked those who attended, it's beneficial to get involvement up front.

## Action Items

Item No.	Assigned to	Description
1	Chip	Chip to send a copy of the map (Figure 1-4) to cooperating agencies that was shared during the discussion showing all the other solar projects on the reservation.
2	Karen	Karen will send a copy of the article discussing the solar projects on the Moapa River Indian Reservation

*The above meeting notes summarize the substantive items discussed or issues resolved at the above meeting. Participants are encouraged to review these notes and respond to Logan Simpson within five business days of the distribution date of these notes if any discrepancies exist. If no comments are received by this time, it will be assumed that these notes accurately reflect the substantive content of the meeting.*



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**From:** Bryan Dixon <[bdixon@xmission.com](mailto:bdixon@xmission.com)>  
**Sent:** Wednesday, July 21, 2021 6:37 PM  
**To:** Lewis, Charles <[Charles.Lewis@bia.gov](mailto:Charles.Lewis@bia.gov)>  
**Subject:** [EXTERNAL] Yahthumb Solar Project

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Please add me to the emailing list for notifications on the progress of this DEIS and FEIS.

It's exciting to see environmentally responsible solar energy being developed on public lands.

Regards,

Bryan

(I also registered for the mailing list online.)

-----  
Bryan Dixon  
225 North Country Lane #72  
St. George, UT 84770  
435-760-0691  
[bdixon@xmission.com](mailto:bdixon@xmission.com)  
-----



STEVE SISOLAK  
Governor

STATE OF NEVADA

**DEPARTMENT OF WILDLIFE**

6980 Sierra Center Parkway, Suite 120

Reno, Nevada 89511

Phone (775) 688-1500 • Fax (775) 688-1595

TONY WASLEY  
Director

BONNIE LONG  
Deputy Director

JACK ROBB  
Deputy Director

July 26, 2021

NDOW-SR#: 22-005  
SAI #: E2022-015

Mr. Chip Lewis, Regional Environmental Protection Officer  
Bureau of Indian Affairs, Western Regional Office  
2600 North Central Avenue, 4<sup>th</sup> Floor Mail Room  
Phoenix, AZ 85004-3008

Re: Scoping: Environmental Impact Statement for Yahthumb Solar Project, LLC's Proposed  
Yahthumb Solar Projects on the Moapa River Indian Reservation, Clark County, Nevada

Dear Mr. Lewis:

The Nevada Department of Wildlife (NDOW) appreciates the opportunity in providing preliminary thoughts on the proposed Yahthumb Solar Project. To date, we understand the proposed energy generation facilities would be constructed on 1,400 acres of an approximately 1,695-acre lease area on tribal trust land. Generation capacity is projected at 138 MW using PV design including a battery energy storage system. Gen-tie of up to ~10 miles long would connect the facility to the regional electric grid at the existing Reid-Gardener Substation. Transmission infrastructure would be on Reservation, BLM-managed, and private lands.

In view of NEPA analyses for previously proposed solar energy facilities similarly sited on the Reservation in the last 10 years, including transmission infrastructure on BLM-managed and private lands, we anticipate considerations and best management practices for special status species like the desert tortoise, Gila monster, migratory birds, and aquatic species associated with the Muddy River system. While NDOW regulatory authorities relevant to wildlife would potentially apply to certain gen-tie portions of the project located on BLM-managed and private lands, as a cooperating agency in development of the EIS we look forward to opportunities for contributing our knowledge and expertise of wildlife resources.

Sincerely,

Handwritten signature of D. Bradford Hardenbrook in blue ink.

D. Bradford Hardenbrook  
Supervisory Habitat Biologist  
Nevada Department of Wildlife, Southern Region  
3373 Pepper Lane, Las Vegas, Nevada 89120  
702.668.3960 Desk; [bhrdnbrk@ndow.org](mailto:bhrdnbrk@ndow.org)

**Nevada State Clearinghouse**  
*Department of Conservation and Natural Resources*  
901 South Stewart Street, Suite 5003  
Carson City, NV 89701  
775-684-2723  
<http://clearinghouse.nv.gov>  
[www.lands.nv.gov](http://www.lands.nv.gov)

DATE: July 26, 2021  
Division of Water Resources  
**Nevada SAI # 2022-015**

Project: NOI BIA Yahthumb Solar Project EIS - Clark County

\_\_\_\_\_ No comment on this project        X     Proposal supported as written

**AGENCY COMMENTS:**

**NRS – Nevada Revised Statutes**  
**NAC – Nevada Administrative Code**

**General:**

Compliance with Nevada water law is required.

All waters of the State belong to the public and may be appropriated for beneficial use pursuant to the provisions of NRS Chapters 533 and 534 and not otherwise.

Water shall not be used from any source unless the use of that water is authorized through a permit issued by the State Engineer. For underground sources, certain uses of water may be authorized through the issuance of a waiver pursuant to NRS Chapter 534 and NAC Chapter 534.

**Water for Construction Projects**

Ensure that any water used on a project for any manner of use shall be provided by an established utility or under permit or temporary change application or waiver issued by the State Engineer’s Office with a manner of use acceptable for suggested project’s water needs.





**Scott Carey**

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**From:** NevadaClearinghouse  
**To:** Rebecca Palmer  
**Subject:** RE: Clearinghouse Notice: NOI BIA Yahthumb Solar Project EIS - Clark County

**From:** Rebecca Palmer  
**Sent:** Monday, July 26, 2021 5:08 PM  
**To:** Clearinghouse <[Clearinghouse@lands.nv.gov](mailto:Clearinghouse@lands.nv.gov)>  
**Subject:** RE: Clearinghouse Notice: NOI BIA Yahthumb Solar Project EIS - Clark County

The SHPO has reviewed the subject project. If the BIA intends to utilize the public scoping as part of compliance with the National Environmental Policy Act (NEPA) to involve the public in the National Historic Preservation Act of 1966, as amended, (NHPA) Section 106 process and procure relevant information concerning cultural resources issues in the project area, the SHPO recommends the inclusion of a clear statement that the federal agency intends to comply with NHPA as well as NEPA public notification requirements is recommended by guidance provided by [CEQ and ACHP](#).

1

Regards,

**Rebecca Lynn Palmer**  
Administrator/State Historic Preservation Officer  
Nevada State Historic Preservation Office  
(O): 775-684-3443  
[rlpalmer@shpo.nv.gov](mailto:rlpalmer@shpo.nv.gov)

**From:** Clearinghouse <[Clearinghouse@lands.nv.gov](mailto:Clearinghouse@lands.nv.gov)>  
**Sent:** Tuesday, July 13, 2021 10:50 AM  
**To:** Rebecca Palmer <[rlpalmer@shpo.nv.gov](mailto:rlpalmer@shpo.nv.gov)>  
**Subject:** Clearinghouse Notice: NOI BIA Yahthumb Solar Project EIS - Clark County

The Nevada State Clearinghouse has posted the following notice and is currently accepting comments. Below please find a description of the notice. To submit your comments on this project click on the comment link at the bottom of this email and insert or upload your comments, please do not respond to this email. To view the complete notice and find additional information please see the links at the bottom of this email.

### Summary

The Bureau of Indian Affairs (BIA), as lead agency in cooperation with the Moapa Band of Paiute Indians, Bureau of Land Management (BLM), and other agencies, intend to prepare an Environmental Impact Statement (EIS) that will evaluate the development of the Yahthumb Solar Project on the Moapa River Indian Reservation in Clark County, NV. This notice announces the beginning of the scoping process to solicit public comments and identify potential issues related to the EIS.

The Applicant plans to develop the Yahthumb Solar Project on the Reservation in Clark County, Nevada. The solar project would generate 138 MWs of solar energy generation using PV technology and would incorporate a battery energy storage system. The proposed Yahthumb solar generating facility would be constructed on up to 1,400 acres within a lease study area of approximately 1,695 acres of tribal trust land on the Reservation set aside by the Moapa Band for the Project. Major components of the solar site would include multiple blocks of solar PV panels mounted on single-axis

tracking systems, associated inverter and transformer equipment, collection lines, BESS, a Project substation, and O&M facilities. Construction of the Project is expected to take approximately 14 months.

For additional information or to view project documents please visit [www.yahthumbsolarprojecteis.com](http://www.yahthumbsolarprojecteis.com) Comments due to the Clearinghouse by July 26, 2021.

### **Comment & Project Links**

[Click here](#) to add Comments to this notice. Comments are due on or before 07/26/2021

Click here to view the complete notice:

<https://clearinghouse.nv.gov/HTMLtoPDF/ViewSavedForms.aspx?DocLoc=SITE&DocKey=1877&ViewKey=VMSCBY8SP7>

For additional information or to view project documents, please visit <https://www.yahthumbsolarprojecteis.com/>.

[Click here](#) to manage your Clearinghouse Email Distribution Settings

Please do not reply to this message. This email is an automated notification, and is unable to receive replies. If you have any questions or need any additional information please contact us at [nevadaclearinghouse@lands.nv.gov](mailto:nevadaclearinghouse@lands.nv.gov) or 775-684-2723.



**From:** Scott Carey <[scarey@lands.nv.gov](mailto:scarey@lands.nv.gov)>  
**Sent:** Monday, July 26, 2021 1:10 PM  
**To:** Lewis, Charles <[Charles.Lewis@bia.gov](mailto:Charles.Lewis@bia.gov)>  
**Subject:** RE: [EXTERNAL] Nevada State Clearinghouse Comments for NOI BIA Yahthumb Solar Project EIS - Clark County

Chip,

Yes that's correct. We have launched a new system last month and this was our first "no comments" project. As you can see we are still working out the kinks.



Thank You,

Scott Carey

**From:** Lewis, Charles <[Charles.Lewis@bia.gov](mailto:Charles.Lewis@bia.gov)>  
**Sent:** Monday, July 26, 2021 1:09 PM  
**To:** Scott Carey <[scarey@lands.nv.gov](mailto:scarey@lands.nv.gov)>  
**Subject:** Re: [EXTERNAL] Nevada State Clearinghouse Comments for NOI BIA Yahthumb Solar Project EIS - Clark County

Scott,

The pdf that was attached is blank. Is that symbolic of the "no comments"?

chip

### Chip Lewis

Regional Environmental Protection Officer  
Branch of Environmental Quality Services  
Bureau of Indian Affairs-Western Region  
2600 N. Central Ave, Fourth Floor Mailroom  
Phoenix, AZ 85004  
Office: (602) 379-6750  
Direct: (602) 240-8448  
Cell: (602) 390-2014

## **Appendix C**

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### Project Design Features / BMPs

**APPENDIX C**  
**Applicant-Proposed Mitigation and Best Management Practices (BMPs)**  
**YAHTHUMB SOLAR PROJECT**

**SOILS / EROSION**

Grading on the solar site would be minimized to only those areas where necessary to meet the construction and operational requirements of the Project. Where no grading occurs, existing vegetation would be mowed to a height of approximately 18 inches and driven over / crushed during construction activities where feasible and where it does not pose a safety risk. Following construction, on-site vegetation will be allowed to return to those areas and will only be mowed to avoid conflicts with solar facility operation and as necessary for safety and fire prevention.

Construction and operational activities will be conducted in compliance with a stormwater pollution prevention plan (SWPPP) that would include BMPs and other erosion-control measures designed to minimize soil erosion and limit sheet flow and downstream sedimentation. The SWPPP would also incorporate adaptive management actions if erosion and sedimentation control measures are found to be insufficient to control surface water at the site.

To minimize wind erosion, all construction activities shall comply with the Fugitive Dust Control Plan that would be developed and implemented for the Proposed Project.

A Site Restoration would be implemented as needed to limit impacts to native, on-site vegetation as much as practicable. The Plan would define construction limits and BMP measures for soil restoration and re-planting and establish monitoring and success criteria as applicable.

**HYDROLOGY / WATER QUALITY**

Grading on the solar site would be minimized to only those areas where necessary to meet the construction and operational requirements of the Project – such as where leveling is necessary, the driveways among the rows of panels, etc. The major existing drainage channels that traverse the site will be retained by the site design and scour protection along these drainages would be installed as needed. Ephemeral drainage of the site would sheet flow into the existing drainage channels.

The drainage plan will be designed to maintain existing drainage patterns and control the rate and amount of surface water runoff.

Final grading and drainage plans will be completed and submitted for approval prior to construction and would demonstrate that downstream flows would not be adversely impacted as a result of proposed changes to natural washes from proposed grading, drainage management measures or the addition of retention ponds.

The paths for all stormwater flows would be identified and modeled as part of the final grading and drainage plan.

The number of drainage crossings would be minimized to the extent possible and each would be designed to accommodate adequate flow.

Existing vegetative buffers would be maintained as much as practical along perimeter edges of major drainages.

Placing Project solar facilities in major washes would be avoided by all alternatives to minimize direct and indirect impacts to the washes from erosion, migration of channels and local scour. All larger Project components will be located outside of drainages. Some roads and collector lines could be placed within ungraded drainages where technically feasible.

Where fencing would be built across drainages, breakaway fencing would be installed and would be designed to avoid interference with flows through those drainages. Breakaway fencing would be inspected and repaired as needed within 48 hours of large flood events.

Post-storm monitoring of erosion and sedimentation would be conducted during construction. If localized gullies were to develop or result in increased rates of erosion and sedimentation, repairs would be made and erosion and sedimentation control measures would be updated.

A spill prevention counter-measure and control (SPCC) plan would be developed and implemented during construction and the operations phase of the Proposed Project. Adequately-sized secondary spill containment would be incorporated around the transformers at the on-site substation to ensure proper capture and control

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measures for potential spills. The Plan would also provide for hazardous material spill prevention and clean-up measures, were a spill to occur.

**AIR QUALITY**

Grading on the solar site would be minimized to only those areas where necessary to meet the construction and operational requirements of the Project. Where no grading occurs, existing vegetation would be mowed to 18 inches and driven over / crushed during construction where feasible and where it does not pose a safety risk. Following construction, on-site vegetation will be allowed to return to those areas not directly disturbed by project components and will only be mowed to avoid conflicts with plant operation and as necessary for safety and fire prevention.

The Project would obtain a dust control permit from Clark County for activities outside tribal land including any required supplements.

The area of grading and vegetation removal would be limited to only that area required for Project construction and operation.

Ground disturbing activities would be undertaken in accordance with the approved dust control plan(s) to minimize the amount of time areas would be exposed to wind erosion.

Vehicular speeds on non-paved roads would be limited 25 miles per hour.

Grading operations would be phased where appropriate to limit the amount of disturbance at any one time, and water would be used for stabilization of disturbed surfaces under windy conditions.

Water would be applied to disturbed areas to control dust and facilitate soil compaction, where necessary. Water will be applied using water trucks and application rates would be monitored to prevent runoff and ponding. Approved palliatives would be used to control dust as required.

Exposed stockpiled material areas would be covered and excavation and grading would be suspended during windy conditions (forecast or actual wind conditions of approximately 25 miles per hour or greater).

Open storage piles and disturbed areas would be stabilized by covering and/or applying water to stockpile to form a crust or organic dust palliative where appropriate at the completion of activity.

All trucks hauling soil and other loose material would be covered or at least 2 feet of freeboard would be maintained.

All paved roads would be kept clean of objectionable amounts of mud, dirt, or debris, as necessary. Gravel or other similar material would be used where non-paved access roads intersect paved roadways to prevent mud and dirt track-out.

Air pollutant emissions from the emergency diesel generators and/or fire water pump engines would be minimized by an operating limitation of no more than 50 hours per year, per engine for routine testing and maintenance of these components. These engines would be compliant with current EPA tier emission performance criteria.

In construction contracts, recommend that all contractors maintain and tune engines per manufacturer's specifications to perform to EPA certification levels, where applicable. Any tampering with engines would be prohibited and continuing adherence to manufacturer's recommendations would be required.

A traffic and parking management plan would be finalized to minimize traffic interference and maintain traffic flow.

Unnecessary idling of equipment would be limited.

**BIOLOGICAL RESOURCES**

Preconstruction surveys will be conducted by qualified biologists according to the most current USFWS or other applicable protocols, where available, by species. These surveys would confirm the presence of special status plants, noxious weeds, and general and special status wildlife species, to help prevent direct loss of vegetation and wildlife and to prevent the spread of noxious plant species.

Biological monitors will be assigned to the Proposed Project in areas of sensitive biological resources. Biological monitors would be in place along the access road during construction and/or temporary fencing utilized during

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the construction period to minimize any impacts from vehicles during construction. The monitors will be responsible for ensuring that impacts to special status species, native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent possible. Where appropriate, monitors will flag the boundaries of areas where activities would need to be restricted to protect native plants and wildlife or special status species. Those restricted areas will be monitored to ensure their protection during construction.

Prior to construction, a Weed Management Plan will be developed that includes measures designed to reduce the propagation and spread of designated noxious weeds, undesirable plants, and invasive plant species, or as determined by the agencies (BIA, BLM, etc.) in coordination with the Band.

The Applicant will implement controls at entry locations to facilitate weed management and invasive species control in order to minimize infestation to the project site from an outside source. Trucks and other large equipment will be checked before entering the site for any invasive species debris or seed.

To minimize activities that attract prey and predators during construction and operations, garbage will be placed in approved containers with lids and removed promptly when full to avoid creating attractive nuisances for wildlife. Open containers that may collect rainwater will also be removed or stored in a secure or covered location to not attract birds.

All work area boundaries will be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities. All workers, equipment, vehicles, and construction materials shall remain within the ROW, existing roads, and designated areas. Staging areas will be located in previously disturbed areas whenever possible.

All transmission towers and poles will be designed to be avian-safe in accordance with the *Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006* (Avian Power Line Interaction Committee [APLIC] 2006) and the Avian Power Line Interaction Committee (APLIC 2006) and *Reducing Avian Collisions with Power Lines* by the U.S. Fish and Wildlife Service and the APLIC (APLIC 2012).

If construction activities are scheduled to commence during the breeding season for western burrowing owls (February 1 through August 31), a qualified biologist will conduct pre-construction surveys within 30 days prior to construction for Western Burrowing Owls within suitable habitat. All areas within 250 feet of ground disturbing activities will be surveyed, per USFWS 2007 Burrowing Owl guidance.

Lighting would be designed to provide the minimum illumination needed to achieve O&M objectives and not emit excessive light to the night sky by installing light absorbing shields on top of all light fixtures and focusing desired light in a downward direction.

A Facility Decommissioning Plan would be finalized and provided to the Band, BIA, and BLM addressing the Project facilities under their respective management. This plan would be submitted for approval at least six months prior to commencement of site closure activities.

Potential closure activities could include re-grading and restoration of original site contours and re-vegetation of areas disturbed by closure activities in accordance with the Site Reclamation Plan. Revegetation seed mixes will be composed of native plant species.

Measures to mitigate potential impacts to Gila monsters would be followed and NDOW Gila monster guidance would be followed.

Worker environmental awareness training will be required for all maintenance and operation staff for the duration of the project. In addition to an overview of minimization measures for all biological resources, the training will include specific best management practices designed to reduce effects to the desert tortoise.

Prior to construction, temporary tortoise-proof fencing will be installed around the boundary of the solar facility. Biological monitors or biologists approved to handle and relocate tortoises will be present during fence installation to relocate all tortoises in harm's way to outside the permitted ROW.

Fence specifications will be agreed to in consultation with USFWS. Tortoise guards will be placed at all road access points where desert tortoise-proof fencing is interrupted to exclude desert tortoises from the project footprint. Gates or tortoise exclusion guards will be installed with minimal ground clearance and shall deter ingress by desert tortoises. Monitoring and maintenance will include regular removal of trash and sediment

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accumulation and restoration of minimal ground clearance between the ground and the bottom of the fence, including re-covering the subsurface portion of the fence if exposed.

The temporary desert tortoise fencing will be inspected monthly during periods of high tortoise activity (April 1 – May 31 and September 1 – October 31).

The Applicant will implement the Raven Management Plan (BLM 2014) to be provided by the BLM for portions of the Proposed Project on BLM-administered lands. The Applicant will inspect transmission structures annually for nesting ravens and other predatory birds and report observations of nests to the Service, BLM, and BIA.

No overnight hazards to desert tortoises (e.g., auger holes, trenches, pits, or other steep-sided depressions) will be left unfenced or uncovered; such hazards will be eliminated each day prior to the work crew and monitoring biologists leaving the site. All excavations will be inspected for trapped desert tortoises at the beginning, middle, and end of the workday, at a minimum, but will also be continuously monitored by a biological monitor or authorized biologist.

Any and all additional measures identified in the Biological Opinion to mitigate impacts to sensitive species will be implemented as prescribed.

**CULTURAL RESOURCES**

Archaeological and Tribal monitors will be employed during construction in the vicinity of cultural resource sites to ensure that cultural resources are not directly affected by the project.

Fencing or other protective barriers will be placed to protect historic properties during construction as needed.

Should any unrecorded cultural resources be discovered during construction, all activities within the immediate area of discovery would cease. The Chairman of the Moapa Tribal Council, or his or her designated representative, and the BIA Regional Archeologist shall be notified immediately and, consulting with BLM and SHPO as appropriate, would make arrangements to assess the nature of discovered cultural resources and, if feasible, avoid the resources to the fullest extent practicable. If avoidance is not possible, the Applicant would minimize and mitigate any damages to any unanticipated discoveries before construction would be allowed resume in the immediate vicinity of the find/discovery.

**TRANSPORTATION**

A Traffic Management Plan would be finalized and approved by the Tribe and BIA that identifies BMPs to minimize construction-related traffic impacts.

Deliveries of materials would be scheduled for off-peak hours, when practical, to reduce effects during periods of peak traffic.

Truck traffic would be phased throughout construction, as much as practical.

Carpooling or mass transportation options for construction workers would be encouraged.

Before construction, the Applicant and agency representatives will document the pre-construction condition of the access route, noting any existing damage. After construction, any damage to public roads will be repaired to the road's pre-construction condition, as determined by the agency representatives.

**PUBLIC HEALTH AND SAFETY**

The Project would be designed in accordance with all applicable federal and industrial standards including the American Society of Mechanical Engineers (ASME), National Electrical Safety Code (NEESC), International Energy Conservation Code (IECC), International Building Code (IBC), Uniform Plumbing Code (UPC), Uniform Mechanical Code (UMC), the National Fire Protection Association (NFPA) standards, and OSHA regulations.

All employees and contractors would be required to adhere to appropriate health and safety plans and emergency response plans. All contractors would be required to maintain and carry health and safety materials including the MSDS of hazardous materials used on site.

An Emergency Response Plan would be developed and implemented based on the results of a comprehensive facility hazard analysis.

A Hazardous Waste Storage Plan would describe the storage, transportation, and handling of wastes and emphasize the recycling of construction wastes where possible.



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The Project would coordinate with the holders of all existing ROWs that would be crossed or paralleled by the Project ROWs (transmission lines and access roads) to minimize encroachment conflicts and possible effects to existing transmission lines and pipelines.

The Project would incorporate measures to reduce potential worker exposure to the *Coccidioides immitis* fungus that can cause Valley Fever.

## **Appendix D**

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### Plan of Development (POD)

**Preliminary Draft  
PLAN OF DEVELOPMENT  
YATHUMB OFF-SITE ROWs  
Casefile No. N-100728**

**Clark County, Nevada**

*Project Applicant:*

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*Submitted to:*



**Bureau of Land Management**  
Las Vegas Field Office  
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*Updated  
December 2021*

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# 1.0 PURPOSE AND NEED FOR FACILITY

## Introduction

Yahthumb Solar Project, LLC (the Applicant) proposes to construct a solar generation project on the Moapa River Indian Reservation (Reservation) in Clark County, Nevada. As part of the Yahthumb Solar Project, off-site facilities would be developed on lands under Bureau of Land Management (BLM) jurisdiction. These include an interconnection (gen-tie) transmission line between a new Yahthumb substation located on the Yahthumb Solar Project site and the existing Reid-Gardner Substation, new and existing access roads, and a temporary water pipeline. In addition, **Figure 1-1** shows the general location of the proposed Project.

Portion of the off-site facilities would be built in the designated utility corridor on the Reservation that is managed by the BLM, on BLM-managed federal land, and on private unincorporated land near the existing substation. BLM's management responsibility for the designated utility corridor on the Reservation was provided in the Moapa Corridor, P.L. 96-491.

The Yahthumb gen-tie would be up to approximately 10.3 miles long with about 9.3 miles on BLM-managed lands. The gen-tie line would be constructed as a single-circuit 230 kilovolt (kV) line. Nearly all the proposed route for the gen-tie across BLM-managed lands will follow the same route and be adjacent to the existing Eagle Shadow Mountain (ESM) Gen-Tie line (NVN 97443). Components of the proposed Project on BLM-administered lands would include transmission line structures, electrical conductors and communication lines strung between structures, roads to access transmission structures and the solar project, and a temporary water pipeline that supply construction water to the solar project.

This Plan of Development (POD) has been prepared for the Las Vegas Field Office of the BLM to identify the proposed location, construction activities, access, and other features of the portion of the Project located on federal lands and communicate the Project plan for non-federal lands as well.

## Applicant's Interests and Objectives for the Project

The purpose of the Project is to facilitate the development of the Yahthumb Solar Project and transmission of the energy produced at the Project to the regional electrical grid at the Reid-Gardner Substation. The need for the Project is to:

- Provide a means of conveying up to 138 MWac of renewable energy to the electric grid to meet increasing demand for generation;
- To complement the Applicant's dedication to environmental stewardship through environmentally sensitive project siting;
- To assist the Moapa Band of Paiutes (MBOP) by promoting economic development and bring living-wage jobs to the region throughout the life of the Proposed Project.
- Help Nevada and surrounding states meet their renewable energy goals
- Be consistent with BLM goals to facilitate the development of renewable energy.

## 2.0 PROPOSED ROW LOCATION

The Yahthumb Solar Project solar energy generation facilities would be located entirely on Reservation lands. The solar site is located west of Interstate-15 and one mile northeast of the ESM solar site. The proposed Project (i.e., ROWs for gen-tie line, access roads, and temporary water pipeline) would be located on a combination of MBOP lands within the designated utility corridor and federal lands administered by the BLM. The northernmost portion of the gen-tie line near the Reid-Gardner Substation would be located on private lands. **Figure 2-1** shows the location of the proposed route for the Yahthumb gen-tie line, the main access route to the solar site, and proposed temporary water pipeline.

On BLM-managed lands, the proposed permanent and temporary right-of-way (ROW) for the gen-tie line would be 75 feet wide. The existing roads used to access the solar site are approximately 20 feet wide and the existing roads to access the gen-tie line are approximately 12 feet wide. The ROW for the temporary water pipeline would be 20 feet. The term of the ROW for all Project features is requested to be for 50 years and the Project would operate year-round.

### Gen-Tie Origin and Destination

The proposed gen-tie route was developed to follow the existing ESM gen-tie line ROW to the extent possible and take advantage of / utilize existing access roads along the entire route to minimize impacts. The proposed Project would originate at the Yahthumb Solar Project substation on tribal lands held in trust by the BIA for the MBOP located adjacent to the BLM-administered Moapa Utility Corridor. The gen-tie ROW would proceed eastward from the Yahthumb Solar Project substation and enter BLM-administered land in Section 31, Township 16S, Range 65E, Mount Diablo Base Meridian. From there the route would proceed east and then northeast on BLM-administered land within the utility corridor for approximately 7.0 miles and cross up to 2.3 miles of BLM federal lands and 1.0 miles of private land near its termination at the Reid-Gardner Substation on private land in NW¼SW¼Section 5, Township 15S, Range 66E.

The Applicant would be responsible for constructing the proposed gen-tie from the proposed Yahthumb Substation to a point-of-change-of-ownership (POCO) structure located on or near private land owned by NV Energy (NVE). From the POCO structure, the remaining segment of the line would be constructed by NVE to the point of interconnection terminal within the existing Reid-Gardner Substation.

The ROW for the proposed route for the Project on BLM-administered land within the utility corridor would be approximately 7.0 miles long and on BLM-managed federal lands would be up to approximately 2.3 miles long. Access along the entire length of this route would be provided via existing roads associated with the recently constructed ESM gen-tie line from which short spur roads would be built where needed to access each new structure location. The Project is proposing a 75-foot-wide ROW on federally-managed lands. The proposed Project would total approximately 129 acres for the permanent transmission ROW on BLM-managed land (102 acres within the corridor and 27 acres on BLM).

All new permanent Project disturbance including access roads would be located within the proposed 75-foot ROW. Temporary disturbance would occur within the ROW at the work areas at each structure location and at some locations outside the ROW to accommodate pulling and tensioning sites and equipment laydown areas. The temporary areas needed during construction for equipment storage and material lay-down would include two lay-down yards – one near each end of the Project on tribal, BLM,

or private lands. The permanent and temporary disturbance areas are identified for the Project in the mapbook in Appendix B and described in Section 6.

In addition to the proposed gen-tie ROW, the proposed Project would require ROWs for use of existing access roads - one for use of the existing access roads that would be used as the primary access for the solar facility and the another for use of new and existing access roads outside of the proposed gen-tie ROW to facilitate construction and operation of the gen-tie. The Project would also require a ROW for a temporary water pipeline that would be used to deliver water to the site during construction.

### **Legal Description**

The legal description of the proposed gen-tie route, existing and proposed roads, and temporary water pipeline are provided in **Appendix A** along with the acreages / dimensions of the project components.

### **Major Users Along the Gen-Tie Route**

Existing linear utility uses such as electric transmission lines, a high-pressure natural gas pipeline, and associated access roads parallel the proposed gen-tie route on BLM-administered lands. There are no active grazing, mining, industrial, or agricultural uses near the proposed route.

## 3.0 FACILITY DESIGN FACTORS

The major components of the Project include gen-tie line facilities, roads, and communications facilities. Typical design characteristics for the Project are listed in **Table 3-1** with more detail on Project design in the following sections. Final design characteristics will be determined in the detailed design phase of the Project prior to construction.

### Gen-Tie Line

The proposed Project would be built as a single-circuit 230kV line and would use single steel pole structures. The structures would be made of self-weathering or galvanized steel. Illustrations of the typical 230kV steel pole structures that could be used for this Project are provided in **Figure 3-1**.

Structure heights would be approximately 90 to 150 feet varying with terrain and associated span lengths. The average span length is expected to be approximately 700 to 900 feet, resulting in about 6 to 8 structures per mile of line.

Each single pole would be installed on drilled piers with anchor bolts which would be typically 8 feet in diameter. The foundation depths and diameters would depend on prevailing soil properties. A geotechnical study would be conducted prior to final foundation designs.

Each circuit would have two or three conductor bundles per phase. Each conductor would be a 1.5 to 2-inch diameter ACSR conductor. The transmission line would also have two shield wires mounted on the top of the structures. One or both of them would be composed of extra high strength steel wire. It is possible that one of the shield wires could include an optical ground wire (OPGW) constructed of aluminum and steel core which would carry glass fibers within its core. This fiber cable would provide communications for the Project between the two substations. If fiber is not included in the shield wire, a separate fiber cable would be strung on the structures below the conductors to provide the needed communications link.



**Table 3-1  
TYPICAL GEN-TIE DESIGN CHARACTERISTICS**

<b>Transmission Line Facilities</b>	
Line length	Up to approximately 10.3 miles (approximately 9.3 miles on BLM-managed land for proposed route)
Type of Structure	Single -circuit single steel poles
Structure height	90 to 150 feet
Span length	700 to 900 feet
Number of structures per mile	Approximately 6 to 8
Right-of-way width	75 feet on BLM-managed land
Access roads	Short spurs from existing ESM access roads where adjacent, mostly located within ROW for line otherwise
Voltage	230 kilovolts (kV)
Circuit configuration	Single circuit (three phases per circuit)
Conductor size	Three 1.5 to 2-inch ACSR conductors per phase
Minimum ground clearance of conductor	25 feet at expected operating temperature
Pole foundation diameter	8 feet
<b>Substation Facilities</b>	
New Yahthumb Substation	On Reservation land
Existing Reid-Gardner Substation	On private land
<b>Communications Facilities</b>	
Systems	Digital Radio System, microwave, VHF/UHF radio, and Fiber Optic Ground Wire (OPGW)
Functions	Communications for fault detection, line protection, SCADA, and two-way voice communication.

## **4.0 ADDITIONAL COMPONENTS**

### **Solar Facility Access Roads**

Primary access to the Yahthumb site would be provided via I-15 to the existing Ute Road on the Reservation. This existing road crosses the utility corridor and branches to provide access to the site at two locations. It could be upgraded where needed but upgrades are not expected within the utility corridor.

Secondary site access would be provided via an existing road within the designated utility corridor that would also be upgraded as needed but upgrades are not expected.

### **Gen-Tie Service Roads / Spur Roads**

On BLM-managed lands, the Yahthumb gen-tie line was designed to provide the smallest possible ground disturbance footprint by utilizing the existing roads associated with the recently constructed ESM gen-tie which this proposed line parallels. Short spur roads would be built to each new structure location from the existing ESM roads / structure locations as shown in the mapbook in Appendix B. Spur roads would be 12 feet wide and would be mostly located within the 75-foot ROW for the gen-tie line. Because the existing roads have been recently developed/upgraded for the recently completed ESM gen-tie construction, they are not expected to require blading and improvements to facilitate construction of this line.

New and existing gen-tie access roads outside of the proposed 75-foot-wide gen-tie ROW would also require coverage under the ROW grant. The total length of the approximately 12-foot-wide new spur roads and existing access roads outside of the 75-foot-wide gen-tie ROW is approximately 16 miles.

### **Point of Change of Ownership Structure**

The Applicant would be responsible for constructing the gen-tie from the Yahthumb Substation to the Point of change in ownership (POCO) dead-end structure and 230-kV switch (located in Lot 2, Section 7, Township 15S, Range 66E). From the POCO structure, the remaining transmission structures would be constructed by NV Energy on NVE-owned lands and continue to the point of interconnection terminal within the existing 230-kV Reid Gardner Substation. The BLM ROW required from the POCO structure to the next structure on NV Energy land would be about 0.10 miles long.

### **Substations**

The proposed gen-tie line would include two substations – the proposed new Yahthumb Substation which would be the southern terminus of the Project and the existing Reid-Gardner Substation which would be the northern terminus of the Project.

The proposed Yahthumb Substation would be located on the Yahthumb Solar Project site on tribal lands on the Reservation. It would be a 34.5kV / 230kV substation where energy collected from the proposed solar project would be stepped up to transmission voltage (230kV).

Within the Reid-Gardner Substation, dedicated relays, and supervisory control and data acquisition required for protection equipment and connection to dual fiberfeeds, would be installed for the gen-tie.

All work would be done inside the fence at this substation.

### **Communication Facilities**

Telecommunications would be installed at the Yahthumb Substation consisting of a remote terminal unit (RTU) and necessary communications equipment for the Yahthumb Solar Project. This would include a multiplexer on the communications line (T-1 line) and miscellaneous communication cables and link equipment, as required. Support equipment (i.e., metering class current transformers and potential transformers) would be installed inside the Yahthumb Substation to facilitate metering of all applicable energy outputs. All of this equipment would be on tribal land.

### **Temporary Water Pipeline**

If the water needed for construction is provided from the Moapa Band's existing well located south of the solar project site, a temporary water pipeline could be installed to transport that water to the site. This pipeline would be approximately 4.7 miles long, eight to 12 inches in diameter, and installed on the ground surface adjacent to the existing gen-tie service road for the ESM gen-tie. The temporary ROW for this pipeline would be 20 feet wide. Following the completion of construction, the pipeline would be removed.

## 5.0 GOVERNMENT AGENCIES INVOLVED

The proposed route for the Project would cross land on the Reservation within the utility corridor and federal land administered by the BLM and private land near the Reid-Gardner Substation. Federal, state, and local agencies and tribes would be consulted during the National Environmental Policy Act (NEPA) analysis of the Project. In addition to the BLM and BIA, those agencies with potential jurisdiction over this Project would be contacted to obtain necessary permits and approvals. These agencies are identified in **Table 5-1**.

<b>TABLE 5-1 GOVERNMENT AGENCIES / JURISDICTION</b>		
<b>Agency/Department</b>	<b>Permit/Approval</b>	<b>Action</b>
<b>Federal Agencies</b>		
Bureau of Indian Affairs (BIA)	Solar lease, ROWs on tribal land	Lead Federal agency for National Environmental Policy Act, Section 106 Consultation and Endangered Species Act (ESA) Consultation.
Bureau of Land Management	ROWs for new and existing facilities (gen-tie, roads) within utility corridor on Reservation and federal land	Act as cooperating agency on the NEPA document
U.S. Fish and Wildlife Service (USFWS)	Biological Assessment, Section 7 Consultation, Biological Opinion (ESA)	Potential effect on federally listed endangered/threatened/proposed species
Department of Air Force (DAF)	Consultation	Confirmation of no effect on military training airspace.
US Army Corps of Engineers (USACE)	Clean Water Act	404 permit, if needed
Environmental Protection Agency (EPA)		Review of impacts to air and water quality
Advisory Council on Historic Preservation (ACHP)	Section 106 Consultation, National Historic Preservation Act (NHPA)	Opportunity to comment if Project may affect cultural resources listed or eligible for listing on National Register of Historic Places.
<b>Tribal</b>		
Moapa Band of Paiutes	Compliance with Tribal Environmental Policy Ordinance	
<b>State Agencies</b>		
Public Utilities Commission of Nevada	Utilities Environmental Protection Act – Permit to Construct	Required for greater than 70-MW renewable energy facility or a 200-kV transmission line.
Nevada Division of Environmental Protection (NDEP)	General Construction Activity Stormwater Permit	Stormwater discharges associated with construction activity for projects in hydrographic basins containing Waters of the U.S.

**TABLE 5-1  
GOVERNMENT AGENCIES / JURISDICTION**

<b>Agency/Department</b>	<b>Permit/Approval</b>	<b>Action</b>
NDEP	Groundwater Discharge Permit	Needed if non-potable water is used for dust control during construction.
Nevada State Historic Preservation Office	Section 106 Consultation, NHPA	Consultation regarding activities potentially affecting cultural resources.
Nevada Department of Wildlife (NDOW)	NRS 701.600-701.640 Energy Review Program Participation	Cost recovery for NDOW consultation regarding wildlife impacts.
NDOW	Special Purpose Permit	Needed for handling tortoises.
<b>Local Agencies</b>		
Clark County	Special Use Permit	For non-conforming uses within County.
Clark County Department of Air Quality	Dust control permit	Dust control during construction.

## 6.0 CONSTRUCTION OF FACILITIES

This section describes the construction process and methods that would be employed to develop the Project. Construction is anticipated to proceed in a sequential manner along the line that is graphically depicted in **Figure 6-1**. The construction and installation of the transmission line would generally be performed using the proposed construction techniques discussed in the following subsections. Any modifications to the proposed construction techniques that arise during construction on federal lands would be approved by a variance, as would be outlined in a Construction and Environmental Compliance Monitoring Plan.

**Table 6-1** shows the acres of temporary and permanent impacts that would result from development of the Project ROWs on BLM-managed land. The construction activities and areas of potential impact would be limited primarily to access roads, spur roads, structure locations, lay-down yards, pull and splicing sites, and the new substation. The proposed locations of the project components and proposed construction areas are included in the detailed mapbook included in **Appendix B**.

Several standard mitigation and best management practices would be employed by the Applicant as part of the Project. A comprehensive list of these Applicant Design Features (ADFs) is included in **Section 7** of this POD identifying those measures that would be applied to the Project by the Applicant to avoid or reduce resource impacts.

Some of the ADFs would be applied to specific areas where needed (where a specific type of resource exists). In these cases, the locations of these geographically specific measures would be shown on the detailed design drawings prepared prior to construction.

Project Feature	Temporary Disturbance		Permanent Disturbance	
	BLM-administered Corridor on Reservation	BLM	BLM-administered Corridor on Reservation	BLM
New Gen-Tie Spur Roads and Transmission Structure turn-arounds	4.23 acres	1.88 acres	5.20 acres	2.04 acres
Gen-Tie Structure WorkArea	16.86 acres	5.32 acres	0 acres	0 acres
Wire Pulling and Tensioning Sites	6.43 acres	3.61 acres	0 acres	0 acres
Temporary Water Pipeline	10.28 acres	0 acres	0 acres	0 acres
<i>Total</i>	<i>37.80 acres</i>	<i>10.81 acres</i>	<i>5.20 acres</i>	<i>2.04 acres</i>

## **Pre-Construction Surveys and Standards**

### **Environmental Pre-Construction Surveys**

Environmental resource surveys would be conducted as part of the NEPA process for the Project. In addition, the final NEPA document would identify any additional pre-construction resource clearance surveys for biological and cultural resources that would be conducted prior to the start of construction. If resources are encountered during the pre-construction surveys or during construction, appropriate measures would be implemented at that time to minimize any potential impact.

Environmental resource surveys would be conducted by qualified resource specialists. Specifically, qualified biologists will evaluate the biological resources and sensitive species for analysis. The details of these surveys would be coordinated with the BLM, BIA, USFWS, and NDOW as needed. Further details regarding required pre-construction environmental surveys would be specified in the final NEPA document, ROW stipulations, and conditions in the Biological Opinion (BO).

Class III pedestrian surveys for cultural resources would be conducted by qualified resource specialists during the NEPA process and in accordance with a cultural resources plan. The survey area for this effort (Area of Potential Effect or APE) would include sufficient buffer to ensure all potentially disturbed areas are evaluated. Cultural plans would be developed that include monitoring and discovery processes identified in compliance with Section 106 of the NHPA.

### **Geotechnical Pre-Construction Surveys**

A detailed geotechnical field survey would be conducted as part of design and engineering prior to construction. The purpose of the field geotechnical program will be to observe subsurface conditions and obtain samples of site soils for laboratory testing and classification with results from the analyses helping determine the foundation design for the transmission structures. Because this work will focus on the transmission structure locations, all associated disturbance would be located within the proposed 200-foot ROW. It is anticipated that the geotechnical field survey for the proposed Project would take place during development of the NEPA document and authorized through issuance of a Categorical Exclusion.

A detailed field plan for the geotechnical field program would be provided to BLM for approval prior to implementation. Borings would be obtained typically using a truck-mounted auger. No core drilling of rock would be required and the need for drilling fluids or water is not anticipated.

Drill crews would utilize the existing roads to access each boring site. Overland drive and crush techniques will be used where new access is needed. The need for grading at these locations is not anticipated. The boring holes would be backfilled with the cuttings.

The cultural and biological resources surveys conducted for the line would be used to ensure that potential impacts to cultural or biological resources are avoided for each boring location prior to any ground disturbing activities.

### **Construction Crew Training and Safety**

Prior to construction, all contractors, subcontractors and Project personnel would undergo an

environmental training program to become familiarized with construction requirements in the POD, the ROW, and any Temporary Use Permits (TUPs). All contractors and company personnel would be required to attend this training prior to gaining access to the ROW. This training will familiarize participants with required environmental protection measures outlined in a Construction and Environmental Compliance Monitoring Plan that would be developed in consultation with BLM, BIA and other agencies as needed.

Additionally, safety training would be mandatory for all Project personnel (e.g., supervisors, inspectors, surveyors, employees, construction engineers, contractors, contractor's employees, and subcontractors) prior to performing any work on-site. Team members would attend daily construction tailboards, detailing specific safety hazards for all work locations, acceptable Personal Protective Equipment (PPE), work location awareness and communication of unsafe work practices. All team members will be required to wear appropriate PPE while on-site. A detailed Health and Safety Plan developed and approved prior to construction will be kept on-site to be used during training.

Despite best efforts, accidents, acts of nature, and other emergency situations can occur. Effective preparations for emergency and response can reduce injuries, prevent or minimize environmental impacts, protect employees and the community, reduce asset losses, and minimize downtime. A detailed Emergency Preparedness and Response Plan would be developed and kept on site to address emergency protocols.

All applicable fire laws and regulations would be observed during construction and BLM and reclamation fire safety standards would be followed. All personnel would be advised of their responsibilities under these requirements, including taking practical measures to report and suppress fires. The Fire Prevention and Response Plan would be developed in consultation with BLM and BIA that provides the required detail on fire safety procedures.

### **Transmission Line Surveying, Flagging, and Staking**

Prior to construction, pre-construction engineering survey work would be conducted locating the centerline, structure center hubs, ROW boundaries, and access roads. All these features would be staked in the field and no paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction limits. After the Project components have been marked in the field, any required pre-construction environmental field surveys would be conducted as necessary. Prior to the initiation of any pre-construction surveys, the necessary survey permits for federal land and rights-of-entry to privately owned land would be obtained.

Any sensitive resources within the planned work areas would be flagged so they can be avoided or appropriately dealt with during construction as described below.



## **Construction**

**Figure 6-1** shows the sequence of typical construction activities required for the completion of transmission line construction. The primary steps are described below.

### **Lay-down Yards**

Construction of the transmission line would begin with the establishment of lay-down yards, which would be required for storing materials, construction equipment, vehicles and in some cases as a show-up yard for the construction crews. The Project would likely have two lay-down yards – one at each end of the Project. These areas would each require approximately 4 acres and they would be located on tribal, BLM, or private lands.

Vegetation would be cleared in these areas and possibly graded in some areas. Unless otherwise directed by the landowner, the lay-down yard would be restored following construction.

### **Access to and along the ROW (Permanent and Temporary)**

Access to the portions of the line on federal lands would be provided by existing access roads where no upgrades are expected to be required. These existing access roads are located both within and outside the proposed ROW.

Access to each new structure location would be provided by short spur roads from the existing access roads. These spur roads would be located within the proposed 75-foot ROW. These spur roads would be up to approximately 12 feet wide. Roads would be constructed in accordance with BLM and/or other relevant standards. The proposed locations of these roads are shown in Appendix B of this POD.

If affected, fences and gates may be built or replaced as required by the land manager or landowner. If cattleguards, fences, and gates are damaged, they would be repaired or replaced to their original condition as required. Temporary gates would be installed only with the permission of the land manager or landowner.

After Project construction, existing and new (spur) permanent access roads would be used by maintenance crews and vehicles for inspection and maintenance activities.

### **Structure Site Clearing, Foundation Excavation, and Foundation Installation**

Structure sites would be located 700 to 900 feet apart. Where the line parallels the existing ESM gen-tie line, the new structures would be located adjacent to the existing structures where possible to best utilize the terrain and existing access. The locations of proposed structure sites on federal lands are shown in Appendix B.

Vegetation clearing and ground disturbance would be required at each structure site for excavation of holes and pouring of concrete foundations. Each structure location would be cleared of vegetation, used for construction, and remain available for future line maintenance. Structure sites will only be graded if necessary. Each structure site would be approximately 75 feet by 200 feet in size resulting in approximately 0.34 acre of temporary disturbance per structure site. These sites would be smaller where

needed if limited workspace is available.

Foundation excavations would be made using mechanized equipment, with steel poles requiring one 8-foot diameter hole. Structure foundation excavations would be made with power drilling equipment. A vehicle-mounted power auger or backhoe would be used to excavate the structure foundations. In rocky areas, the foundation holes would be excavated by drilling. Although not expected, in some instances blasting could be necessary because of the specific geologic conditions. Further details on blasting procedures and safeguards would be included in a Blasting Plan that would be provided prior to construction if needed. Foundation holes left open or unguarded would be covered to protect the public and wildlife. Additionally, any holes left open would be cleared by a monitor to ensure any trapped wildlife are removed before work resumes.

Foundations would be installed by placing reinforced steel and transmission structure steel components into each foundation hole, positioning the steel components, and encasing them in concrete. Excess spoil material would be used for fill where suitable and any remaining soil would be spread on the access road.

Water would be used for soil compaction and dust abatement at each structure site and along access roads, as needed. Water for footer construction and dust abatement would be obtained from local water sources and trucked to the construction area.

### **Structure Assembly and Erection**

Structural steel components and associated hardware would be transported from the lay-down yards to each structure site by truck. Steel structure sections would be delivered to structure locations where they would be fastened together to form a complete structure and hoisted into place by a large crane. At each structure site, a work area of approximately 75 feet by 200 feet would be required for the structure foundation locations, structure assembly, and the necessary crane maneuvers. The work area would be cleared of vegetation only to the extent necessary. Concrete for use in constructing foundations would be dispensed from concrete mixer trucks. After line construction, all pads not needed for future maintenance would be restored to the greatest extent possible and revegetated where required.

### **Conductor Installation**

After the structures are erected, insulators, hardware, and stringing sheaves would be delivered to each structure site. The structures would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position.

Multiple pulling and tensions sites would be required for installing the conductors on the transmission structures. Pulling and tension sites would be approximately 75 feet by 500 feet and would be located within and adjacent to the gen-tie ROW. Conductors would be strung between transmission structures with heavy duty trucks and a telescoping boom lift. Pilot lines would be pulled (strung) from structure to structure either using helicopters or pulling equipment and threaded through the stringing sheaves at each structure. Following pilot lines, stronger line with a greater diameter would be attached to conductors to pull them onto structures. This process would be repeated until the ground wire or conductor is pulled through all sheaves.

The shield wire (and/or OPGW) and conductors would be strung using powered pulling equipment at one end and powered braking or equipment tensioning at the other end of each conductor stringing segment.

There would be no blading at pull sites if the terrain is sufficiently level. Pull site locations will be confirmed during final design.

### **Helicopter Use**

As stated above, helicopters could possibly be used to pull in pilot lines. If helicopters are determined to be necessary, it is anticipated that one of the lay-down yards would be used for helicopter staging if needed. More details regarding helicopter use would be included in a Helicopter Flight and Safety Plan developed prior to construction. The construction contractor would also develop a detailed helicopter plan specifically for each area where they would be proposed for use.

### **Construction Workforce and Schedule**

The Project would be constructed primarily by contract personnel with the Applicant responsible for Project administration and construction review. The estimated number of temporary workers and types of equipment required to construct the proposed transmission lines are summarized in **Table 6-2**.

Construction of the proposed Project could include multiple construction crews working simultaneously at various locations. The typical work week would be approximately 10 hours per day, six days per week. If time constraints occur or a more aggressive production schedule is required, construction could start at two or more points concurrently.

The total length of time for the transmission line construction is estimated to be 9 to 12 months. A detailed transmission construction schedule would be developed that would include the breakdown of expected personnel and daily average run time per piece of construction equipment used for construction.

### **Water Use for Construction**

The Project would use water for dust control and for assisting with large ground bores for concrete foundations during construction. For dust control in the Project's geographical location, dust control would require application of water spread out over up to 12 months. For boring foundations, some material conditions could require the addition of water to assist the auger. All disposal of water used for construction purposes will be per any local, state, and federal rules and regulations.

Water would be sourced and purchased from local providers at the most local site possible and drawing that water from the locations the local entities specifically require. It is understood that there are multiple locations throughout the Project area where water can be accessed.

### **Industrial Waste and Toxic Substances**

Petroleum products such as gasoline, diesel fuel, crankcase oil, lubricants, and cleaning solvents would be present within the Project ROW and temporary work areas during construction. These products would be used to fuel, lubricate, and clean vehicles and equipment, and would be transported in approved trucks or containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents. These materials would not be drained onto the ground or into drainage areas.

Totally enclosed containment would be provided for all hazardous waste. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous

materials, would be removed to a disposal facility authorized to accept such materials.

A Hazardous Waste Management and Spill Prevention Plan would be developed for the Project and ultimately the construction contractor will provide the final Plan to BLM for approval prior to construction. In the event of a hazardous materials spill, notification and clean-up would be undertaken by construction contractor’s certified personnel in an expeditious manner according to the approved final plan.

It is expected that construction waste will be hauled to a local landfill. There would be haul-off bins at each lay-down yard as needed with scheduled pick-ups from local hauling providers.

## Communications / Roles and Responsibilities

A Field Contact Representative would be designated by the Project during construction and would be responsible for ensuring compliance with all mitigation measures, ADFs, and permit conditions. This would include all terms and conditions in permits or approvals from all federal, state, and local agencies.

Personnel from permitting agencies would periodically inspect the Project to verify compliance with or request information from the construction contractor regarding compliance with laws, regulations, and Project permits. The Applicant would be responsible for responding to requests from permitting agencies and submitting the permits and authorizations according to Project requirements. These roles and responsibilities would be described in detail in a Construction and Environmental Compliance Monitoring Plan developed and finalized prior to construction.

TABLE 6-2 ESTIMATED PERSONNEL AND EQUIPMENT FOR TRANSMISSION LINE CONSTRUCTION			
Activity	Equipment Type	Pieces of Equipment	# of People
Material/Yard / Receiving / Distribution (two yards)	3/4-ton Pickup	4	8
	10,000 R/T Forklift	2	
	50-ton Crane	2	
	Tractor Trailer (flatbed)	3	
	20-ton Boom Truck	2	
	100-ton Crane	0	
Survey (Construction Staking)	1/2-ton Pickup	2	4
	ATVs	4	
Soil Borings	3/4-ton Pickup	2	6
	Drill Rig	2	
ROW Clearing	3/4-ton Pickup	4	4
	Chainsaw	4	
	Hydro Axe	1	
Roads and Access	1-ton Pickup	2	6
	Cat D-6	1	
	Grader	1	
	Semi w/Dump Trailer	1	
	Water Truck	3	
Foundations	1/2-ton Pickup	3	20
	1-ton Pickup	3	
	Drill Rig	3	
	Loader/Backhoe	3	

**TABLE 6-2  
ESTIMATED PERSONNEL AND EQUIPMENT FOR TRANSMISSION LINE CONSTRUCTION**

Activity	Equipment Type	Pieces of Equipment	# of People
	Boom Truck	3	
	Concrete Truck	3	
	Generator	3	
	Cat D-6	3	
Structure Assembly H-frame	1/2-ton Pickup	3	16
	1-ton Line Truck	3	
	40-ton Boom Truck	3	
	Air Compressor	3	
	30-ton R/T Crane	3	
Structure Assembly Tubular	1/2-ton Pickup	1	8
	1-ton Flatbed Truck	1	
	Air Compressor	1	
	50-ton R/T Crane	1	
Structure Erection (H-frame)	1/2-ton Pickup	1	10
	1-ton Flatbed Truck	1	
	200-ton Crane	2	
	150ft Bucket/Boom Truck	2	
	Air Compressor	1	
Structure Erection (Tubular)	1/2-ton Pickup	1	10
	1-ton Flatbed Truck	1	
	200-ton Crane	1	
	150ft Bucket/Boom Truck	1	
	Air Compressor	2	
Wire Pulling (Conductor, Overhead Ground Wire, OPGW)	1-ton Line Truck	2	20
	200-ton Crane	2	
	150ft Bucket/Boom Truck	2	
	Air Compressor	1	
	Cat D-8	3	
	Puller	2	
	Tensioner	2	
	Reel Trailer	2	
Conductor Clipping and Dead ending	1/2-ton Pickup	4	32
	1-ton Line Truck	6	
	Bucket Truck/ Boom w/Basket	4	
Restoration	1/2-ton Pickup	2	4
	Tractor with Disc	1	
	Cat D-4	1	
	Hydro Seed Truck	1	
Contractor Management /Compliance Monitors	1/2-ton Pickup	10	15
	ATV (Inspection)	2	

## 7.0 RESOURCE CONSIDERATIONS

### Description of Site Characteristics / Potential Environmental Issues

#### Realty

Most of the Yahthumb gen-tie under BLM jurisdiction would be located within designated utility corridor on the Reservation. This corridor currently includes at least 12 BLM-authorized linear rights-of-way (ROWs) including the ESM gen-tie that the proposed line would parallel (**Table 7-1**). None of these existing ROWs on BLM-managed land would be crossed by the proposed Yahthumb gen-tie line. Some of the existing roads that would be used for access would cross several of these existing ROWs.

Table 7-1 Authorized Rights-of-Way within BLM Moapa Utility Corridor			
Serial No.	Proponent/Holder	Project	ROW Width
NVN 97443	325MK 8me LLC	ESM Gen-Tie Line	75'
NVN 082385	Holly Energy Partners	UNEV Pipeline	50'
NVN 042581	Kern River Gas Transmission Co	Natural Gas Pipeline	75'
NVN 089176	K-Road Moapa Solar LLC	500 kV Transmission Line	Varies – 100' – 200'
NVN 091072	K-Road Moapa Solar LLC	Road and Drainage	27'
NVN 010683	Los Angeles Department of Water and Power	500 kV Transmission Line	Varies – 200' – 400'
NVN 004790	LADWP / BOR / Nevada Energy	Navajo - McCullough 550 kV	200'
NVN 039815	NV Energy	Pecos - Harrisburg 345 kV Transmission Line	Varies – 150' – 330'
NVN 0061985	NV Energy	230 kV Transmission Line	Varies – 100' – 230'
NVN 0067348	NV Energy	230 kV Transmission Line	100'
NVN 091614	Overton Power District	Arrow Canyon Powerline	50'
NVN 086732	TransWest Express LLC	600 / 500 kV Transmission Line	Varies – 200' – 300'

#### Special or Sensitive Species and Habitats

Portions of the Project are located within potentially suitable habitat for the federally threatened desert tortoise (*Gopherus agassizii*). Construction and operation of the Project could potentially negatively impact individual desert tortoises.

## **Special Land Use Designations**

There are no special land use designations on the lands that would be crossed or directly affected by the Project or in the immediate vicinity.

There are no wilderness or wilderness study areas nor wild and scenic rivers in the area.

## **Visual Resource Management (VRM) Designations**

Visual resource management classes are categories assigned to BLM-managed lands that portray the relative value of the visual resources and the associated visual management objectives. One of four VRM classes, (I, II, III, IV) is assigned to an area. VRM Class I areas have the most valuable visual resources and VRM Class IV areas have the least. The VRM classes guide future land management actions and subsequent site-specific implementation decisions. These designations do not apply to tribal lands.

The very short segment of federal lands managed by the BLM affected by the Yahthumb gen-tie Project are managed as VRM Class IV. The objective for Class IV is to accommodate management activities which require major modifications of the existing character of the landscape. The lands within the designated utility corridor on the Reservation that are managed by BLM are not included in BLM's Resource Management Plan (RMP) for the Las Vegas Field Office but, generally, BLM manages designated utility corridors as VRM Class IV because of the existing and potential future high level of modification to the landscape in these areas.

## **Cultural and Historic Resource Sites and Values**

Cultural resources are defined as buildings, sites, structures, or objects that have historical, architectural, archaeological, cultural, and/or scientific importance. Generally, prehistoric sites across the Great Basin and the greater American Southwest exhibit the presence of humans during the late Pleistocene 15,000 years ago. Around 1,500 years ago, the Ancestral Puebloan inhabitants of the greater southwest came into the vicinity.

A cultural resources records search would be conducted through the State Historic Preservation Officers (SHPO's) Nevada Cultural Resource Information System (NVCRIS) to identify previous cultural resource projects and archaeological sites within the Project Area. A Class III Cultural Resources Inventory would be completed in consultation with the BIA and BLM to identify the cultural resources that occur within the Project's area of potential effect (APE). The APE would include sufficient buffer around the proposed ROW and temporary use areas to ensure all potentially disturbed areas are evaluated. As a result, the APE will be larger than the expected impacts expected to result from the Project.

The resulting information would be utilized by the BIA and BLM to determine project-specific measures necessary to reduce potential impacts to cultural resources. To the extent feasible, significant cultural resources would be avoided and, if they cannot be avoided, appropriate mitigation would be developed.

## **Native American Tribal Concerns**

The BIA, as the lead federal agency for the Yahthumb Solar Project, would conduct government-to-

government consultations with Native American tribes in the region with traditional interests in the area inquiring about potential concerns about the effects of the proposed Project on historic properties or areas of traditional or cultural importance.

### **Hydrology and Water Quality**

There are several ephemeral washes that cross the proposed route for the gen-tie and the existing roads that would be used by the Project. Generally, drainages in the project area ultimately flow east toward the California Wash and onto the Muddy River. It is possible that these drainages could be jurisdictional by the Corps of Engineers under section 404 of the Clean Water Act.

### **Vegetation, Invasive Plants / Noxious Weeds**

General vegetation in the region consists mainly of Sonora-Mojave Creosote bush / White Bursage Desert Scrub. The BLM and the State of Nevada have protections for cactus and yucca species which would apply to the portion of the Project on BLM-managed federal land and private land.

The BLM and BIA also regulate and manage invasive plant species. The BLM and BIA would require development and implementation of a Restoration and Revegetation Plan and an Integrated Weed Management Plan to reduce potential impacts from invasive plants and noxious weed species.

### **Air Quality**

Construction and operation of the Project would result in the generation of dust and tailpipe emissions from vehicle traffic. There would be an increase in dust emissions during construction activities that would be mitigated by the application of best management practices outlined within a Fugitive Dust Plan developed for the portion of the Project on BLM-managed federal land and private land to satisfy BLM and Clark County requirements. A dust plan would also be developed for the portions of the project on tribal land. Disturbed areas would be watered as necessary to suppress dust during construction and operation.

### **Recreation**

As mentioned above, nearly all the BLM-managed lands crossed by the Project are on the Reservation and within the designated utility corridor. The public does not have access to these lands.

### **Socioeconomics**

Socioeconomic impacts generated from the Project would be short-term and generally positive. The Project would create some jobs for the local and regional population during construction.

### **Location Relative to Existing Designated Utility Corridors**

Most of the proposed gen-tie and existing access roads for the Yahthumb Project would be within the Moapa federally designated utility corridor on the Reservation that was established by P.L. 96-491. - approximately 7.0 miles of the 7.5 miles of the route on BLM-managed lands (approximately 93 percent).



## Project Design Features / Mitigation

As stated throughout this POD, the Applicant would develop and implement a variety of mitigation plans and conservation measures to minimize the environmental impacts from construction and operation of the Project. These plans are repeated below and would become part of the Final POD for the Project and will be reviewed and approved by the BLM prior to the initiation of construction:

- Dust Control Plan
- Erosion and Sediment Control Plan / Stormwater Pollution Prevention Plan (SWPPP)
- Spill Prevention, Control, and Countermeasures (SPCC) Plan
- Health and Safety Plan
- Fire Management Plan
- Vegetation Management Plan
- Site Restoration and Revegetation Plan
- Integrated Weed Management Plan
- Desert Tortoise Translocation Plan
- Cultural Resources Unanticipated Discovery Plan
- Traffic Control Plan
- Helicopter Flight and Safety Plan
- Blasting Plan
- Worker Environmental Awareness Plan (WEAP)
- Hazardous Materials Management Plan
- Decommissioning Plan

In addition, several standard mitigation and best management practices are proposed by the Applicant as part of the Project. A comprehensive list of these ADFs is included in **Table 7-2** below identifying those measures that would be applied to the Project by the Applicant to avoid or mitigate resource impacts.

<b>Table 7-2 Applicant-Proposed Mitigation and Best Management Practices (BMPs) YATHUMB GEN-TIE PROJECT</b>	
<b>SOILS / EROSION</b>	
Grading would be minimized to only those areas where necessary to meet the construction and operational requirements of the Project.	
Construction activities will be conducted in compliance with a stormwater pollution prevention plan (SWPPP) that would include BMPs and other erosion-control measures designed to minimize soil erosion and limit sheet flow and downstream sedimentation. The SWPPP would also incorporate adaptive management actions if erosion and sedimentation control measures are found to be insufficient to control surface water at the site.	
To minimize wind erosion, all construction activities shall comply with the Fugitive Dust Control Plan that would be developed and implemented for the proposed Project.	
A Restoration Plan would be implemented as needed to limit impacts to temporary disturbance areas as much as practicable.	
<b>HYDROLOGY / WATER QUALITY</b>	
The number of drainage crossings would be minimized to the extent possible and each would be designed to accommodate adequate flow.	

**Table 7-2**  
**Applicant-Proposed Mitigation and Best Management Practices (BMPs)**  
**YATHUMB GEN-TIE PROJECT**

Post-storm monitoring of erosion and sedimentation would be conducted during construction. If localized gullies were to develop or result in increased rates of erosion and sedimentation, repairs would be made, and erosion and sedimentation control measures would be updated if needed.

Transmission structures (e.g., project substation) will be located outside of major drainages to the extent practical.

A Spill Prevention, Control, and Countermeasure (SPCC) plan would be developed and implemented during construction phase of the Proposed Project. The Plan would also provide for hazardous material spill prevention and clean-up measures, were a spill to occur.

**AIR QUALITY**

The Project would obtain a dust control permit from Clark County for construction activities including any required supplements.

The area of grading and vegetation removal would be limited to only that area required for Project construction and operation.

Ground disturbing activities would be undertaken in accordance with the applicable dust control plan(s) to minimize fugitive dust emissions.

Vehicular speeds on non-paved roads would be limited 25 miles per hour.

Ground disturbing activities would be phased where appropriate to limit the amount of disturbance at any one time.

Water would be applied to disturbed areas to control dust and facilitate soil compaction, where necessary. Approved palliatives would be used to control dust as required.

All paved roads would be kept clean of objectionable amounts of mud, dirt, or debris, as necessary. Gravel or other similar material would be used if needed where non-paved access roads intersect paved roadways to prevent mud and dirt track-out.

Unnecessary idling of equipment would be limited.

**BIOLOGICAL RESOURCES**

Prior to construction, a Weed Management Plan will be developed that includes measures designed to reduce the propagation and spread of designated noxious weeds, undesirable plants, and invasive plant species, or as determined by the agencies (BLM, etc.).

The Applicant will implement controls at ROW entry locations to facilitate weed management and invasive species control in order to minimize infestation to the project site from an outside source.

To minimize activities that attract prey and predators during construction and operations, garbage will be placed in approved containers with lids and removed promptly when full to avoid creating attractive nuisances for wildlife.

All work area boundaries will be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities. All workers, equipment, vehicles, and construction materials shall remain within the ROW, existing roads, and designated areas. Staging areas would be in previously disturbed areas whenever possible.

All transmission towers and poles will be designed to be avian-safe in accordance with the *Suggested Practices for Avian Protection on Power Lines: State of the Art in 2006* (Avian Power Line Interaction Committee [APLIC] 2006) and the Avian Power Line Interaction Committee (APLIC 2006) and *Reducing Avian Collisions with Power Lines* by the U.S. Fish and Wildlife Service and the APLIC (APLIC 2012).

A Decommissioning Plan would be finalized and provided to the BLM at least six months prior to commencement of site closure activities.

Revegetation of areas disturbed by construction activities would be done in accordance with the Site Reclamation Plan. and seed mixes will be composed of native plant species.

Worker environmental awareness training will be required for all maintenance and operation staff for the duration of the project. In addition to an overview of minimization measures for all biological resources, the training will include specific best management practices designed to reduce effects to the desert tortoise.

**Table 7-2**  
**Applicant-Proposed Mitigation and Best Management Practices (BMPs)**  
**YATHUMB GEN-TIE PROJECT**

Biological monitors or biologists approved to handle and relocate tortoises will be present to relocate all tortoises in harm's way to outside the permitted ROW.
The Applicant will implement the Raven Management Plan (BLM 2014) developed by the BLM for portions of the Proposed Project on BLM-administered lands. The Applicant will inspect transmission structures annually for nesting ravens and other predatory birds and report observations of nests to the BLM and the Service.
No overnight hazards to desert tortoises (e.g., auger holes, trenches, pits, or other steep-sided depressions) will be left unfenced or uncovered. Such hazards will be eliminated each day prior to the work crew and monitoring biologists leaving the site. All excavations will be inspected for trapped desert tortoises at the beginning, middle, and end of the workday, at a minimum, but will also be continuously monitored by a biological monitor or authorized biologist.
<b>CULTURAL RESOURCES</b>
Archaeological monitors will be employed during construction in the vicinity of significant cultural resource sites as needed to ensure that cultural resources are not directly affected by the project.
Fencing or other protective barriers will be placed to protect historic properties during construction as needed.
Should any unrecorded and unanticipated cultural resources be discovered during construction, all activities within the immediate area of discovery shall cease. Any unanticipated discoveries of cultural resources or changes to the Project APE would be managed in accordance with an <i>Unanticipated Discoveries Plan</i> that would be developed in consultation with the BLM and SHPO. If avoidance is not possible, the Applicant would minimize and mitigate any damages to any unanticipated discoveries before construction would be allowed resume in the immediate vicinity of the find/discovery.
<b>TRANSPORTATION</b>
A Traffic Management Plan would be finalized and approved by the BLM that identifies BMPs to minimize construction-related traffic impacts.
Deliveries of materials would be scheduled for off-peak hours, when practical, to reduce effects during periods of peak traffic.
Truck traffic would be phased throughout construction, as much as practical.
<b>PUBLIC HEALTH AND SAFETY</b>
The Project would be designed in accordance with all applicable federal and industrial standards including the American Society of Mechanical Engineers (ASME), National Electrical Safety Code (NESC), International Energy Conservation Code (IECC), International Building Code (IBC), the National Fire Protection Association (NFPA) standards, and Occupational Safety and Health Administration (OSHA) regulations.
All employees and contractors would be required to adhere to appropriate health and safety plans and emergency response plans. All contractors would be required to maintain and carry health and safety materials including the MSDS of hazardous materials used on site.
An Emergency Response Plan would be developed and implemented based on the results of a comprehensive Project hazard analysis.
A Hazardous Waste Management Plan would describe the storage, transportation, and handling of wastes and emphasize the recycling of construction wastes where possible.
The Project would coordinate with the holders of all existing ROWs that would be crossed or paralleled by the Project ROWs (transmission lines and access roads) to minimize encroachment conflicts and possible effects to existing transmission lines and pipelines.

## **8.0 STABILIZATION AND REHABILITATION**

This section outlines the actions that would be employed immediately following the completion of construction to ensure Project stabilization and rehabilitation.

### **Reclamation**

Reclamation treatments would be applied to construction-related disturbances to rehabilitate temporary use areas. Reclamation treatments will be included in a detailed Restoration Plan that would be submitted for approval prior to construction. This plan would focus on restoring plant communities and associated wildlife habitat, preventing substantial increases in noxious weeds in the Project area, minimizing Project-related soil erosion, and reducing visual impacts caused by construction activities.

Restoration efforts at temporarily disturbed sites will begin as soon as practical after completing the soil disturbing activities for the entire Project. For sites that may be disturbed again during the construction phase, temporary soil covering, erosion control, and weed monitoring would occur.

Temporarily disturbed areas are limited to the construction laydown areas, temporary roads, the temporary pipeline route, and areas where native vegetation has been left in place and construction equipment has driven over and crushed the vegetation during installation of the of facilities. Where appropriate, graded areas could be recontoured and soils would be de-compacted and the soil surface textured.

Seeding with local and weed-free seed mixes recommended by the Band and BLM would be conducted on suitable areas as necessary during appropriate months following construction. Temporary roads built for construction could be reclaimed or could be maintained for use during the operational life of the Project. The portions of construction roads to be reclaimed would be determined at the end of construction.

All restoration efforts would be implemented as soon as practical after disturbance of a site has concluded and prior to the typical rainy season of late summer and early fall. This will minimize the potential for soil loss and establishment of noxious weeds.

### **Noxious Weed Management**

A Noxious Weed Management Plan would be developed prior to construction that would outline the measures to control noxious weed species during transmission line construction, operation and maintenance as well as reclamation and revegetation of the disturbed areas. Surveys would be conducted in areas disturbed during construction within the construction corridor and along access roads.

### **Erosion Control**

A Stormwater Pollution Prevention Plan (SWPPP) would be developed prior to construction, identifying site-specific erosion control measures that would be implemented to prevent erosion and runoff during and immediately following construction.

## **9.0 OPERATIONS, MAINTENANCE, AND DECOMMISSIONING**

### **Operations**

This section outlines those procedures that would be employed during the operation and maintenance phase of the Project after construction and post-construction restoration has been completed.

Operation and maintenance activities would include all requirements set forth by the Western Energy Coordinating Council (WECC) including activities such as patrol of the lines, climbing inspections, transmission structure (tower or pole) and wire maintenance and repair, routine insulator washing, and repairs of access and spur roads.

The Applicant would keep necessary work areas around all structures clear of vegetation. Also, the height of vegetation along the ROW would be limited so as not to interfere with operation of the line but the need for this is expected to be limited in this environment. The following sections provide details on the anticipated operation and maintenance requirements for the Project.

#### **Transmission Line Safety**

The safety measures implemented during construction for worker protection would be applicable during operation and maintenance and would be detailed in the Health and Safety Plan developed for the Project. The transmission line would be protected with power circuit breakers and related line relay protection equipment. Lightning protection would be provided by overhead ground wires (shield wires or OPGW) along the line. Electrical equipment and fencing at the substation would be grounded. All existing fences, metal gates, pipelines, etc. that cross or are within the transmission line ROW would be grounded to prevent electrical shock.

#### **Transmission Line Emergency Response**

Emergencies are any event requiring immediate response to a condition by Project personnel. These may include but are not limited to car-to-structure contacts; downed transmission line, structures, or equipment failure; fires and explosions; transformer outages and/or outages due to down wire as a result of extreme weather; spills or releases of hazardous materials; sudden loss of power; natural disasters; and serious personal injury. Responding crews would vary in number and equipment needs depending on the size and severity of the emergency. In areas without vehicle access, helicopters may be used to respond quickly to emergencies. A detailed Emergency Preparedness and Response Plan outlining the proposed measures would be developed and submitted for approval prior to the beginning of line operations.

### **Transmission Line Maintenance**

#### **Inspection Patrols and Maintenance Schedule**

Regular inspections would be performed in accordance with the regulatory requirements for transmission facility maintenance. The Project's overhead transmission lines, transmission structures and substations would be inspected for corrosion, equipment misalignment, loose fittings, and other mechanical problems.

Normal maintenance or repairs to conductor or insulator components would not require notification to the BLM unless new ground disturbance is required. Access for this routine repair work would be confined to roads and access designated for this purpose.

In emergencies arising from fire, flood, storms, vandalism or other factors causing or requiring an outage, repair work would be conducted as soon as the damage is detected. Restoration procedures following completion of repair work would be similar to those prescribed for original construction.

### **Insulator Washing**

If dirt and dust build up on insulators, it can compromise their insulating capabilities. In desert environments where rain is rare, washing the insulators can be conducted if necessary. Insulator washing involves driving a water truck to within six feet of a tower base and using a high-pressure hose to spray deionized water at the insulators. Insulator washing would not be expected more than twice a year and would be done with plain water.

### **ROW Maintenance**

ROW maintenance would include grading or repair of spur roads and work areas and spot repair of areas subject to flooding if it causes erosion damage. Required equipment could include a motor grader, backhoe, four-wheel drive pickup truck, and a loader. All access roads would be maintained on a regular schedule.

### **Vegetation Management**

A cleared area a minimum of ten feet around the base or foundation of all transmission structures would be maintained. In addition, work areas adjacent to access roads and electric transmission structures would be maintained for vehicle and equipment access necessary for operations, maintenance and repair. Shrubs and other obstructions would be removed as needed near structures to facilitate safe inspection and maintenance of equipment and to ensure system reliability. In addition, though not expected to be an issue for this Project, vegetation with a mature height of 15 feet or taller would not be allowed to grow within the ROW to protect system reliability and public safety.

### **Fire Control**

All applicable fire laws and regulations would be observed during the operation and maintenance period. BLM fire safety standards would be followed and requirements for fire tool availability, spark arresters/mufflers on equipment, and coordination of extreme fire conditions with BLM representatives would be coordinated. When extreme fire conditions occur, BLM representatives would be contacted, and access would be limited, if needed.

Prior to construction, a Fire Prevention and Response Plan will be developed in conjunction with BLM that outlines all required fire safety and management measures needed for both construction and operation. All personnel would be advised of their responsibilities under these requirements, including taking practical measures to report and suppress fires.

## **Noxious Weed Control**

The measures outlined in the Noxious Weed Management Plan would be continued on federal lands as dictated by BLM for long-term invasive weed abatement during operation. On private property, implementation of the plan could include specific weed abatement methods, practices and treatment timing as developed in consultation with the landowners and other parties.

## **Raven Control Plan**

Prior to the completion of construction, a Raven Monitoring, Management and Control Plan would be prepared for portions of the Project route where needed. This plan would include the use of raven perching and nesting deterrents and describe the procedures for obtaining a permit from the appropriate agencies to legally remove ravens. The Project would obtain approval for this plan from the BLM and USFWS.

## **10.0 TERMINATION AND RECLAMATION / DECOMMISSIONING**

This section outlines the measures that would be implemented in the future when the ROW permit expires and the Project is terminated. A Decommissioning Plan would be developed and finalized before decommissioning activities would start. At this time, these activities are anticipated to include:

- Removal of structures
- Recontouring of roads, tower pads, etc. if needed
- Stabilization and re-vegetation of disturbed areas

Structures would be removed and structure sites would be cleared and graded only to the extent necessary.

In general, all decommissioning and subsequent maintenance activities would be conducted in a manner that would minimize disturbance to soil and vegetation. Methods of restoration when the Project is terminated would adhere to the generally accepted standard operating procedures at the time. In addition, restoration would be implemented to achieve results that will reuse/recycles materials to the maximum extent practicable.

Prior to restoration, any necessary surveys would be conducted in accordance with accepted standards and procedures at the time. During the course of any necessary restoration activities, education similar to that given to construction crews would be given to workers regarding environmentally sensitive areas and resources. In addition, environmental monitors would be utilized at any areas deemed necessary.

Standard safety procedures associated with restoration activities would be implemented. If any special construction techniques are needed for restoration, safety procedures would be outlined and implemented prior to beginning restoration activities.



## **APPENIX A - LEGAL DESCRIPTION AND ACREAGES**

## **LEGAL DESCRIPTION OF ROWS**

# LEGAL DESCRIPTION

## YAHTHUMB RIGHTS-OF-WAY ON BLM ADMINISTERED LANDS

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### Proposed Project, Legal Description for Gen-Tie Right-of-Way

T. 15 S., R. 65 E.,  
sec. 12, Lots 6, 7, and 14, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 13, Lot 1, NE $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 14, Lots 6, 7, and 14, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 22, Lots 7, 8, 9, 16, and 17  
sec. 23, Lots 4, 5, and 7  
sec. 27, Lots 4, 5, and 7  
sec. 28, Lots 12, 13, 14, 21, and 22  
sec. 31, Lot 10  
sec. 32, Lots 1, 11, 12, 17, and 18, NW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$   
sec. 33, Lots 4, 5, and 6  
Acres: 101.98

T. 15 S., R. 66 E.,  
sec. 05, Lots 2, 3, and 4, SW $\frac{1}{4}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 06, Lots 1 and 7, SE $\frac{1}{4}$ NE $\frac{1}{4}$   
sec. 07, Lots 1 and 2  
Acres: 26.60

**Total Proposed Project Gen-Tie ROW Acreage: 128.58 acres (Designated Utility Corridor: 101.98 acres, BLM: 26.60 acres)**

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### Proposed Project, Legal Description for New Access / Spur Roads (outside of Gen-Tie ROW)

T. 15 S., R. 65 E.,  
sec. 12, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 13, Lot 1, NE $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 14, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 22, Lots 7, 8, 9, and 16  
sec. 23, Lots 4, 5, and 7  
sec. 27, Lots 4, 5, and 7  
sec. 28, Lots 12, 13, 14, and 21  
sec. 31, Lot 10  
sec. 32, Lots 12, 17, and 18, NW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$   
sec. 33, Lots 4, and 5  
Acres: 0.71

T. 15 S., R. 66 E.,  
sec. 05, Lots 2, 3, and 4, SW $\frac{1}{4}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 06, Lot 7  
sec. 07, Lot 1

Acres: 0.13

**Total New Gen-Tie Access Roads (outside of Gen-Tie ROW) Acreage: 0.84 acres  
(Designated Utility Corridor: 0.71 acres, BLM: 0.13 acres)**

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**Proposed Project, Legal Description for Existing Access Roads (outside of Gen-Tie ROW)**

T. 15 S., R. 65 E.,

sec. 12, Lots 4, and 6, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 13, NE $\frac{1}{4}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ NE $\frac{1}{4}$ , NW $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 14, Lots 6, 7, and 14, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 22, Lots 7, 8, 9, 16, and 17  
sec. 23, Lots 3, 4, 5, 7, and 8  
sec. 27, Lots 3, 4, 5, and 7  
sec. 28, Lots 12, 13, 14, 21, and 22  
sec. 31, Lots 9 and 10  
sec. 32, Lots 1, 3, 12, 17, 18, and 19, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , NW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 33, Lots 4, 5, 6, 7, and 18  
Acres: 21.7

T. 15 S., R. 66 E.,

sec. 05, Lots 1, 2, 3, and 4, SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 06, Lots 1, 6, and 7  
sec. 07, Lots 1, 2, 3, and 4, NE $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$   
sec. 18, Lot 1  
Acres: 8.28

T. 16 S., R. 64 E.,

sec. 12, Lots 1, 8, 9, and 14, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , NW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 13, NE $\frac{1}{4}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 14, Lots 1, 8, 9, and 11, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , NW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$ ,  
sec. 22, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , NW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$ ,  
sec. 23, NE $\frac{1}{4}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 27, NE $\frac{1}{4}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 28, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 33, NE $\frac{1}{4}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$ ,  
Acres: 15.20

T. 16 S., R. 65 E.,

sec. 05, Lot 7  
sec. 06, Lot 8  
sec. 07, Lot 7  
Acres: 8.65

T. 17 S., R. 64 E.,

sec. 10, Lot 7, NE $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$   
sec. 15, NE $\frac{1}{4}$ NW $\frac{1}{4}$ ,  
Acres: 1.65

**Total Existing Gen-Tie Access Roads (outside of Gen-Tie ROW): 55.49 acres (Designated Utility Corridor: 48.86 acres, BLM: 6.63 acres)**

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**Proposed Project, Legal Description for Short-Term Right-of-Way**

T. 15 S., R. 65 E.,  
sec. 12, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 13, Lot 1, NE $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 14, NE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 22, Lots 7, 8, 9, and 16  
sec. 23, Lots 4, 5, and 7  
sec. 27, Lots 4, 5, and 7  
sec. 28, Lots 12, 13, 14, and 21  
sec. 31, Lot 10  
sec. 32, Lots 12, 17, and 18, NW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$   
sec. 33, Lots 4, and 5  
Acres: 4.28

T. 15 S., R. 66 E.,  
sec. 05, Lots 2, and 4, SW $\frac{1}{4}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 06, Lot 7  
sec. 07, Lot 1 and NE $\frac{1}{4}$ NW $\frac{1}{4}$   
Acres: 2.40

**Total Proposed Short-Term Right-of-Way Acreage: 6.68 acres (Designated Utility Corridor: 4.28 acres, BLM: 2.40 acres)**

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**Proposed Project, Legal Description for Temporary Water Pipeline**

T. 15 S., R. 65 E.,  
sec. 31, Lot 10  
sec. 32, Lot 17

T. 16 S., R. 64 E.,  
sec. 12, Lots 1, 8, 9, and 14, NW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$   
sec. 13, NW $\frac{1}{4}$ NW $\frac{1}{4}$   
sec. 14, Lots 1, 8, 9, 11, and 12, NW $\frac{1}{4}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$   
sec. 15, NE $\frac{1}{4}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ NE $\frac{1}{4}$

T. 16 S., R. 65 E.,  
sec. 05, Lot 7  
sec. 06, Lot 8  
sec. 07, Lot 7

**Total Proposed Temporary Water Pipeline Acreage: 10.28 acres (Designated Utility Corridor: 10.28 acres, BLM: 0 acres)**

**DIMENSIONS OF SPUR ROADS  
(Inside and Outside ROW)**

**DIMENSIONS OF PROPOSED NEW SPUR ROADS OUTSIDE GEN-TIE ROW  
YATHUMB GEN-TIE LINE**

<b>Structure #</b>	<b>Name</b>	<b>Width (feet)</b>	<b>Jurisdiction</b>	<b>Acres</b>	<b>Length (feet)</b>
POCO	Outside ROW	12	BLM	0.014372	56.30
S1	Outside ROW	12	Corridor	0.045491	164.97
S2	Outside ROW	12	Corridor	0.045685	166.12
S4	Outside ROW	12	Corridor	0.030487	105.69
S5	Outside ROW	12	Corridor	0.009709	26.53
S6	Outside ROW	12	Corridor	0.012937	42.25
S7	Outside ROW	12	Corridor	0.013852	41.98
S8	Outside ROW	12	Corridor	0.009192	28.64
S9	Outside ROW	12	Corridor	0.057003	207.51
S10	Outside ROW	12	Corridor	0.010892	35.45
S11	Outside ROW	12	Corridor	0.012077	33.09
S12	Outside ROW	12	Corridor	0.009591	28.16
S13	Outside ROW	12	Corridor	0.010237	28.58
S14	Outside ROW	12	Corridor	0.003303	12.82
S17	Outside ROW	12	Corridor	0.010781	28.89
S18	Outside ROW	12	Corridor	0.011685	30.35
S19	Outside ROW	12	Corridor	0.010319	28.65
S20	Outside ROW	12	Corridor	0.014546	44.68
S21	Outside ROW	12	Corridor	0.016003	44.45
S22	Outside ROW	12	Corridor	0.017060	46.94
S23	Outside ROW	12	Corridor	0.019797	59.73
S24	Outside ROW	12	Corridor	0.055160	200.30
S26	Outside ROW	12	Corridor	0.013421	44.24
S27	Outside ROW	12	Corridor	0.016147	45.43
S28	Outside ROW	12	Corridor	0.018882	58.63
S29	Outside ROW	12	Corridor	0.016542	43.33
S30	Outside ROW	12	Corridor	0.018733	61.90
S31	Outside ROW	12	Corridor	0.019168	62.23
S32	Outside ROW	12	Corridor	0.014376	43.50
S33	Outside ROW	12	Corridor	0.015794	36.56
S34	Outside ROW	12	Corridor	0.010898	31.48
S35	Outside ROW	12	Corridor	0.015007	34.66
S36	Outside ROW	12	Corridor	0.011481	30.31
S38	Outside ROW	12	Corridor	0.014452	45.69
S39	Outside ROW	12	Corridor	0.018324	61.77
S40	Outside ROW	12	Corridor	0.026039	93.92
S41	Outside ROW	12	Corridor	0.010659	29.85
S42	Outside ROW	12	Corridor	0.009878	27.02
S43	Outside ROW	12	Corridor	0.011274	30.00

<b>DIMENSIONS OF PROPOSED NEW SPUR ROADS OUTSIDE GEN-TIE ROW YATHUMB GEN-TIE LINE</b>					
<b>Structure #</b>	<b>Name</b>	<b>Width (feet)</b>	<b>Jurisdiction</b>	<b>Acres</b>	<b>Length (feet)</b>
S44	Outside ROW	12	Corridor	0.010123	28.55
S45	Outside ROW	12	Corridor	0.009288	28.22
S48	Outside ROW	12	BLM	0.004039	21.41
S50	Outside ROW	12	BLM	0.015462	60.56
S51	Outside ROW	12	BLM	0.016720	62.11
S52	Outside ROW	12	BLM	0.009469	41.20
S53	Outside ROW	12	Private	0.059175	221.25
S55	Outside ROW	15	Private	0.266233	758.10
S62	Outside ROW	12	Private	0.047932	184.79
S64	Outside ROW	12	BLM	0.059887	221.13
S66	Outside ROW	12	BLM	0.005842	21.08
S66	Outside ROW	12	Private	0.008401	26.59
S68	Outside ROW	12	BLM	0.000858	9.78
S69	Outside ROW	12	BLM	0.001713	9.39
<b>TOTAL OUTSIDE ROW</b>				<b>1.22</b>	



<b>PROPOSED NEW SPUR ROADS INSIDE GEN-TIE ROW YATHUMB GEN-TIE LINE</b>					
<b>Structure #</b>	<b>Location</b>	<b>Width (feet)</b>	<b>Jurisdiction</b>	<b>Acres</b>	<b>Length (feet)</b>
POCO	Inside ROW	12	BLM	0.060830	237.69
S1	Inside ROW	12	Corridor	0.058519	216.37
S2 - S3	Inside ROW	12	Corridor	0.285661	954.44
S4	Inside ROW	12	Corridor	0.058820	215.56
S5	Inside ROW	12	Corridor	0.058312	215.67
S6	Inside ROW	12	Corridor	0.061557	232.23
S7	Inside ROW	12	Corridor	0.061297	230.46
S8	Inside ROW	12	Corridor	0.059197	221.23
S9	Inside ROW	12	Corridor	0.058345	212.46
S10	Inside ROW	12	Corridor	0.060255	225.10
S11	Inside ROW	12	Corridor	0.058617	217.15
S12	Inside ROW	12	Corridor	0.058311	214.24
S13	Inside ROW	12	Corridor	0.058311	215.53
S14	Inside ROW	12	Corridor	0.058354	216.34
S15	Inside ROW	12	Corridor	0.048214	213.30
S16	Inside ROW	12	Corridor	0.064452	235.26
S17	Inside ROW	12	Corridor	0.058311	213.43
S18	Inside ROW	12	Corridor	0.058311	216.99
S19	Inside ROW	12	Corridor	0.058309	212.78
S20	Inside ROW	12	Corridor	0.062052	234.83
S21	Inside ROW	12	Corridor	0.060652	227.99
S22	Inside ROW	12	Corridor	0.061584	233.09
S23	Inside ROW	12	Corridor	0.064678	250.44
S24	Inside ROW	12	Corridor	0.058310	215.53
S25	Inside ROW	12	Corridor	0.055573	204.80
S26	Inside ROW	12	Corridor	0.055298	206.66
S27	Inside ROW	12	Corridor	0.060919	229.97
S28	Inside ROW	12	Corridor	0.061548	230.57
S29	Inside ROW	12	Corridor	0.060617	226.05
S30	Inside ROW	12	Corridor	0.062955	240.81
S31	Inside ROW	12	Corridor	0.063612	241.91
S32	Inside ROW	12	Corridor	0.060085	227.41
S33	Inside ROW	12	Corridor	0.059018	219.77
S34	Inside ROW	12	Corridor	0.058614	215.20
S35	Inside ROW	12	Corridor	0.058309	211.80
S36	Inside ROW	12	Corridor	0.058309	212.29
S37	Inside ROW	12	Corridor	0.048311	213.36
S38	Inside ROW	12	Corridor	0.061657	233.97
S39	Inside ROW	12	Corridor	0.065616	253.49

<b>PROPOSED NEW SPUR ROADS INSIDE GEN-TIE ROW YATHUMB GEN-TIE LINE</b>					
<b>Structure #</b>	<b>Location</b>	<b>Width (feet)</b>	<b>Jurisdiction</b>	<b>Acres</b>	<b>Length (feet)</b>
S40	Inside ROW	12	Corridor	0.074045	292.57
S41	Inside ROW	12	Corridor	0.058760	220.04
S42	Inside ROW	12	Corridor	0.058309	214.88
S43	Inside ROW	12	Corridor	0.058309	215.21
S44	Inside ROW	12	Corridor	0.058323	217.08
S45	Inside ROW	12	Corridor	0.058326	214.26
S46	Inside ROW	12	Corridor	0.046580	212.67
S47	Inside ROW	12	BLM	0.048447	213.44
S48	Inside ROW	12	BLM	0.061076	228.55
S49	Inside ROW	12	BLM	0.031157	131.23
S50	Inside ROW	12	BLM	0.061767	233.96
S51	Inside ROW	12	BLM	0.058484	217.86
S52	Inside ROW	12	BLM	0.065735	251.23
S53	Inside ROW	12	Private	0.058621	218.33
S54, S55, S56	Inside ROW	15	Private	0.528508	1624.64
S59	Inside ROW	12	BLM	0.123909	3752.20
S62	Inside ROW	12	Private	0.004185	15.21
S62 - S63	Inside ROW	12	BLM	0.345102	1254.58
S64	Inside ROW	12	BLM	0.060625	226.75
S65	Inside ROW	12	BLM	0.048594	214.83
S66 - S67	Inside ROW	12	BLM	0.214012	763.38
S68	Inside ROW	12	BLM	0.064782	248.55
S69	Inside ROW	12	BLM	0.060512	233.22
<b>TOTAL INSIDE ROW</b>				<b>4.79</b>	

**DIMENSIONS OF EXISTING ROADS  
(Outside ROW)**

**ACREAGE OF EXISTING BLM-MANAGED ROADS  
PROPOSED TO BE USED FOR YAHTHUMB ACCESS**

<b>Road Name / Type</b>	<b>Jurisdiction</b>	<b>Width</b>	<b>Length (Feet)</b>	<b>Acres</b>
Unnamed Rd	BLM	10 ft	438.28	0.10
Unnamed Rd	BLM	12 ft	471.38	0.13
Unnamed Rd	BLM	12 ft	2514.01	0.69
Unnamed Rd	BLM	12 ft	781.02	0.24
Unnamed Rd	BLM	12 ft	2577.29	0.71
Unnamed Rd	BLM	12 ft	1158.25	0.32
Unnamed Rd	BLM	12 ft	826.70	0.22
Unnamed Rd	BLM	12 ft	151.92	0.04
Unnamed Rd	BLM	12 ft	865.93	0.24
Unnamed Rd	BLM	12 ft	1562.28	0.43
Unnamed Rd	BLM	12 ft	103.55	0.03
Unnamed Rd	BLM	12 ft	1416.91	0.39
Unnamed Rd	BLM	15 ft	510.14	0.17
Unnamed Rd	BLM	15 ft	1446.93	0.45
Unnamed Rd	BLM	15 ft	1210.00	0.41
Unnamed Rd	BLM	15 ft	1721.95	0.60
Unnamed Rd	BLM	15 ft	492.13	0.16
Unnamed Rd	BLM	15 ft	731.49	0.25
Unnamed Rd	BLM	30 ft	284.97	0.19
Wally Kay Way	BLM	24 ft	1543.84	0.86
SH 78	Designated Corridor	18 ft	284.00	0.11
Spur	Designated Corridor	12 ft	183.99	0.12
Spur	Designated Corridor	12 ft	178.88	0.12
Spur	Designated Corridor	12 ft	181.50	0.12
Spur	Designated Corridor	12 ft	182.15	0.12
Spur	Designated Corridor	12 ft	173.32	0.12
Spur	Designated Corridor	12 ft	174.61	0.11
Spur	Designated Corridor	12 ft	128.39	0.22
Spur	Designated Corridor	12 ft	163.95	0.22
Spur	Designated Corridor	12 ft	186.67	0.83
Spur	Designated Corridor	12 ft	165.70	0.83
Spur	Designated Corridor	12 ft	186.81	0.83
Spur	Designated Corridor	12 ft	190.26	0.83
Spur	Designated Corridor	12 ft	261.42	0.83
Spur	Designated Corridor	12 ft	172.43	0.83
Spur	Designated Corridor	12 ft	166.08	0.83
Spur	Designated Corridor	12 ft	99.80	0.10
Spur	Designated Corridor	12 ft	59.15	0.08
Spur	Designated Corridor	12 ft	169.22	0.11
Spur	Designated Corridor	12 ft	175.23	0.33

**ACREAGE OF EXISTING BLM-MANAGED ROADS  
PROPOSED TO BE USED FOR YAHTHUMB ACCESS**

<b>Road Name / Type</b>	<b>Jurisdiction</b>	<b>Width</b>	<b>Length (Feet)</b>	<b>Acres</b>
Spur	Designated Corridor	12 ft	166.81	0.33
Spur	Designated Corridor	12 ft	158.77	0.33
Spur	Designated Corridor	12 ft	151.29	0.11
Spur	Designated Corridor	12 ft	169.70	0.11
Spur	Designated Corridor	12 ft	214.86	0.47
Spur	Designated Corridor	12 ft	174.13	0.47
Spur	Designated Corridor	12 ft	171.58	0.47
Spur	Designated Corridor	12 ft	167.18	0.47
Spur	Designated Corridor	12 ft	231.73	0.13
Spur	Designated Corridor	12 ft	203.08	0.12
Spur	Designated Corridor	12 ft	268.08	0.14
Spur	Designated Corridor	12 ft	177.14	0.12
Spur	Designated Corridor	12 ft	184.69	0.12
Spur	Designated Corridor	12 ft	161.79	0.11
Spur	Designated Corridor	12 ft	189.57	0.12
Spur	Designated Corridor	15 ft	193.67	0.13
Unnamed Rd	Designated Corridor	12 ft	6129.36	1.67
Unnamed Rd	Designated Corridor	12 ft	494.74	0.14
Unnamed Rd	Designated Corridor	12 ft	3857.63	1.11
Unnamed Rd	Designated Corridor	12 ft	17175.91	4.74
Unnamed Rd	Designated Corridor	12 ft	2873.76	0.80
Unnamed Rd	Designated Corridor	12 ft	1253.88	0.35
Unnamed Rd	Designated Corridor	12 ft	3398.41	0.94
Unnamed Rd	Designated Corridor	12 ft	1186.00	0.34
Unnamed Rd	Designated Corridor	12 ft	1200.60	0.33
Unnamed Rd	Designated Corridor	12 ft	301.78	0.08
Unnamed Rd	Designated Corridor	12 ft	4744.36	1.31
Unnamed Rd	Designated Corridor	12 ft	17.26	0.25
Unnamed Rd	Designated Corridor	12 ft	906.69	0.25
Unnamed Rd	Designated Corridor	12 ft	682.98	0.19
Unnamed Rd	Designated Corridor	12 ft	7457.11	2.05
Unnamed Rd	Designated Corridor	12 ft	1032.11	0.29
Unnamed Rd	Designated Corridor	12 ft	533.42	0.15
Unnamed Rd	Designated Corridor	12 ft	1447.14	0.44
Unnamed Rd	Designated Corridor	12 ft	325.54	0.09
Unnamed Rd	Designated Corridor	12 ft	572.96	0.16
Unnamed Rd	Designated Corridor	12 ft	339.38	0.09
Unnamed Rd	Designated Corridor	12 ft	317.91	0.09
Unnamed Rd	Designated Corridor	12 ft	533.99	0.15
Unnamed Rd	Designated Corridor	12 ft	284.76	0.08

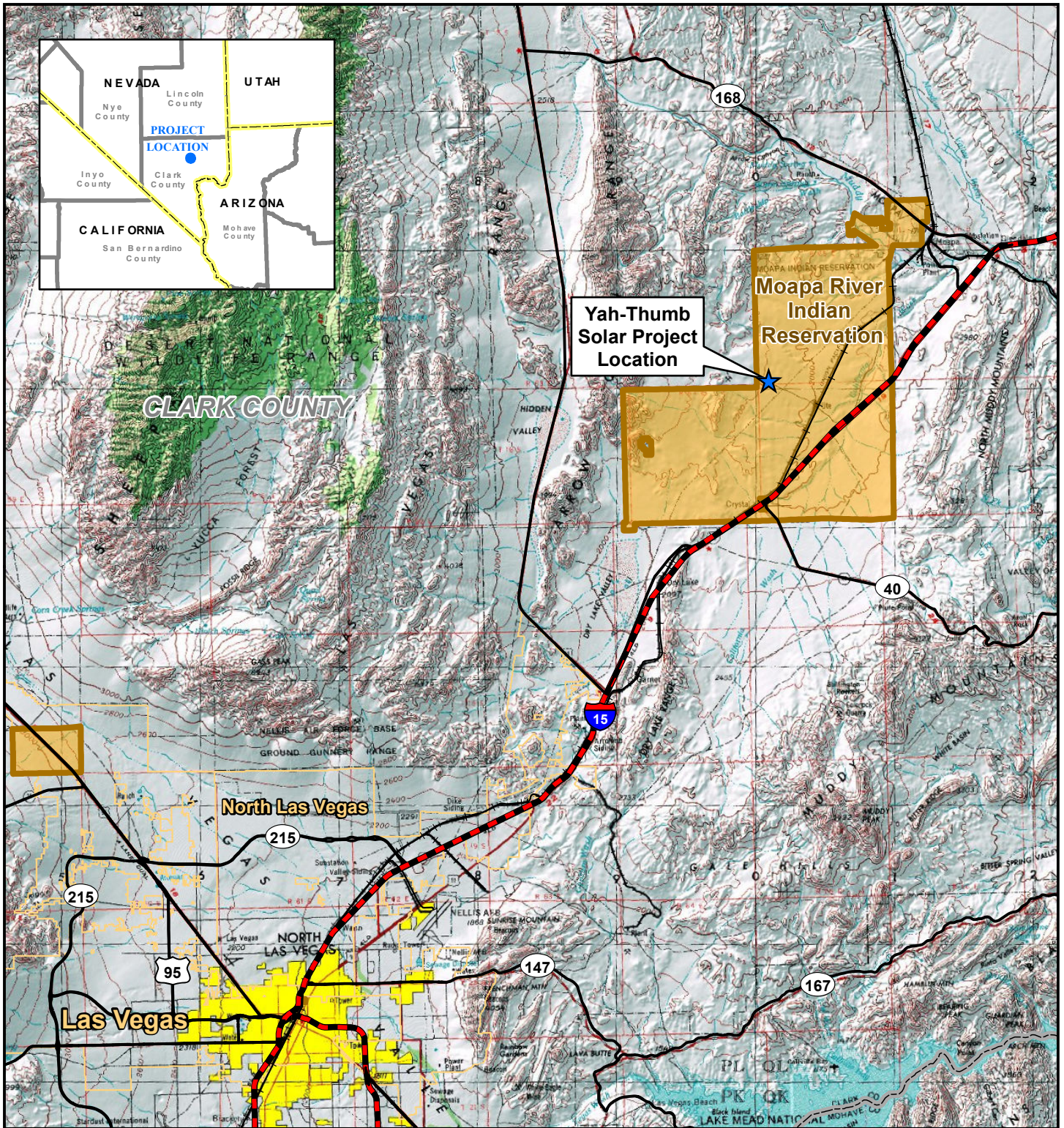
**ACREAGE OF EXISTING BLM-MANAGED ROADS  
PROPOSED TO BE USED FOR YAHTHUMB ACCESS**

<b>Road Name / Type</b>	<b>Jurisdiction</b>	<b>Width</b>	<b>Length (Feet)</b>	<b>Acres</b>
Unnamed Rd	Designated Corridor	12 ft	2923.91	0.80
Unnamed Rd	Designated Corridor	12 ft	531.89	0.15
Unnamed Rd	Designated Corridor	12 ft	660.94	0.18
Unnamed Rd	Designated Corridor	12 ft	563.67	0.15
Unnamed Rd	Designated Corridor	12 ft	422.52	0.11
Unnamed Rd	Designated Corridor	12 ft	484.54	0.13
Unnamed Rd	Designated Corridor	12 ft	1557.74	0.43
Unnamed Rd	Designated Corridor	12 ft	575.40	0.15
Unnamed Rd	Designated Corridor	12 ft	19533.07	5.38
Unnamed Rd	Designated Corridor	12 ft	348.93	0.08
Unnamed Rd	Designated Corridor	13 ft	46041.82	13.74
Unnamed Rd	Designated Corridor	13 ft	9485.65	2.83
Unnamed Rd	Designated Corridor	13 ft	4842.25	1.48
Unnamed Rd	Designated Corridor	15 ft	718.05	0.24
Unnamed Rd	Designated Corridor	20 ft	4238.16	1.97
Unnamed Rd	Designated Corridor	24 ft	2956.32	1.63
Wally Kay Way	Designated Corridor	24 ft	603.46	0.32
<b>TOTAL</b>				<b>63.93</b>






## **APPENDIX B – FIGURES AND MAPS**

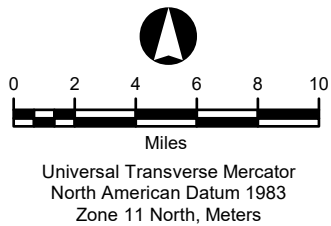
## **FIGURES**





**Legend**

-  Solar Project Location
-  Interstate
-  US/ State Highway
-  Railroad
- Jurisdictional Land Ownership**
-  Indian Reservation



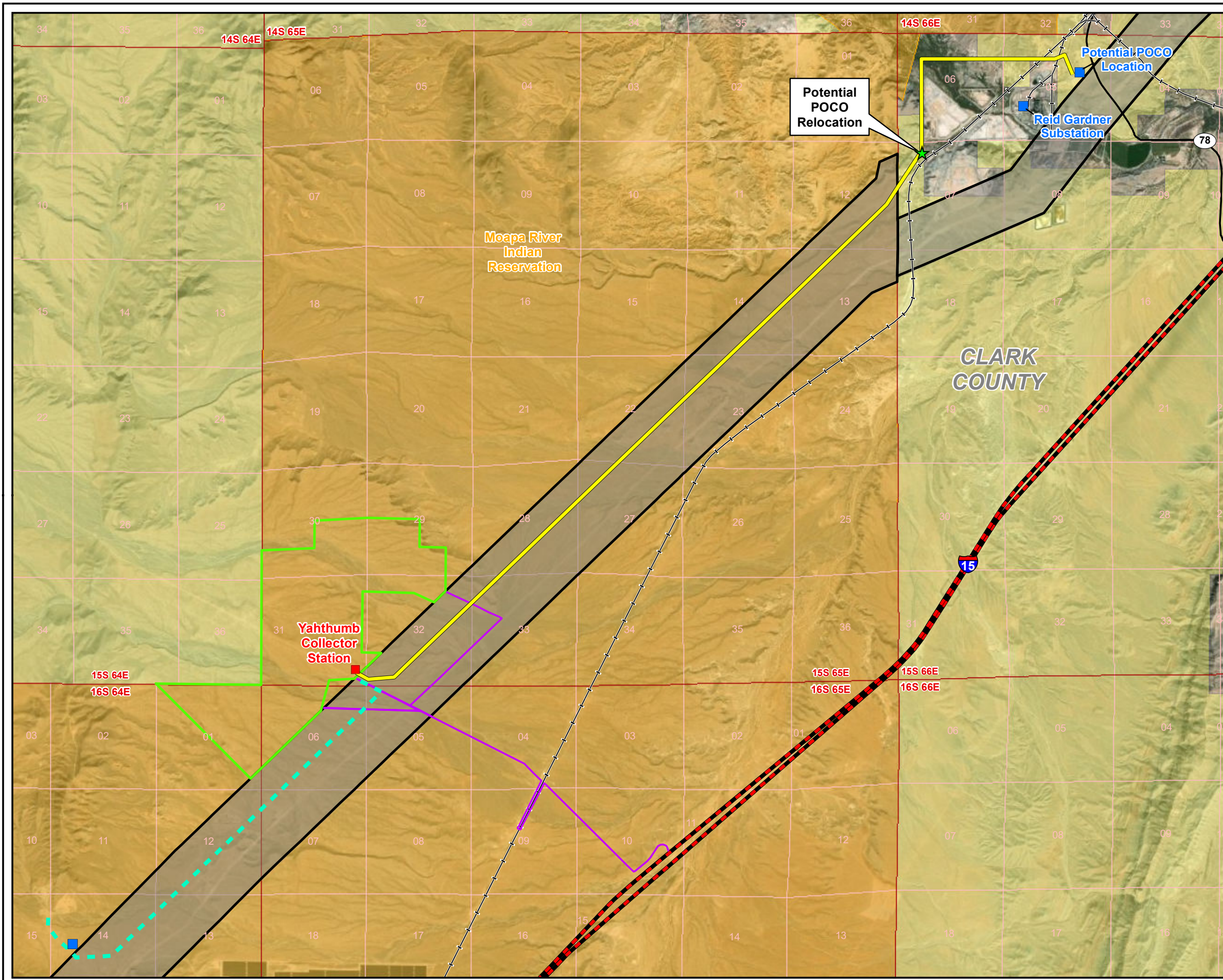
**Yah-Thumb Solar Project**

**FIGURE 1-1**  
**General Location**

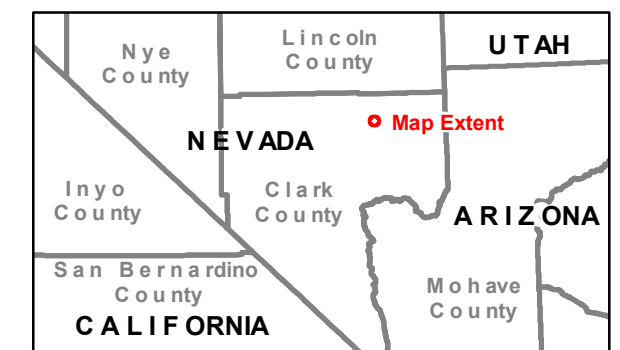
Map Extent: Clark County, Nevada

Date: 07-05-21	Author: mrc
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- ### Legend
- Project Components**
- Substation
  - Yahthumb Collector Station
  - ★ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Access Road
  - Temporary Water Pipeline
  - Yah-Thumb Solar Site
- General Features**
- Interstate
  - Major Highway
  - Railroad
  - Stream / River
  - Designated Utility Corridor
  - Township
  - Section
- Land Jurisdiction**
- Bureau of Land Management Land
  - Indian Land



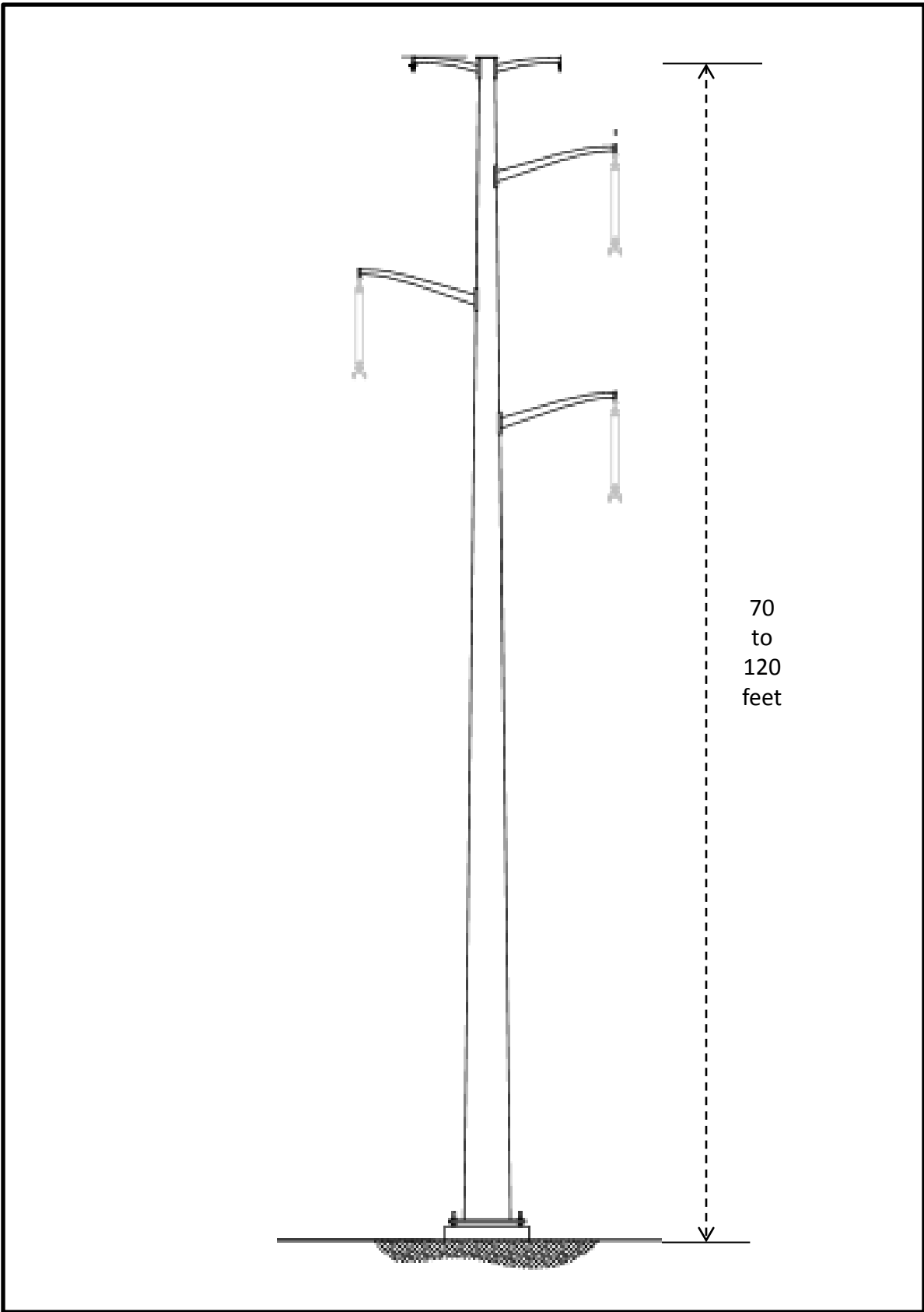
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North American Datum 1983  
Zone 12 North, Meters

## Yah-Thumb Solar Project

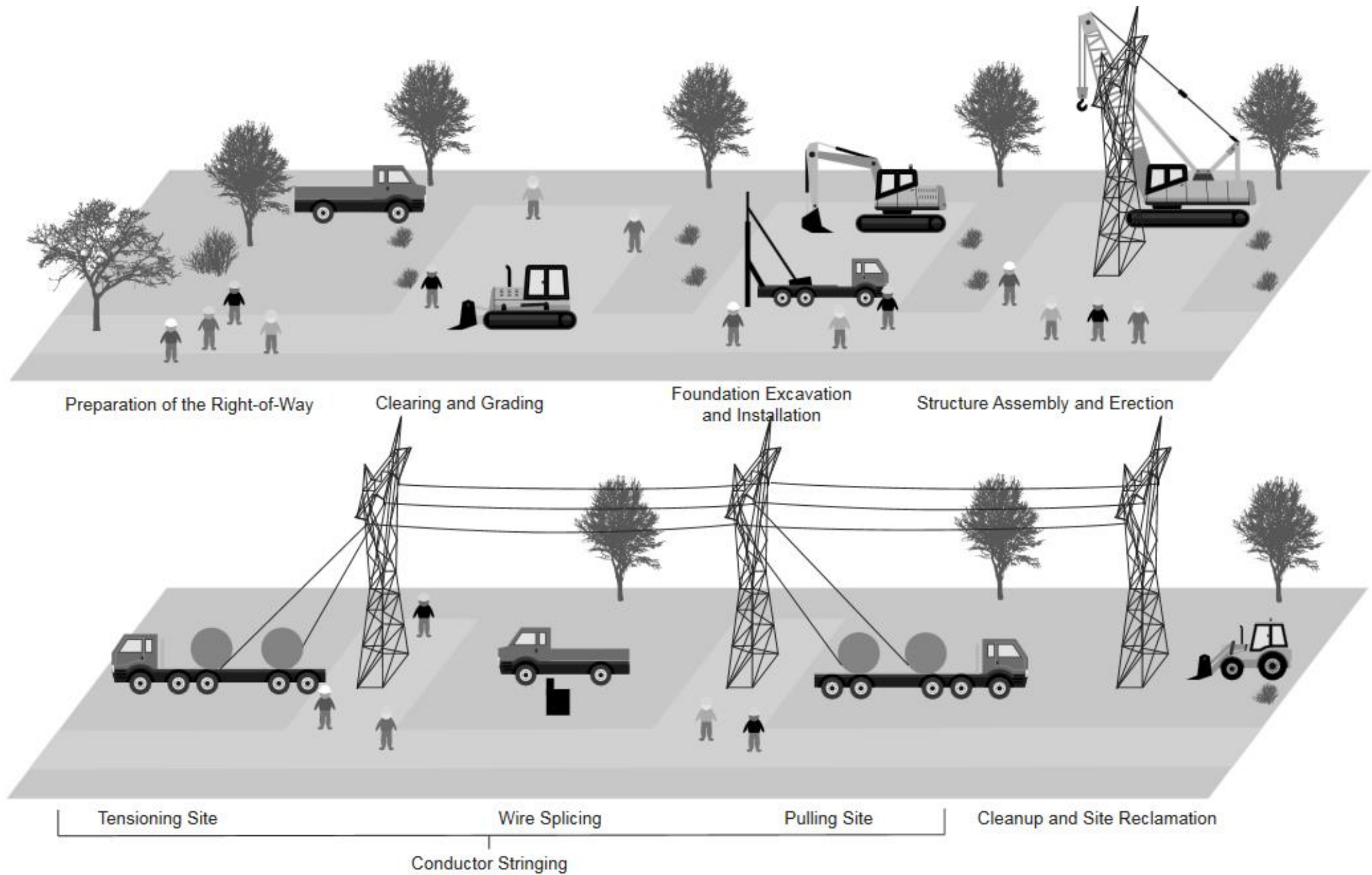
**Figure 2-1**  
**Project Overview Map**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
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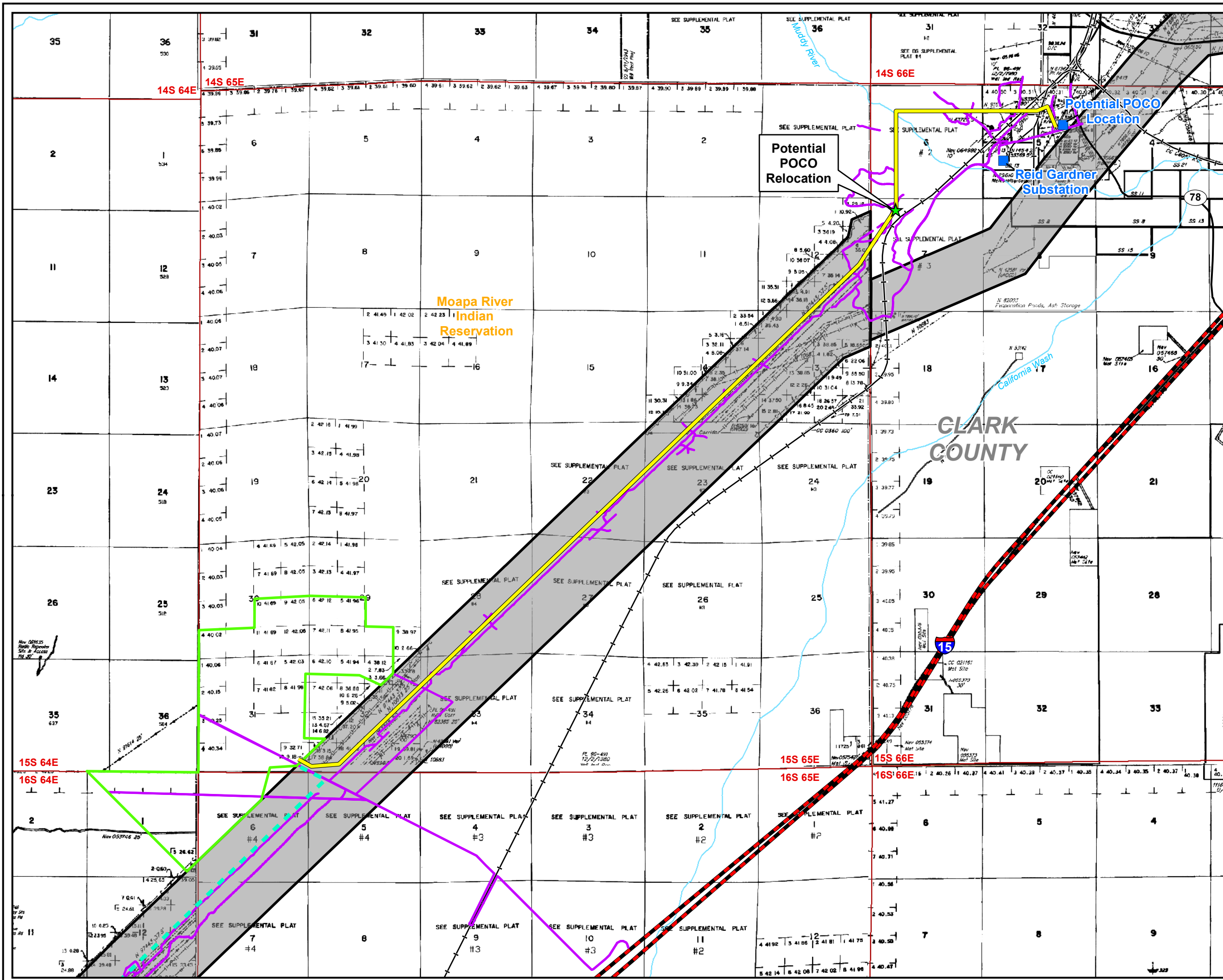


**Figure 3-1**  
**Typical 230 kV Single-Circuit Steel Pole Structure**



**Figure 6-1**  
**Typical Transmission Line Construction Sequence**

## **MASTER TITLE PLATS**



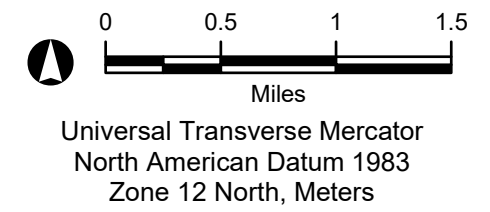
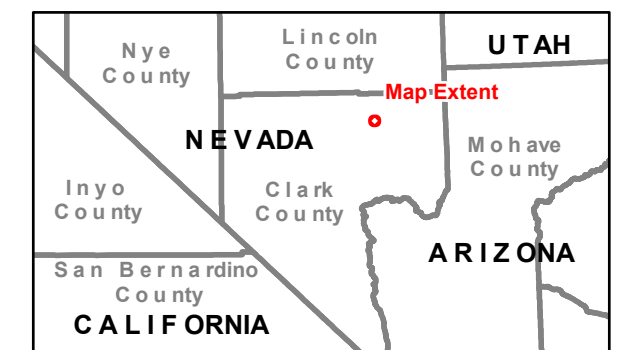
### Legend

**Project Components**

- Substation
- ★ Potential POCO Relocation
- Proposed 230 kV Transmission Line
- Access Road
- Temporary Water Pipeline
- Yah-Thumb Solar Site

**General Features**

- Interstate
- Major Highway
- Railroad
- Designated Utility Corridor
- Township

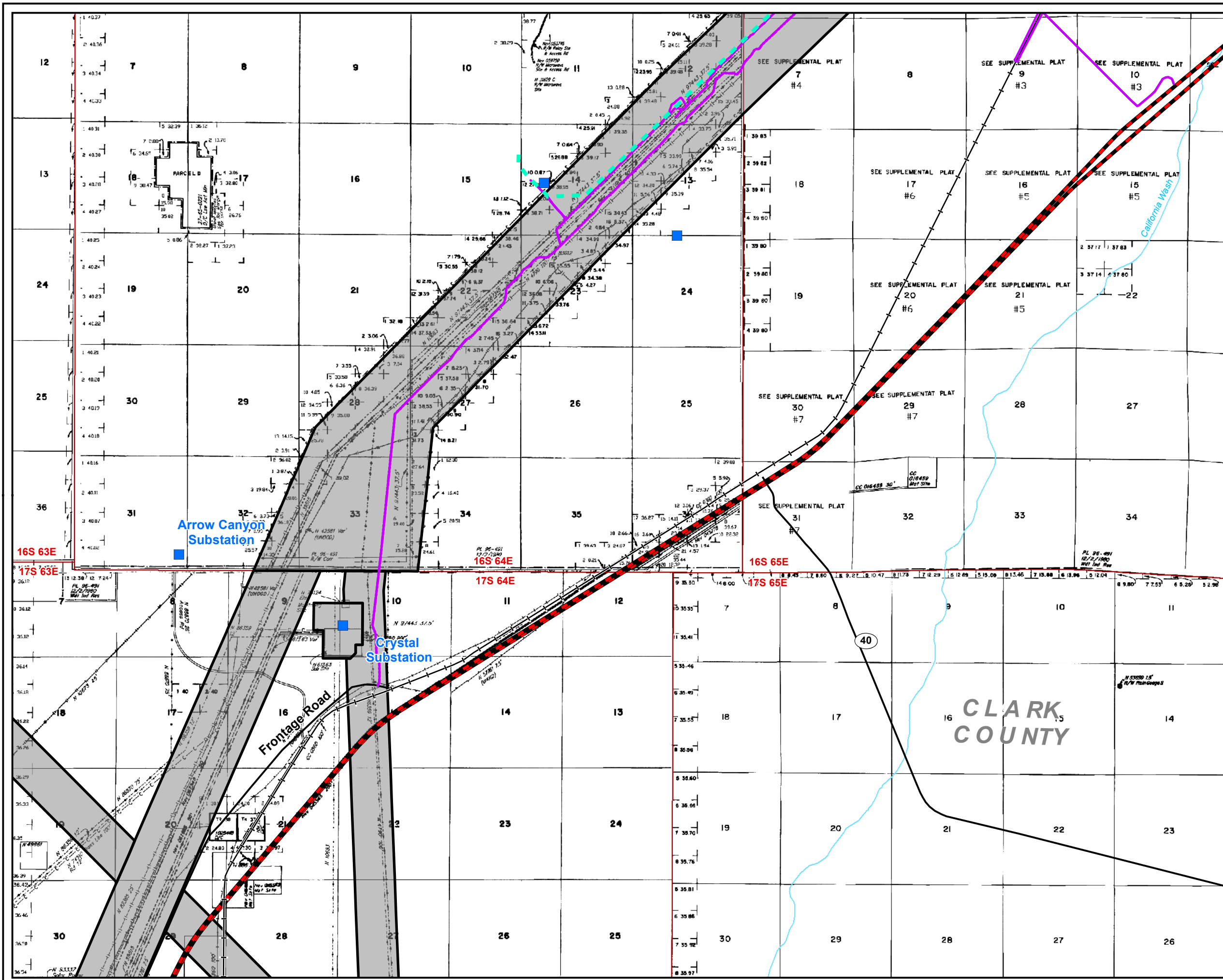


## Yah-Thumb Solar Project

**BLM Master Title Plats - Page 1**

Map Extent: Clark County, Nevada

Date: 12-02-21	Author: mc
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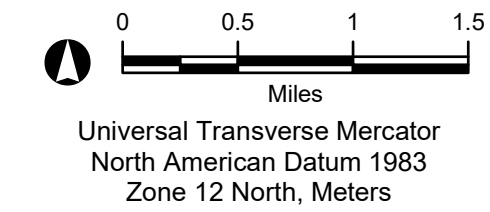
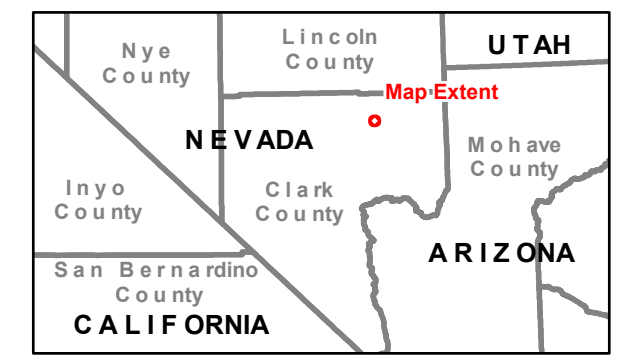
### Legend

**Project Components**

- Substation
- Access Road
- Temporary Water Pipeline

**General Features**

- Interstate
- Major Highway
- Railroad
- Designated Utility Corridor
- Township



## Yah-Thumb Solar Project

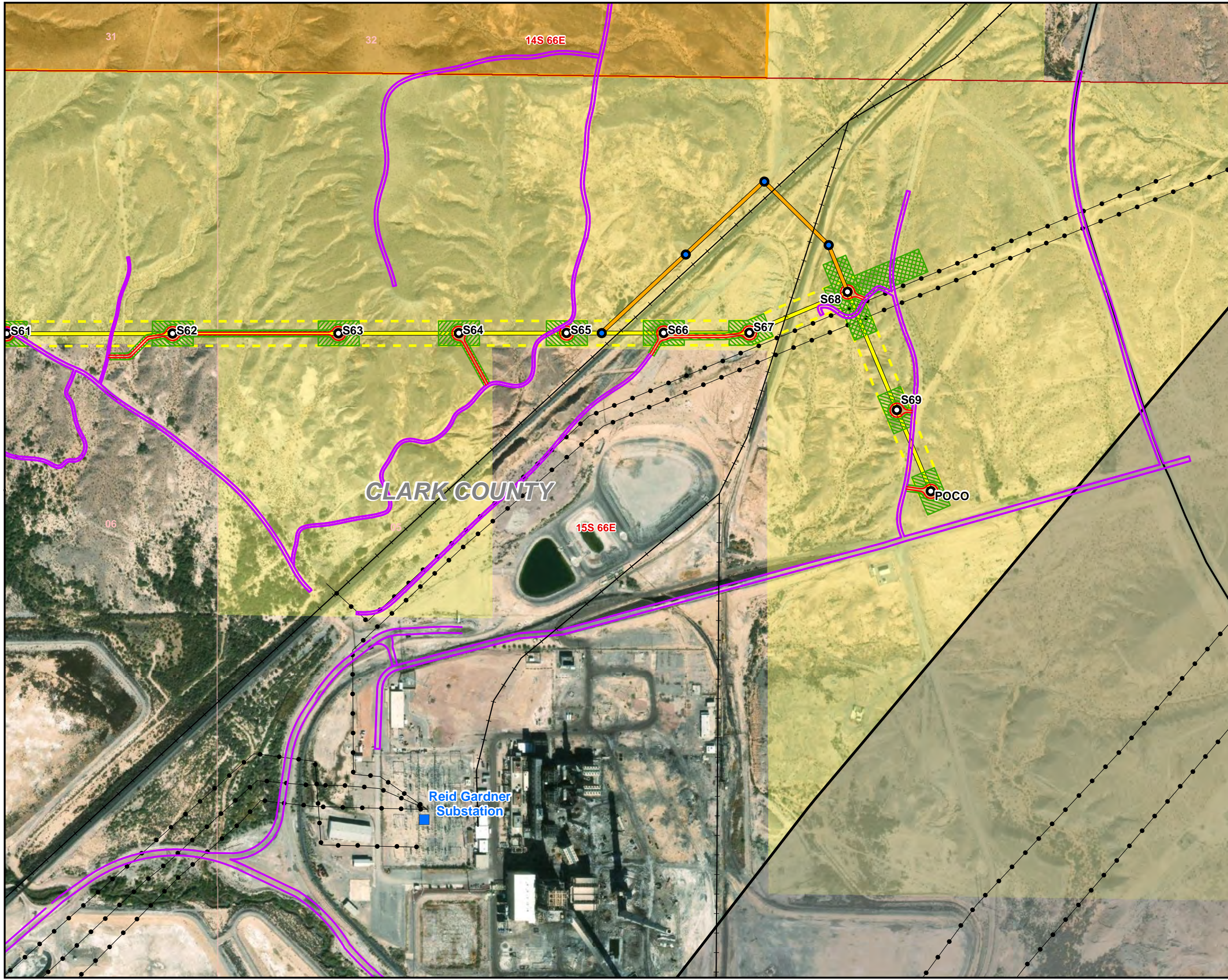
**BLM Master Title Plats - Page 2**

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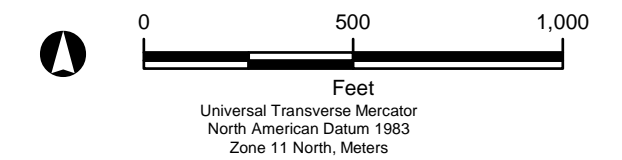
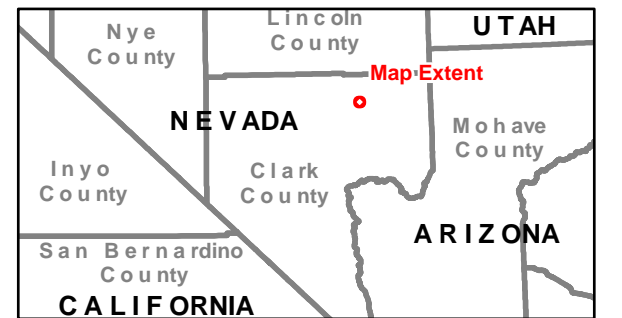
Date: 12-02-21	Author: mc
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## **DETAILED MAPBOOK**





- ### Legend
- #### Project Components
- Substation
  - Yahthumb Collector Station
  - Proposed Structure Location
  - Proposed Structure Location - Option
  - ☆ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Proposed 230 kV Transmission Line - Option
  - - - Temporary Water Pipeline
  - - - Proposed ROW
  - Existing Access Road
  - Permanent Impacts
  - ▨ Temporary Impacts - Outside the ROW
  - ▩ Stringing Sites - Outside the ROW
  - ▨ Temporary Impacts - Within the ROW
  - ▩ Stringing Sites - Within the ROW
  - ▭ Yah-Thumb Solar Site
- #### General Features
- Existing Transmission Line
  - Railroad
  - ▭ Designated Utility Corridor
  - ▭ Township
  - ▭ Section
- #### Land Jurisdiction
- ▭ Bureau of Land Management Land
  - ▭ Indian Land

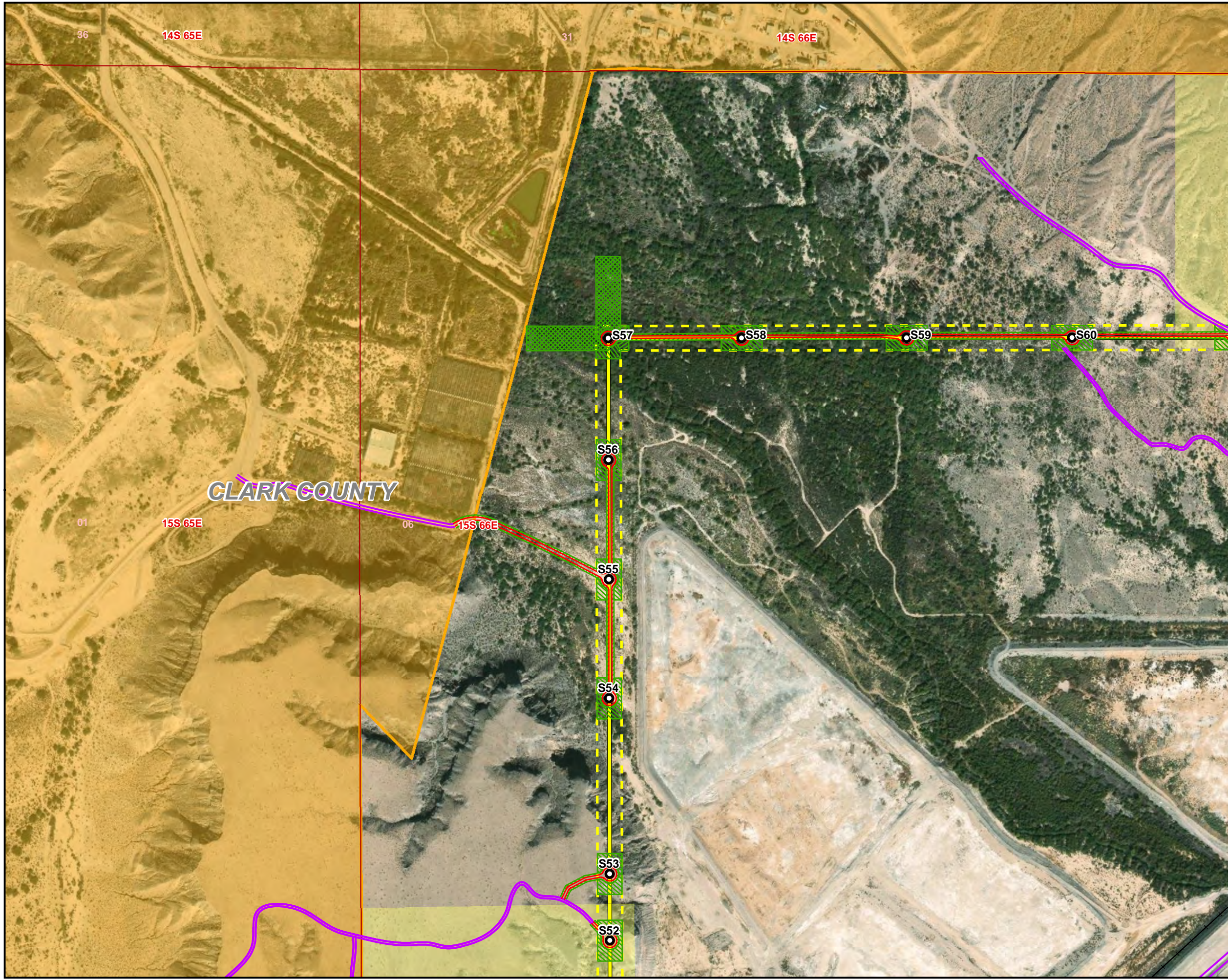


## Yah-Thumb Solar Project

### Proposed Route Mapbook

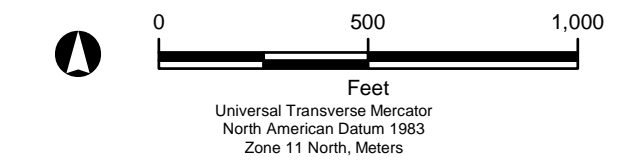
Map Extent: Clark County, Nevada

Date: 12-02-21	Mapbook Page 1	Author: mc
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- ### Legend
- #### Project Components
- Substation
  - Yahthumb Collector Station
  - Proposed Structure Location
  - Proposed Structure Location - Option
  - ☆ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Proposed 230 kV Transmission Line - Option
  - - - Temporary Water Pipeline
  - - - Proposed ROW
  - Existing Access Road
  - Permanent Impacts
  - Temporary Impacts - Outside the ROW
  - Stringing Sites - Outside the ROW
  - Temporary Impacts - Within the ROW
  - Stringing Sites - Within the ROW
  - Yah-Thumb Solar Site

- #### General Features
- Existing Transmission Line
  - Railroad
  - Designated Utility Corridor
  - Township
  - Section
- #### Land Jurisdiction
- Bureau of Land Management Land
  - Indian Land

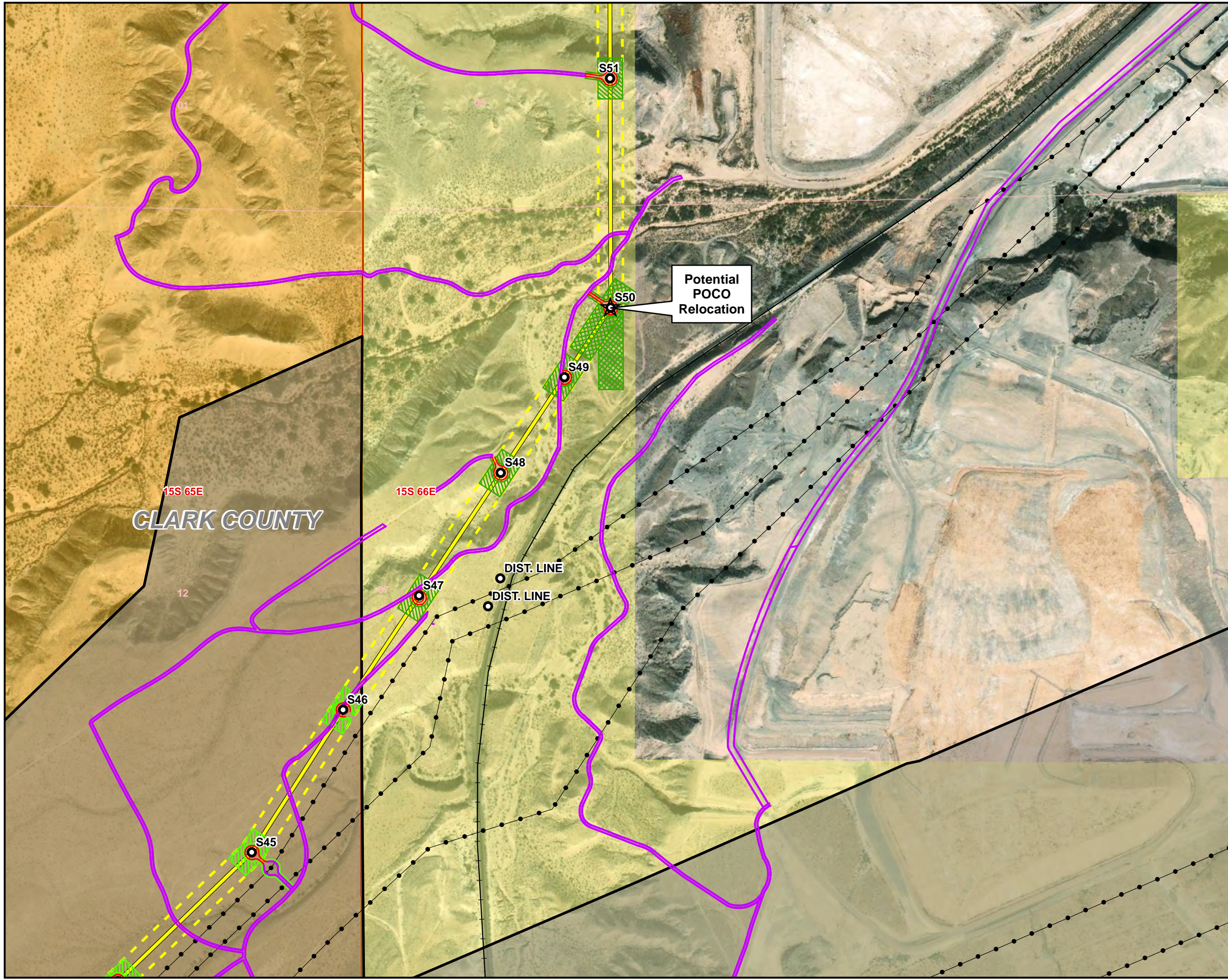


## Yah-Thumb Solar Project

### Proposed Route Mapbook

Map Extent: Clark County, Nevada

Date: 12-02-21	Mapbook Page 2	Author: mc
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**Legend**

**Project Components**

- Substation
- Yahthumb Collector Station
- Proposed Structure Location
- Proposed Structure Location - Option
- ☆ Potential POCO Relocation
- Proposed 230 kV Transmission Line
- Proposed 230 kV Transmission Line - Option
- - - Temporary Water Pipeline
- - - Proposed ROW
- Existing Access Road
- Permanent Impacts
- Temporary Impacts - Outside the ROW
- Stringing Sites - Outside the ROW
- Temporary Impacts - Within the ROW
- Stringing Sites - Within the ROW
- Yah-Thumb Solar Site

**General Features**

- Existing Transmission Line
- Railroad
- Designated Utility Corridor
- Township
- Section

**Land Jurisdiction**

- Bureau of Land Management Land
- Indian Land

**Map Extent**

**Scale**

0 500 1,000 Feet

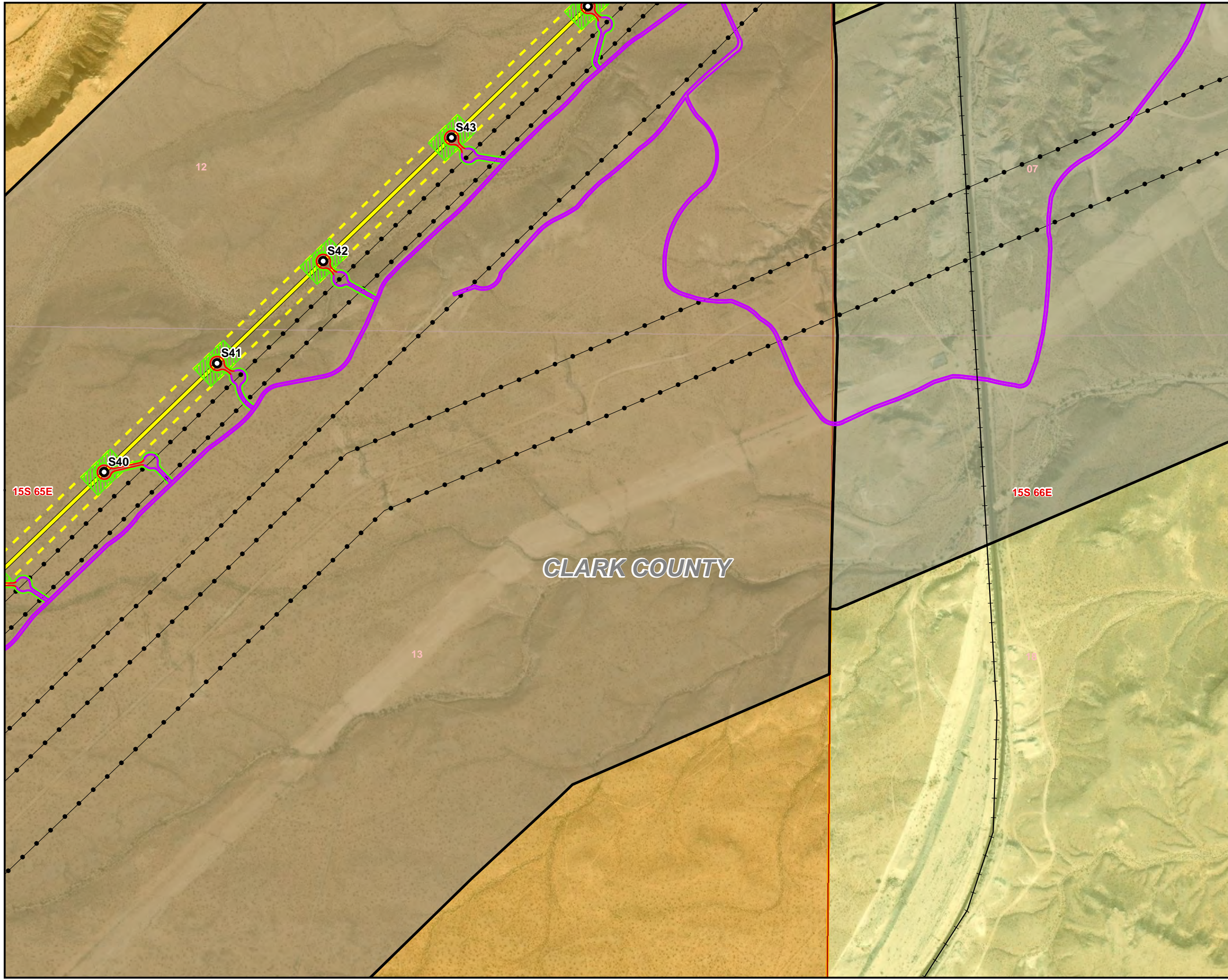
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Zone 11 North, Meters

**Yah-Thumb Solar Project**

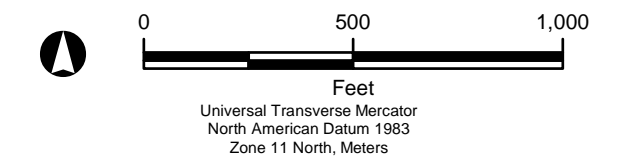
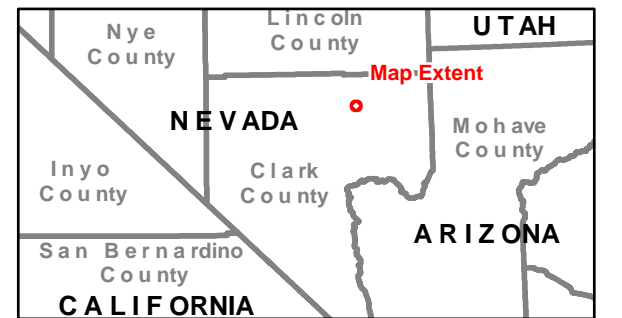
**Proposed Route Mapbook**

Map Extent: Clark County, Nevada

Date: 12-02-21	<b>Mapbook Page 3</b>	Author: mc
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- ### Legend
- #### Project Components
- Substation
  - Yahthumb Collector Station
  - Proposed Structure Location
  - Proposed Structure Location - Option
  - ☆ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Proposed 230 kV Transmission Line - Option
  - - - Temporary Water Pipeline
  - - - Proposed ROW
  - Existing Access Road
  - Permanent Impacts
  - ▨ Temporary Impacts - Outside the ROW
  - ▩ Stringing Sites - Outside the ROW
  - ▨ Temporary Impacts - Within the ROW
  - ▩ Stringing Sites - Within the ROW
  - Yah-Thumb Solar Site
- #### General Features
- Existing Transmission Line
  - +— Railroad
  - Designated Utility Corridor
  - Township
  - Section
- #### Land Jurisdiction
- Bureau of Land Management Land
  - Indian Land

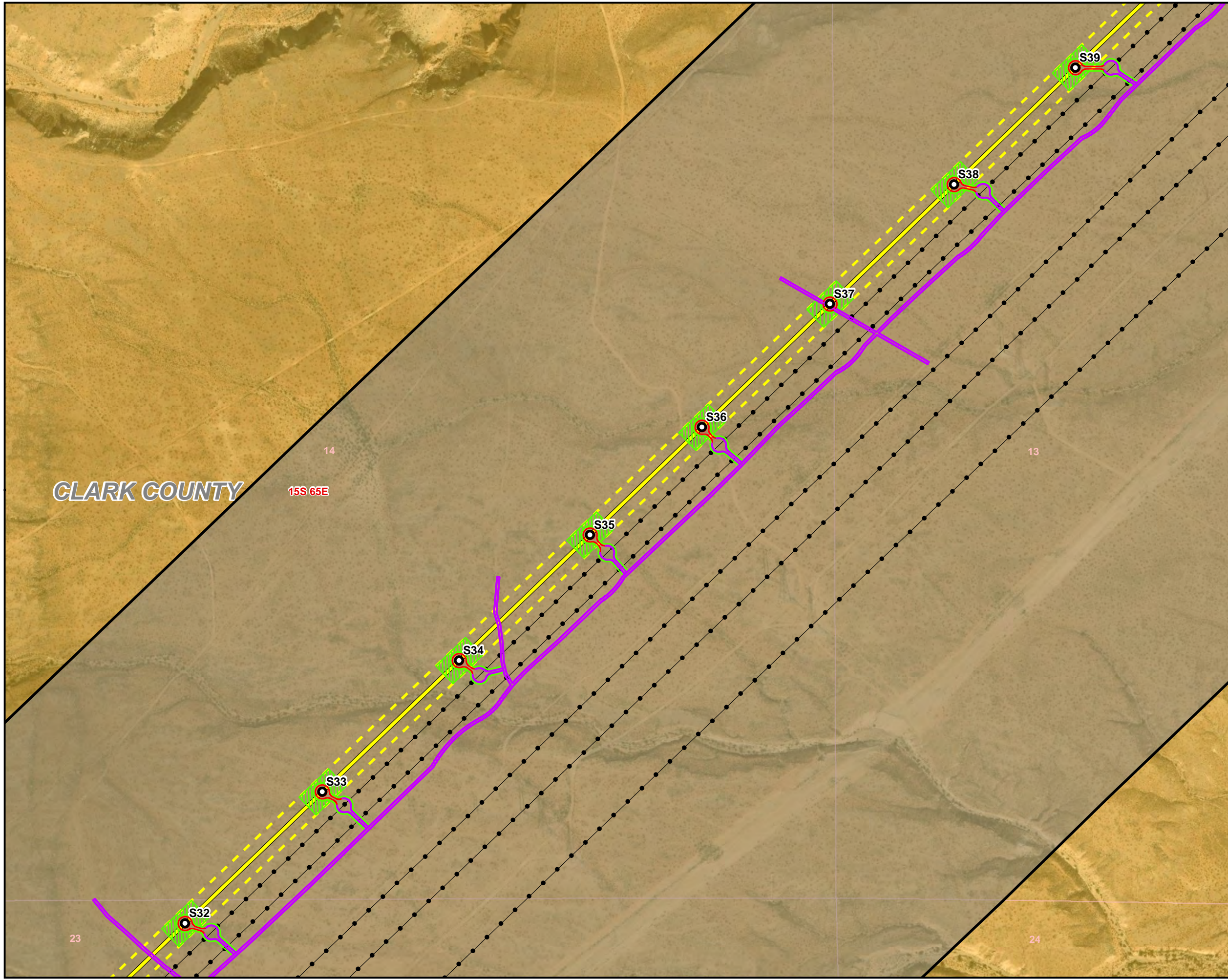


**Yah-Thumb Solar Project**

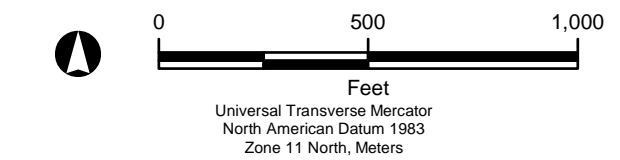
**Proposed Route Mapbook**

Map Extent: Clark County, Nevada

Date: 12-02-21	<b>Mapbook Page 4</b>	Author: mc
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- ### Legend
- #### Project Components
- Substation
  - Yahthumb Collector Station
  - Proposed Structure Location
  - Proposed Structure Location - Option
  - ☆ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Proposed 230 kV Transmission Line - Option
  - Temporary Water Pipeline
  - Proposed ROW
  - Existing Access Road
  - Permanent Impacts
  - Temporary Impacts - Outside the ROW
  - Stringing Sites - Outside the ROW
  - Temporary Impacts - Within the ROW
  - Stringing Sites - Within the ROW
  - Yah-Thumb Solar Site
- #### General Features
- Existing Transmission Line
  - Railroad
  - Designated Utility Corridor
  - Township
  - Section
- #### Land Jurisdiction
- Bureau of Land Management Land
  - Indian Land

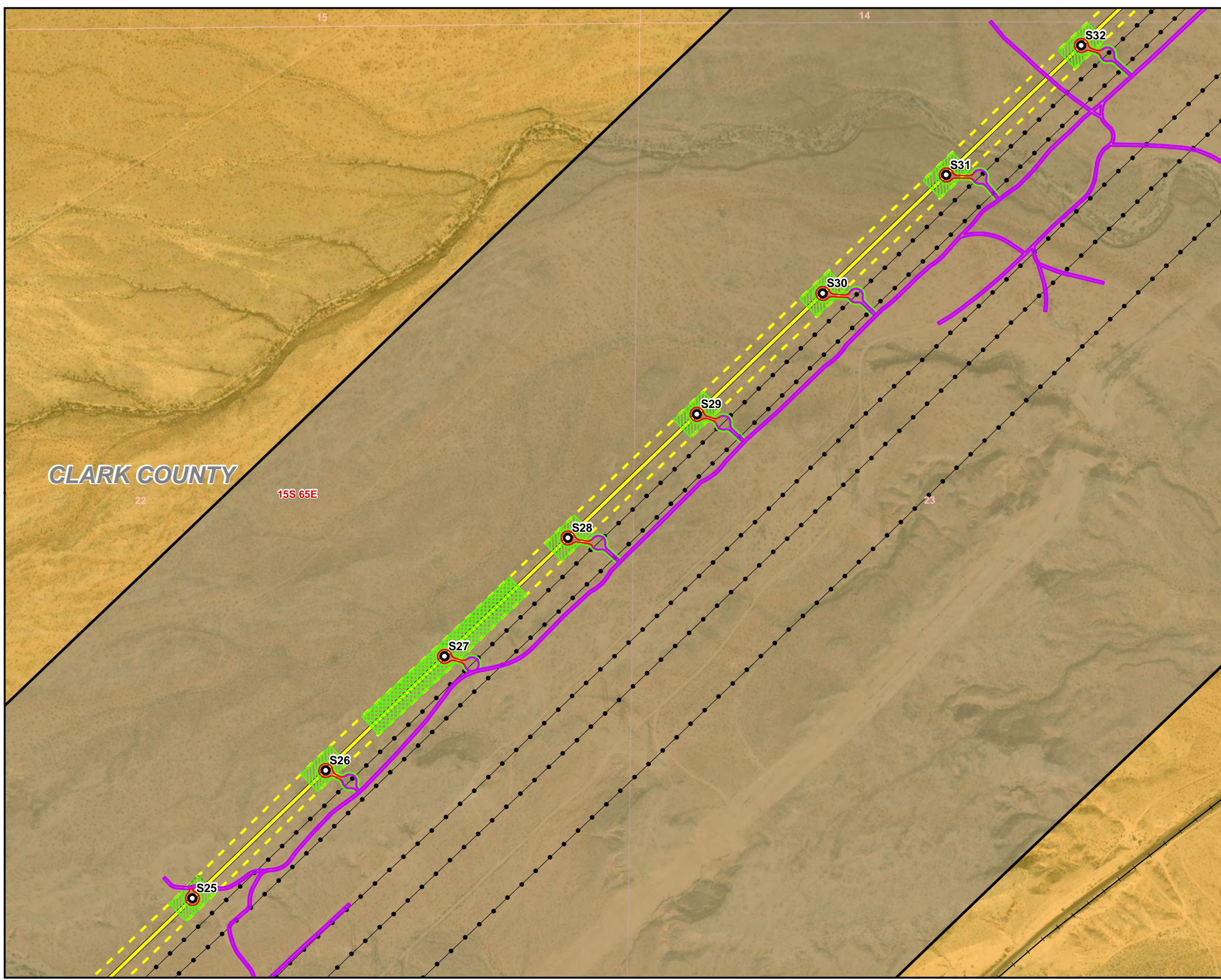


## Yah-Thumb Solar Project

### Proposed Route Mapbook

Map Extent: Clark County, Nevada

Date: 12-02-21	<b>Mapbook Page 5</b>	Author: mc
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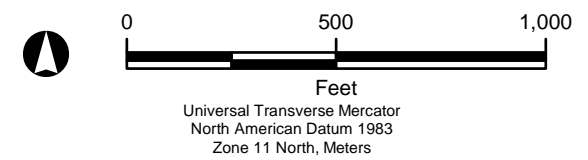
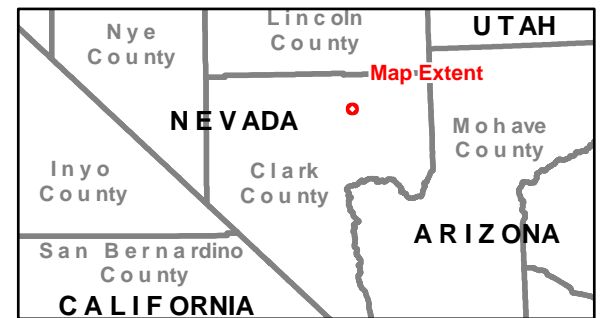


- ### Legend
- #### Project Components
- Substation
  - Yahthumb Collector Station
  - Proposed Structure Location
  - Proposed Structure Location - Option
  - ☆ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Proposed 230 kV Transmission Line - Option
  - Temporary Water Pipeline
  - Proposed ROW
  - Existing Access Road
  - Permanent Impacts
  - Temporary Impacts - Outside the ROW
  - Stringing Sites - Outside the ROW
  - Temporary Impacts - Within the ROW
  - Stringing Sites - Within the ROW
  - Yah-Thumb Solar Site
- #### General Features
- Existing Transmission Line
  - +— Railroad
  - Designated Utility Corridor
  - Township
  - Section
- #### Land Jurisdiction
- Bureau of Land Management Land
  - Indian Land

CLARK COUNTY

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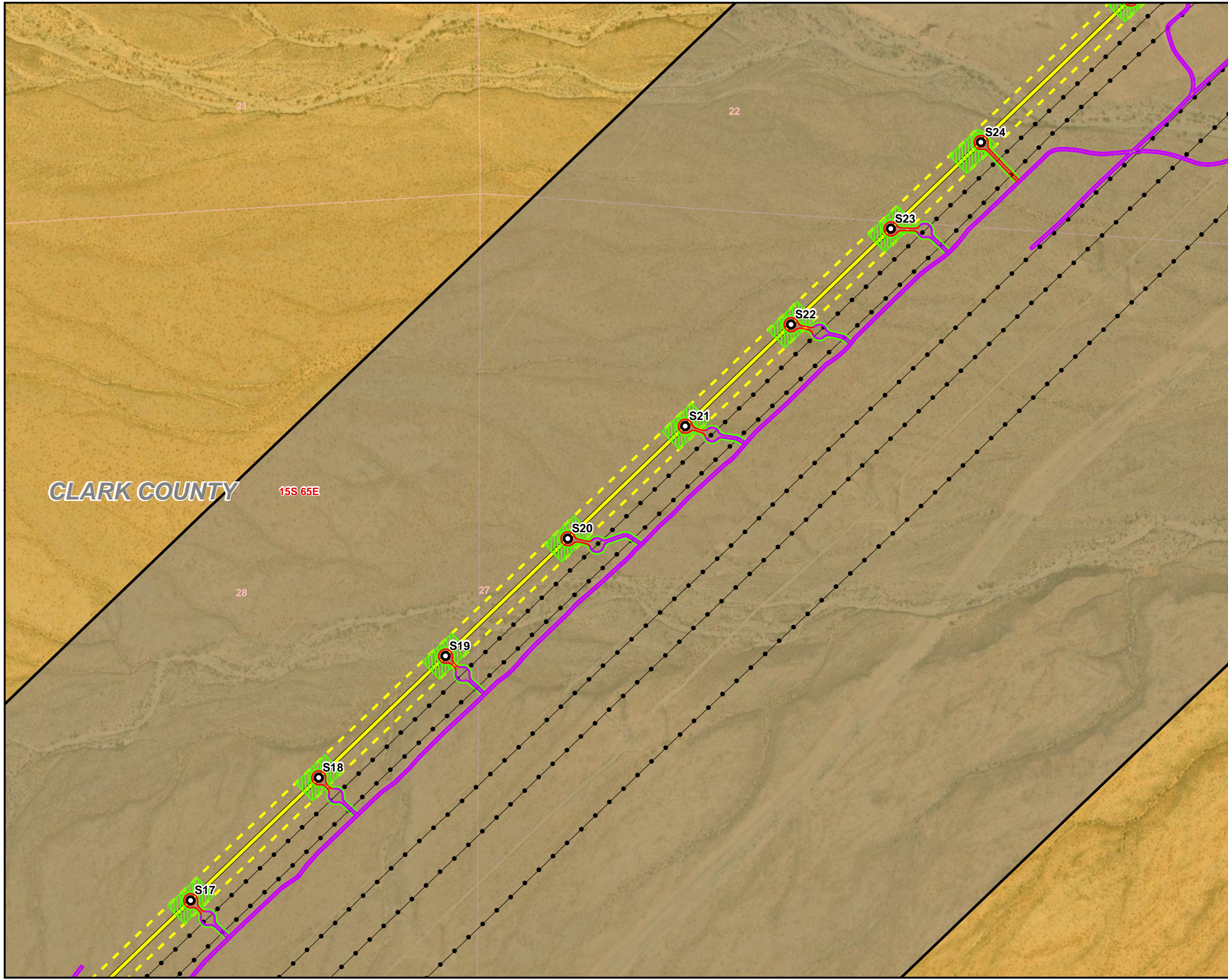


## Yah-Thumb Solar Project

### Proposed Route Mapbook

Map Extent: Clark County, Nevada

Date: 12-02-21	<b>Mapbook Page 6</b>	Author: mc
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### Legend

**Project Components**

- Substation
- Yahthumb Collector Station
- Proposed Structure Location
- Proposed Structure Location - Option
- ☆ Potential POCO Relocation
- Proposed 230 kV Transmission Line
- Proposed 230 kV Transmission Line - Option
- Temporary Water Pipeline
- Proposed ROW
- Existing Access Road
- Permanent Impacts
- Temporary Impacts - Outside the ROW
- Stringing Sites - Outside the ROW
- Temporary Impacts - Within the ROW
- Stringing Sites - Within the ROW
- Yah-Thumb Solar Site

**General Features**

- Existing Transmission Line
- +— Railroad
- Designated Utility Corridor
- Township
- Section

**Land Jurisdiction**

- Bureau of Land Management Land
- Indian Land

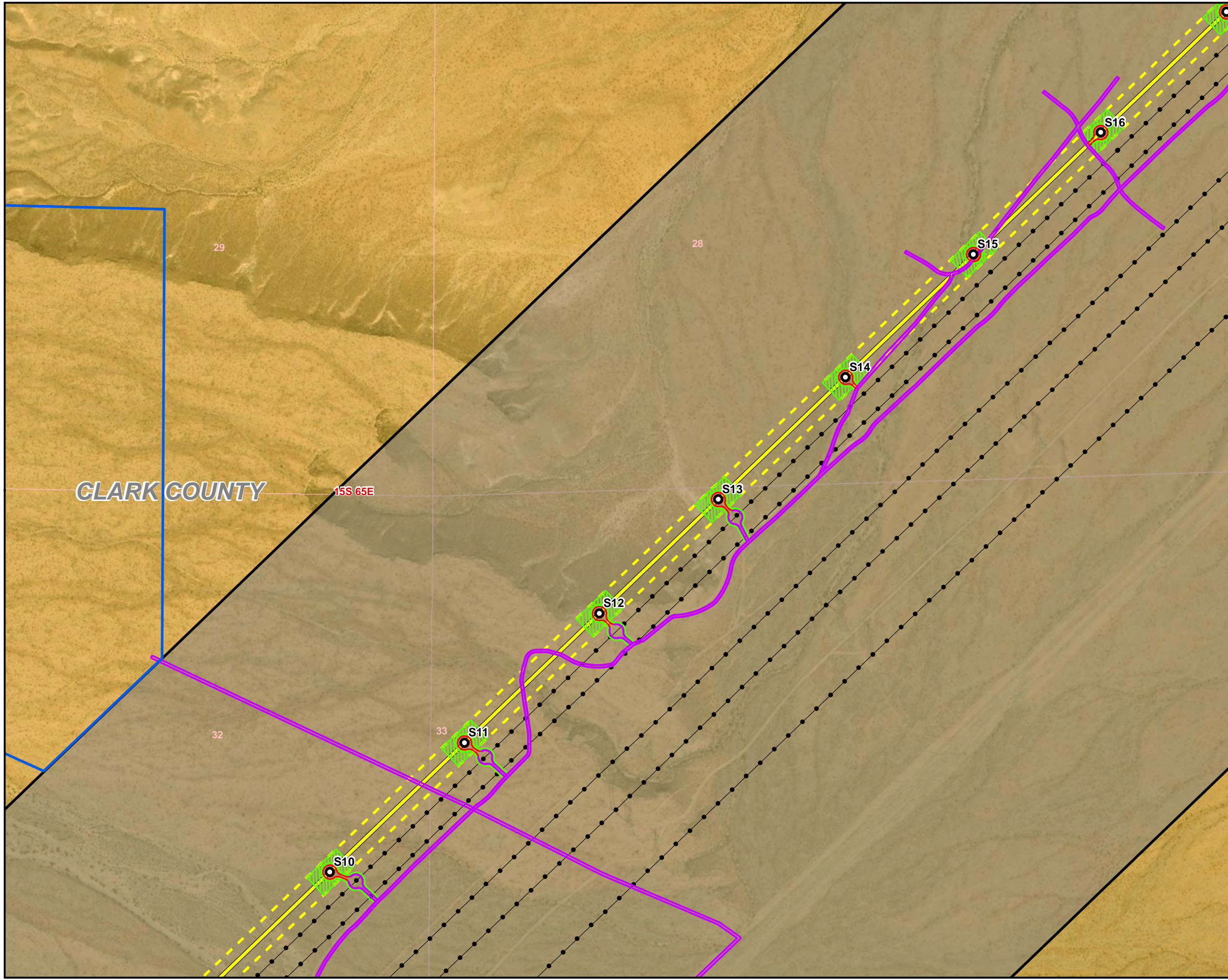
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Yah-Thumb Solar Project

Proposed Route Mapbook

Map Extent: Clark County, Nevada

Date: 12-02-21	Mapbook Page 7	Author: mc
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### Legend

**Project Components**

- Substation
- Yahthumb Collector Station
- Proposed Structure Location
- Proposed Structure Location - Option
- ☆ Potential POCO Relocation
- Proposed 230 kV Transmission Line
- Proposed 230 kV Transmission Line - Option
- - - Temporary Water Pipeline
- - - Proposed ROW
- Existing Access Road
- Permanent Impacts
- ▨ Temporary Impacts - Outside the ROW
- ▩ Stringing Sites - Outside the ROW
- ▨ Temporary Impacts - Within the ROW
- ▩ Stringing Sites - Within the ROW
- Yah-Thumb Solar Site

**General Features**

- Existing Transmission Line
- +— Railroad
- Designated Utility Corridor
- Township
- Section

**Land Jurisdiction**

- Bureau of Land Management Land
- Indian Land

Map Extent

Universal Transverse Mercator  
North American Datum 1983  
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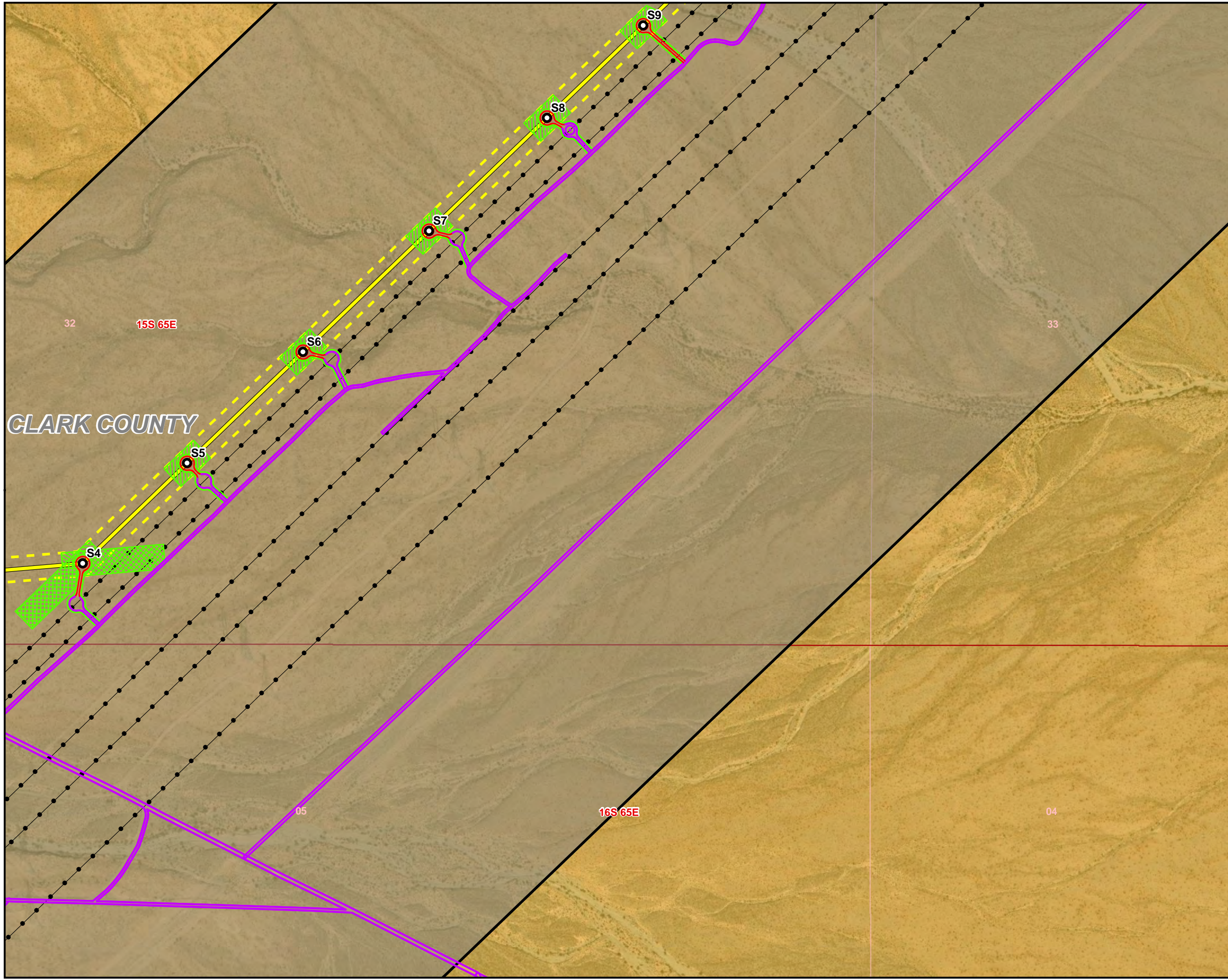
Yah-Thumb Solar Project

Proposed Route Mapbook

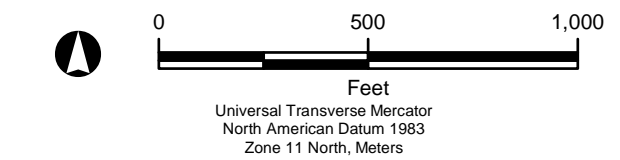
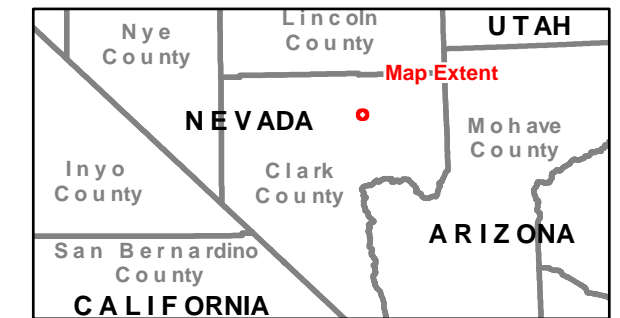
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Date: 12-02-21	Mapbook Page 8	Author: mc
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- ### Legend
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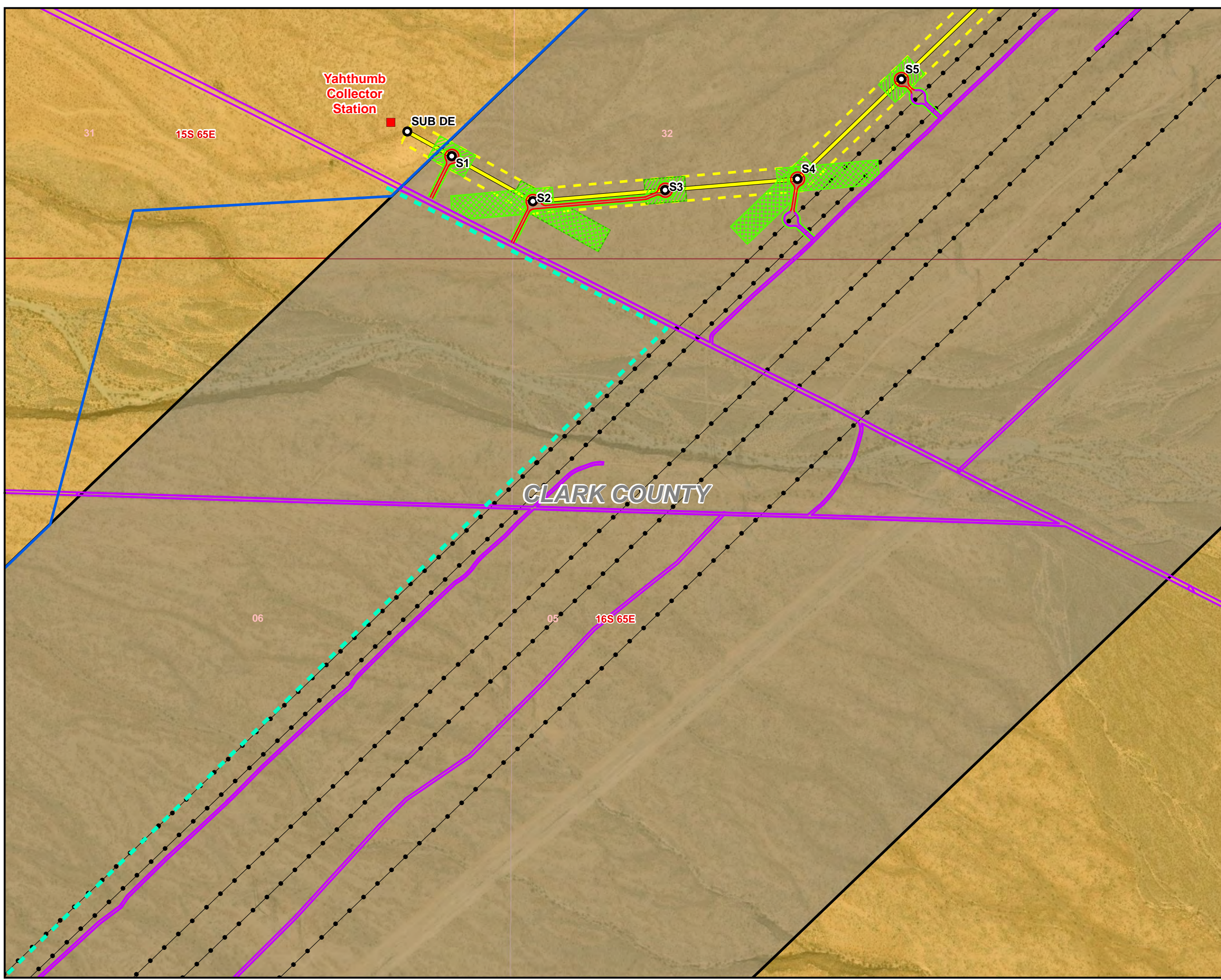


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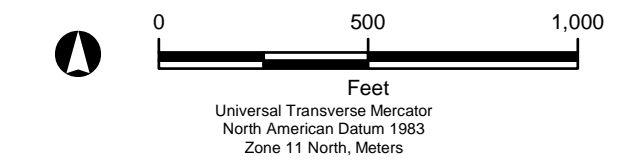
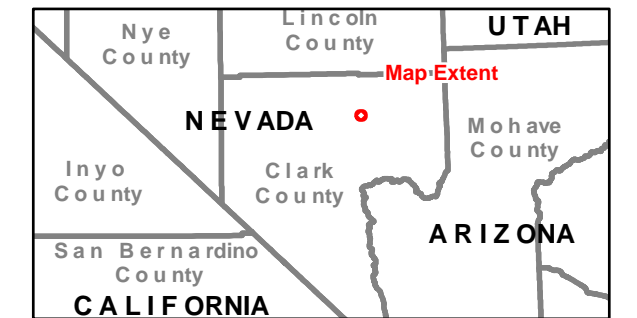
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Map Extent: Clark County, Nevada

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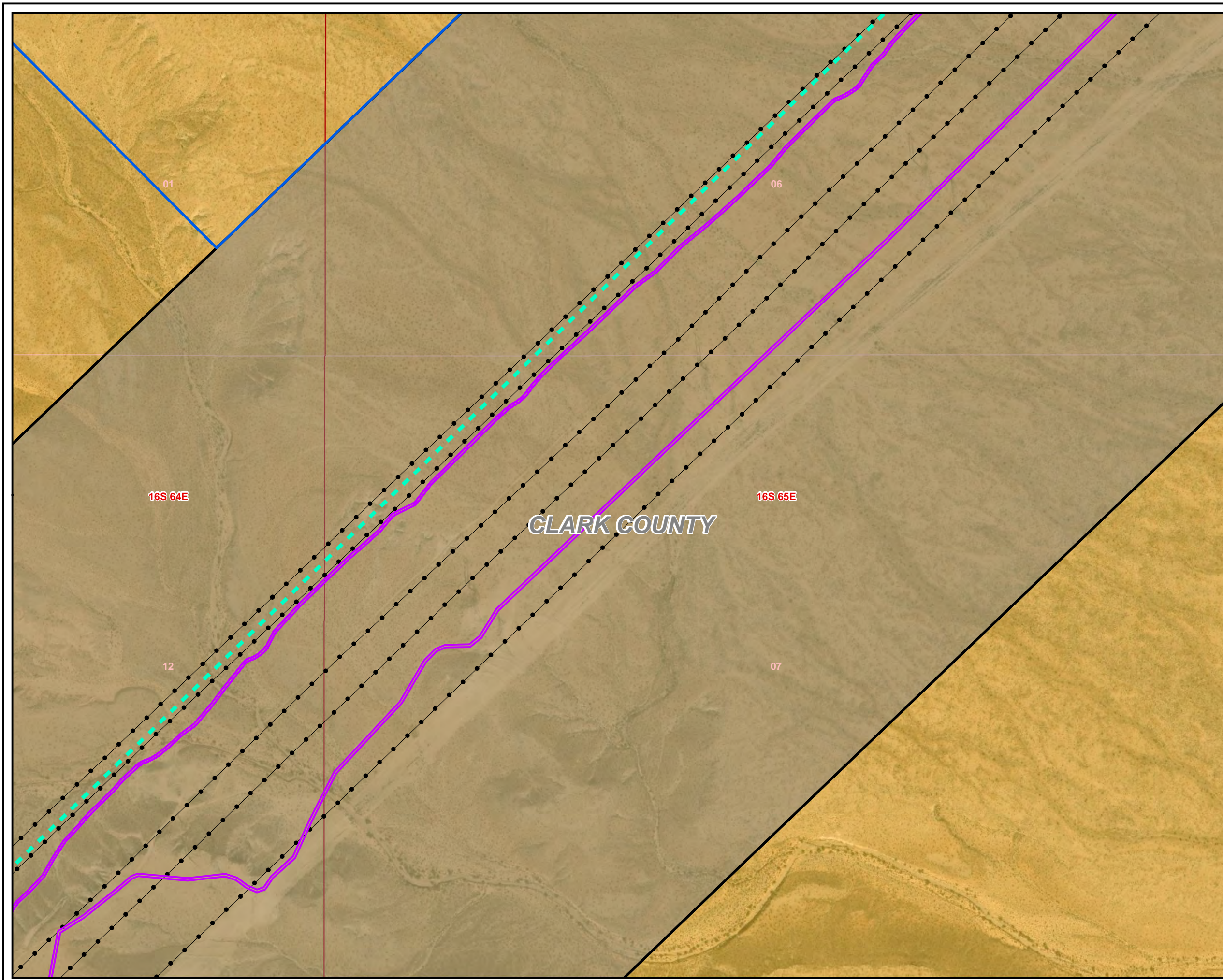


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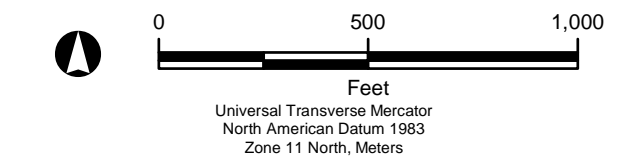
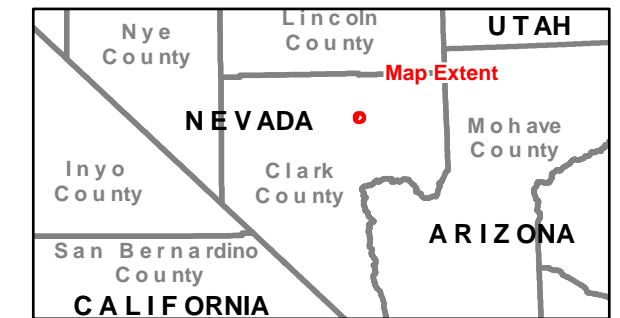
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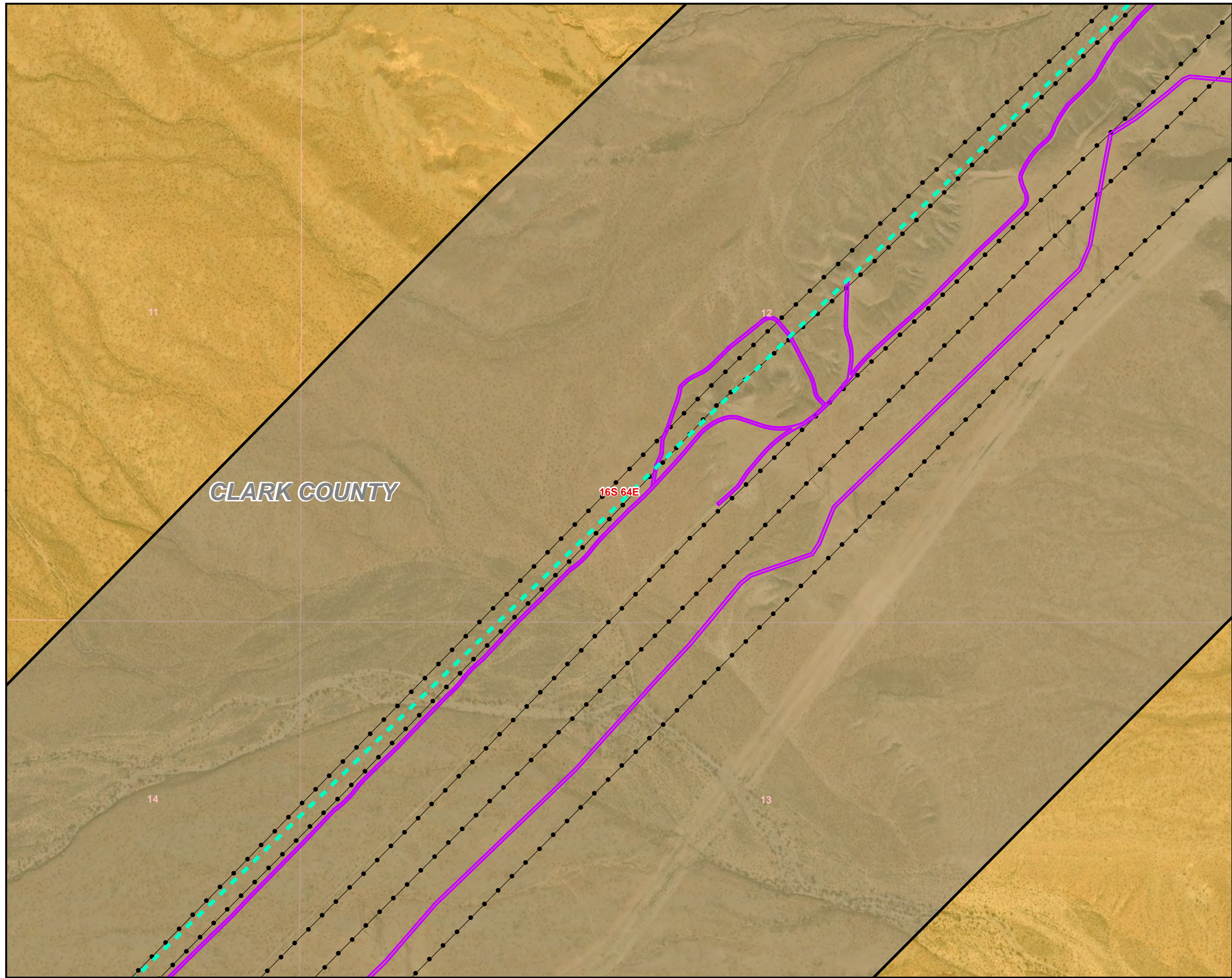
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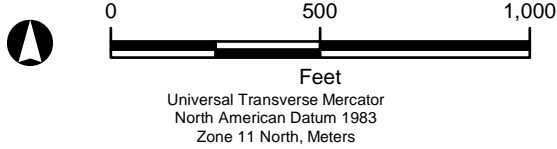
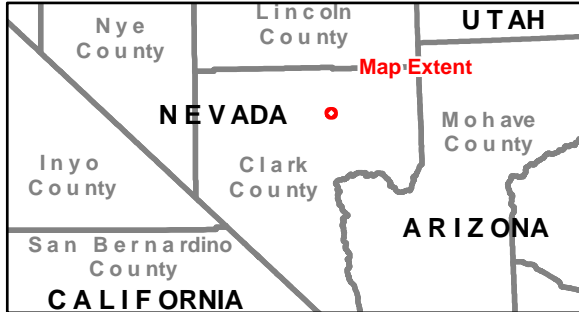
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Map Extent: Clark County, Nevada		
Date: 12-02-21	Mapbook Page 11	Author: mc
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  - Section
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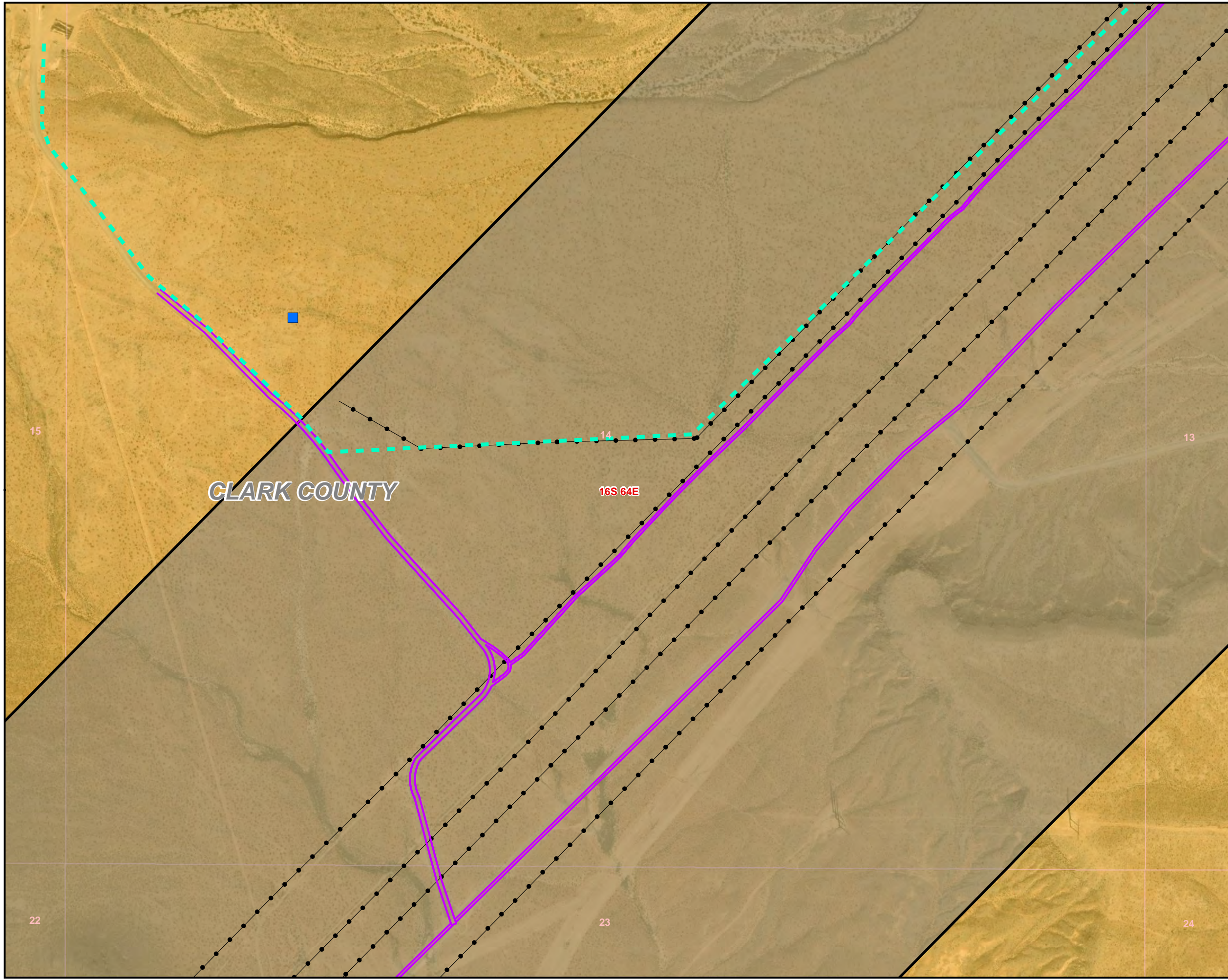


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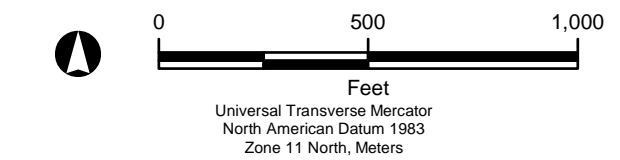
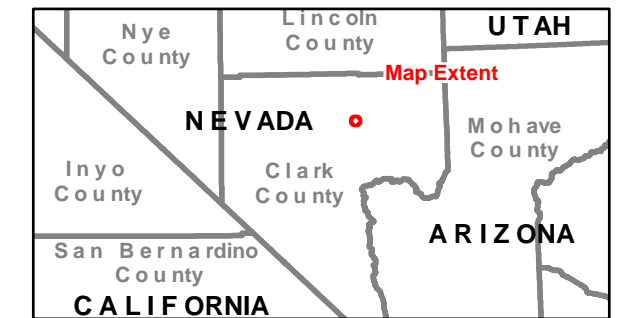
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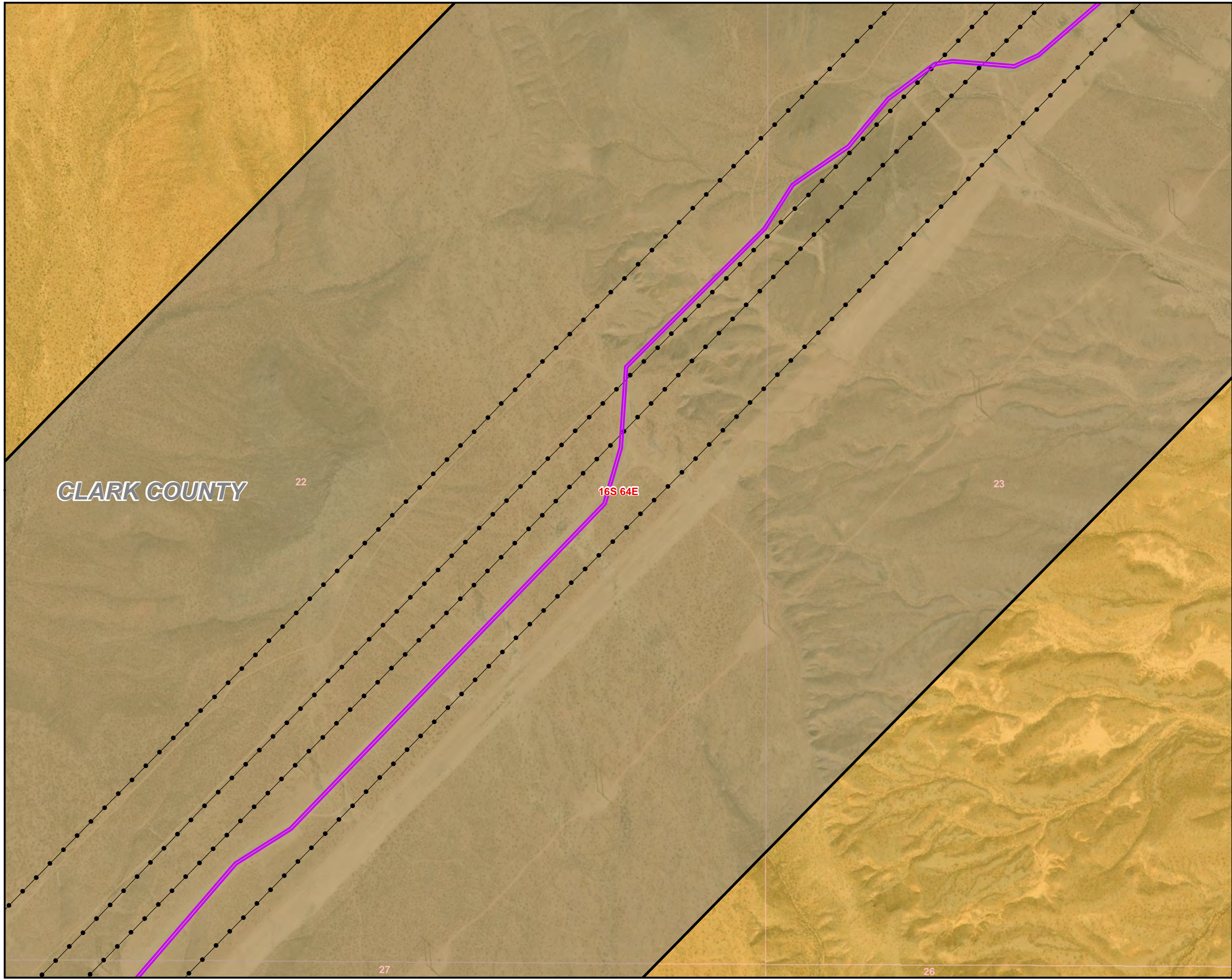
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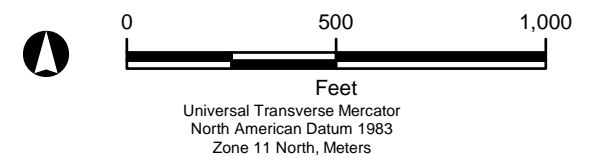
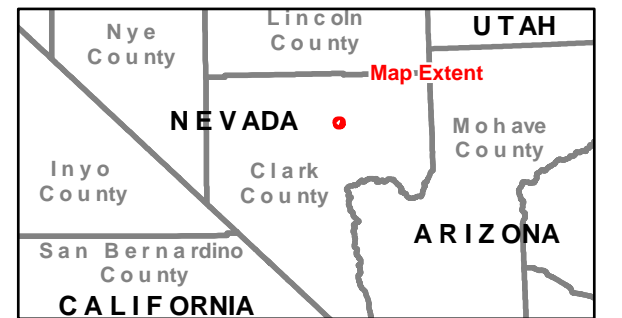
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<i>Proposed Route Mapbook</i>		
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Date: 12-02-21	Mapbook Page 13	Author: mc
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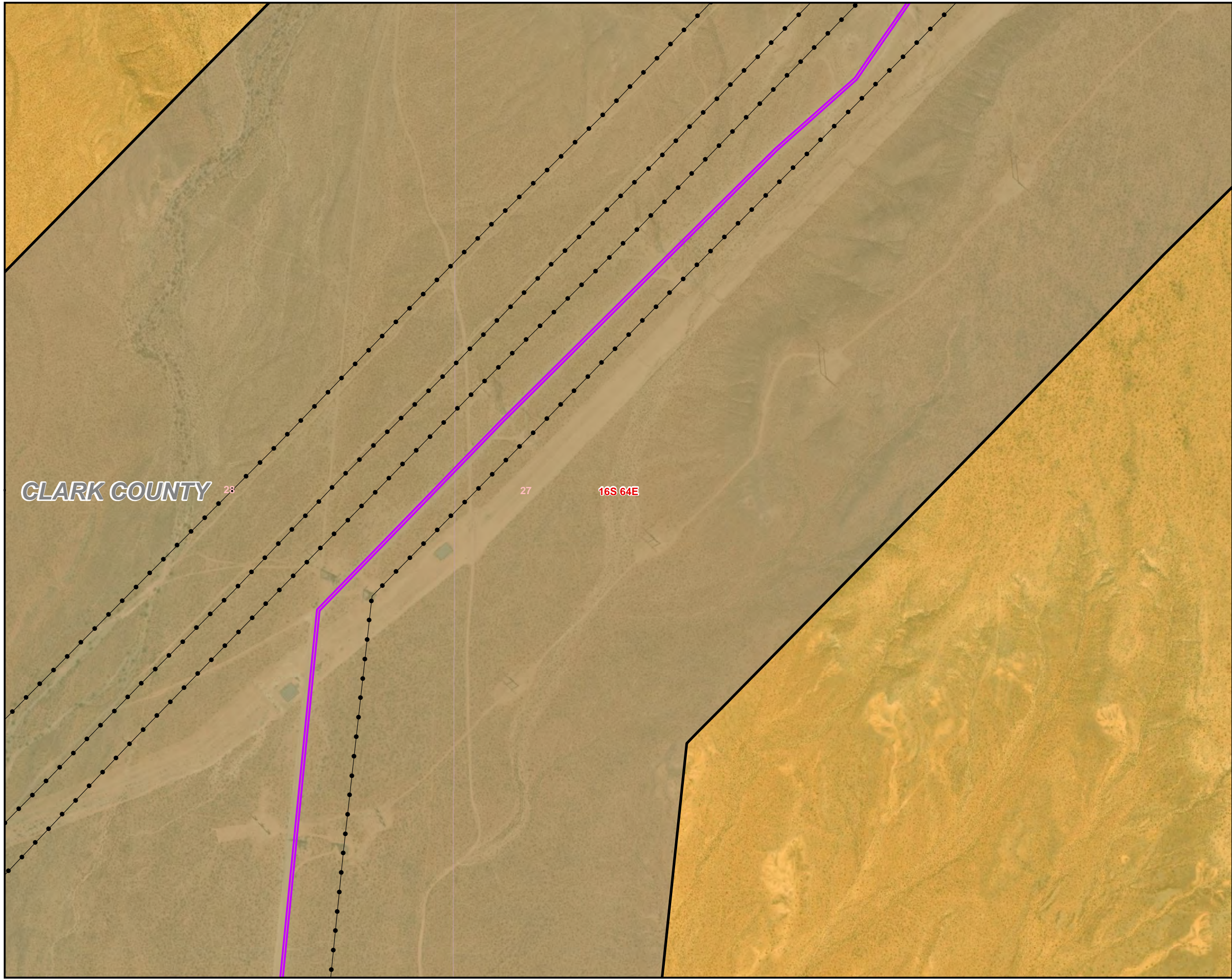


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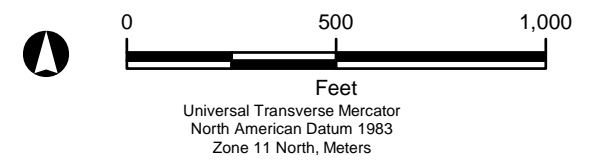
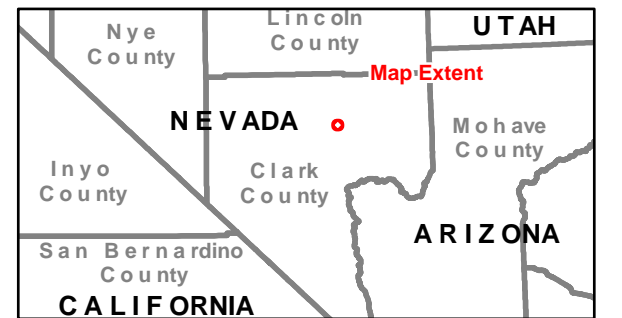
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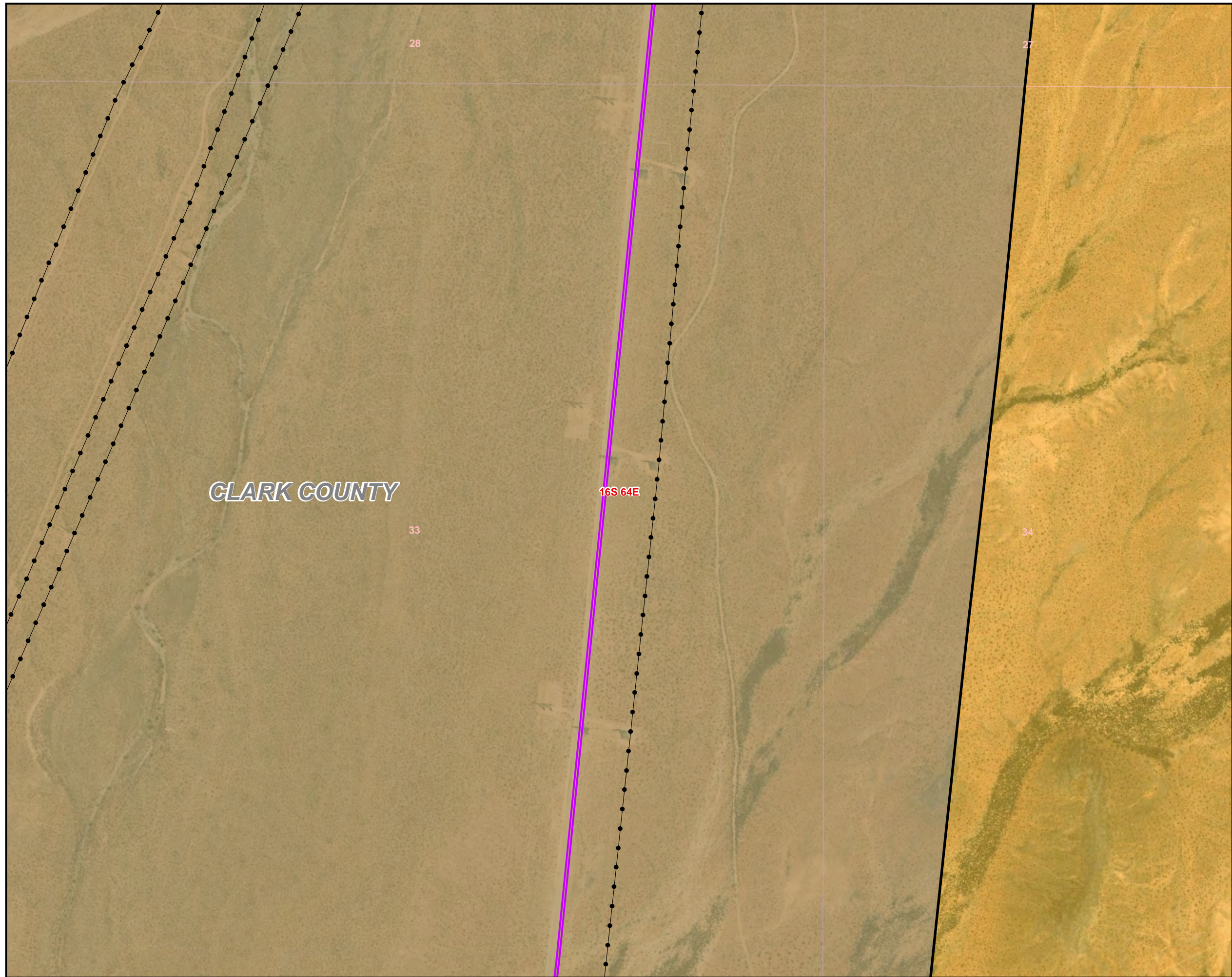


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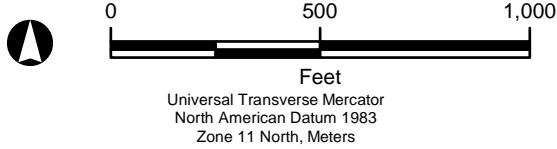
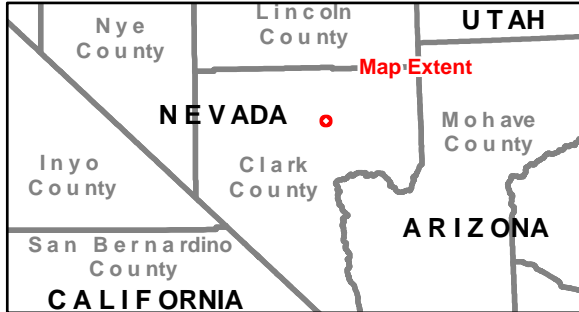
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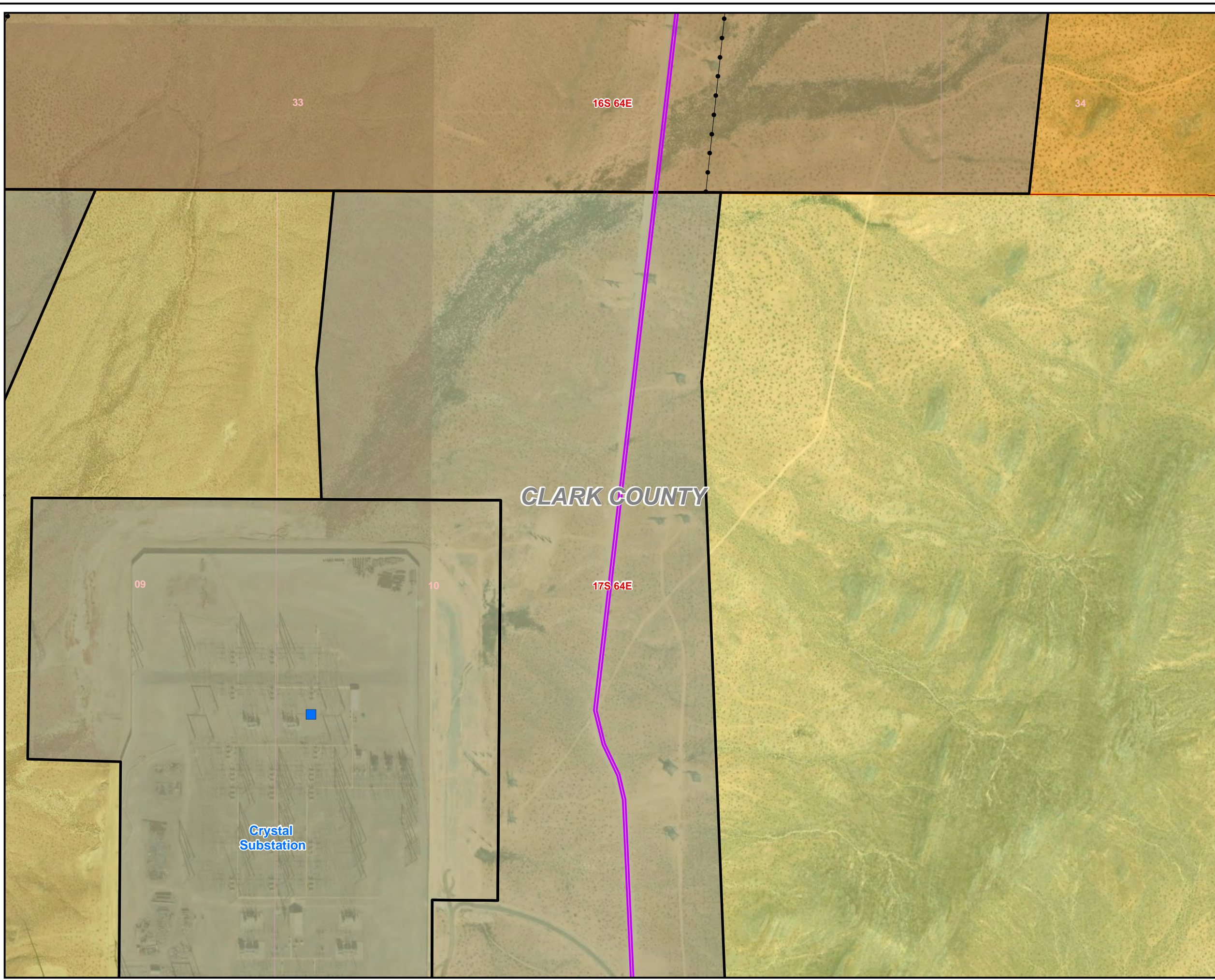
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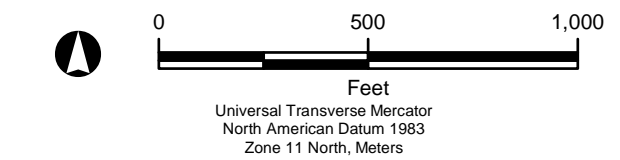
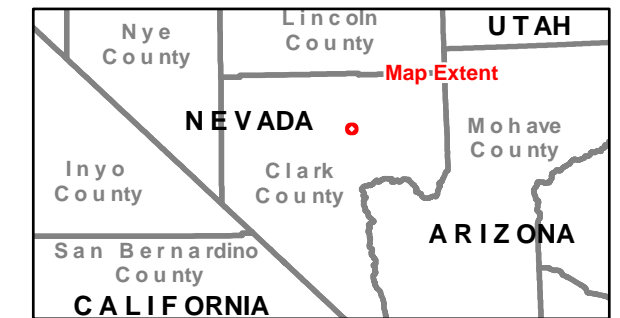
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- ### Legend
- Project Components**
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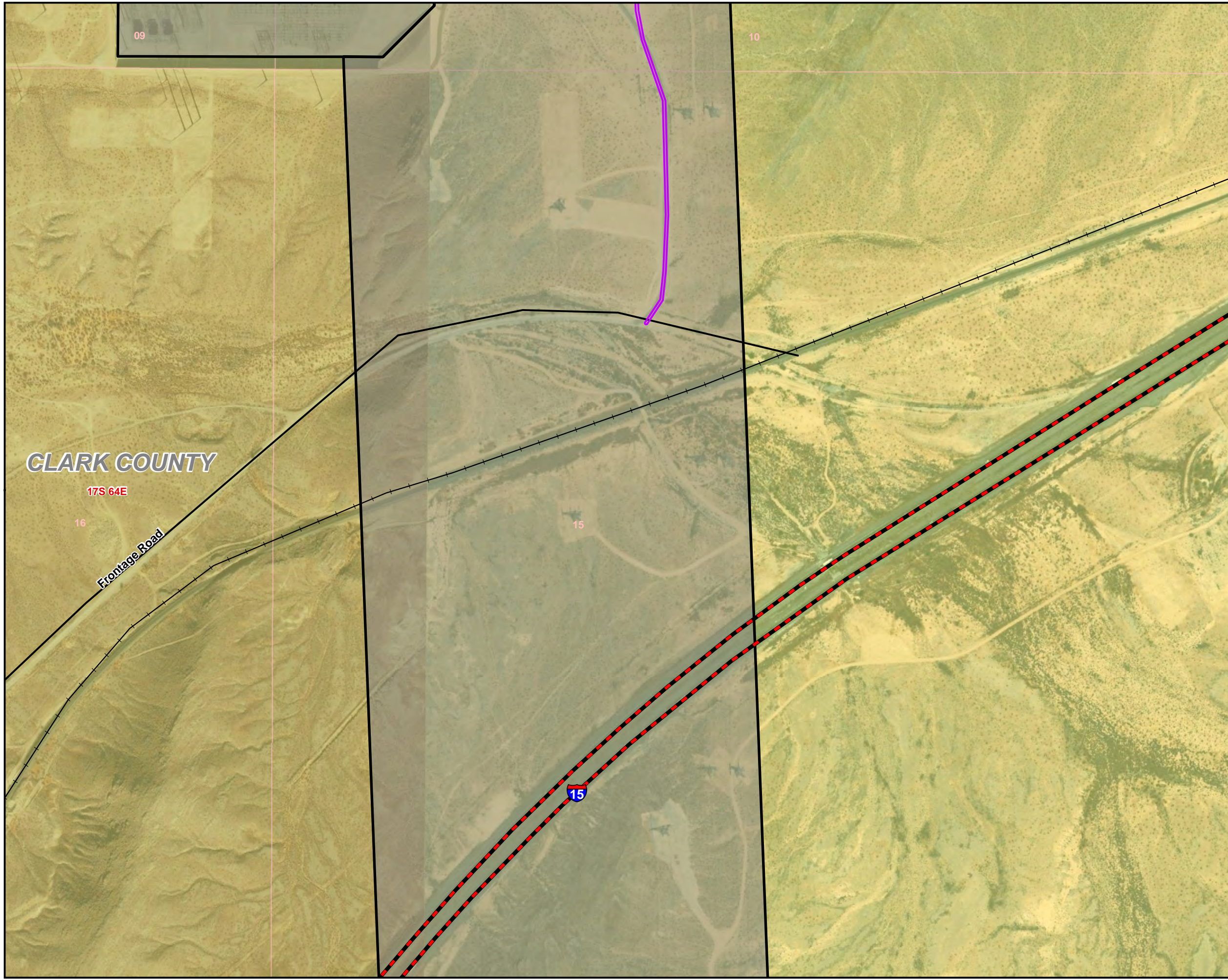


**Yah-Thumb Solar Project**

**Proposed Route Mapbook**

Map Extent: Clark County, Nevada

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**CLARK COUNTY**

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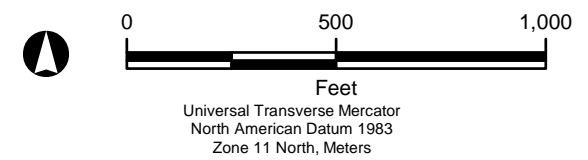
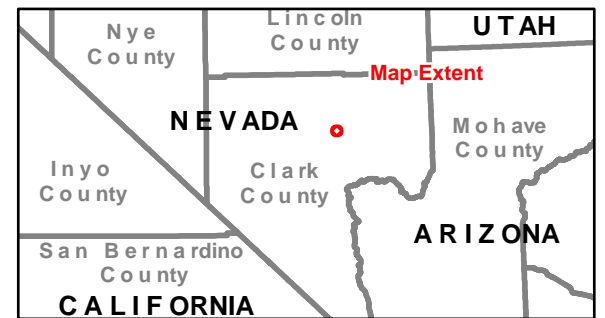
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Frontage Road

15

15

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  - Indian Land



## Yah-Thumb Solar Project

### Proposed Route Mapbook

Map Extent: Clark County, Nevada

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## **Appendix E**

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### Site Revegetation / Restoration Plan

# Site Restoration Plan

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## **YAHTHUMB SOLAR PROJECT**

July 2022

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## Acronyms and Abbreviations

BESS	Battery Energy Storage System
BIA	Bureau of Indian Affairs
BMP	Best Management Practice
BLM	Bureau of Land Management
EIS	Environmental Impact Statement
EDFR	EDF Renewables Development, Inc.
Moapa Band	Moapa Band of Paiute Indians
NDOW	Nevada Department of Wildlife
NRS	Nevada Revised Statute
O&M	Operations and Maintenance
PV	Photovoltaic
Reservation	Moapa River Indian Reservation
ROW	Right-of-Way
SRP	Site Restoration Plan
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

# 1 Introduction

Yahthumb Solar Project, LLC (Applicant) has entered into an option agreement with the Moapa Band of Paiute Indians (Moapa Band or Band) to lease up to 1,400 acres for the development of a solar project referred to as the Yahthumb Solar Project (Yahthumb Project or Project) to be located on the Moapa River Indian Reservation (Reservation) in Clark County, Nevada.

The solar project would generate up to 138 megawatts (MWs) of solar energy generation using photovoltaic (PV) technology and incorporating battery energy storage systems (BESS). The Yahthumb Project would include the solar project and all associated facilities. The Bureau of Indian Affairs (BIA), as lead agency in cooperation with the Moapa Band of Paiute Indians (Moapa Band), and other agencies, intends to prepare an Environmental Impact Statement (EIS) that will evaluate the Project.

## 1.1 Purpose

The purpose of this Site Restoration Plan (SRP) is to describe the proposed Yahthumb Solar Project and identify the various factors and methods to be applied toward restoring the site following construction. The goal of this SRP and its successful implementation is to mitigate the potential impacts associated with the proposed Project and to facilitate managed and natural restoration of the site and impacted areas toward achieving pre-project or similar conditions. This plan is a draft and will be updated prior to construction.

Appendix C (Applicant Proposed Mitigation and Best Management Practices [BMPs]) – Soils / Erosion and Biological Resources, states the following:

- Grading on the solar site would be minimized to only those areas where necessary to meet the construction and operational requirements of the Project. Where no grading occurs, existing vegetation would be mowed to a height of approximately 18 inches and driven over / crushed during construction activities where feasible and where it does not pose a safety risk. Following construction, on-site vegetation will be allowed to return to those areas and will only be mowed to avoid conflicts with solar facility operation and as necessary for safety and fire prevention;
- A Site Restoration Plan would be implemented to limit impacts to native, on-site vegetation as much as practicable. The Plan would define construction limits and BMP measures for soil restoration and re-planting in temporary impact areas such as gen-tie work areas, and establish monitoring and success criteria as applicable; and
- Potential closure activities could include re-grading and restoration of original site contours and re-vegetation of areas disturbed by closure activities in accordance with the Site Reclamation Plan. Revegetation seed mixes will be composed of native plant species.

The objectives of this SRP include:

- Minimize initial disturbance to habitats within the proposed Project area;
- Preserve site-specific materials for use in the restoration/revegetation phase, including topsoil, plants, and seeds, where practicable;
- Use native, BLM-approved plant species to revegetate disturbed areas on BLM land;

- Implement revegetation practices in a timely manner, thereby reducing secondary effects including soil erosion and establishment of noxious plant species; and
- Return the Project site to conditions similar to those that existed prior to project-initiation by restoring soils, topography, plant species and their densities and distribution.

The following procedure and task matrix (**Table 1-1**) identifies the specific BMPs that will be implemented, as needed, to minimize disturbance and implement restoration of the Project site.

<b>Table 1-1 Procedures and Task Matrix</b>		
<b>BMP #</b>	<b>Site Procedure(s)</b>	<b>Task Assignment and Schedule</b>
1	Minimize temporary disturbance areas as much as practicable.	Construction Supervisors and Staff will coordinate and perform work to minimize temporary disturbance areas as much as practicable.
2	Minimize grading to only those areas where necessary to meet the construction and operational requirements of the Project.	Construction Supervisors and Staff will coordinate and perform work to minimize unnecessary grading as much as practicable.
3	All work area boundaries will be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities. All workers, equipment, vehicles, and construction materials shall remain within the ROW, existing roads, and designated areas. Staging areas will be located in previously disturbed areas whenever possible.	Qualified Biologists and Environmental Managers will coordinate with Construction Supervisors and Staff to ensure that all work area boundaries are clearly marked as much as practicable and that all workers stay on designated roadways and in designated areas.
4	Preserve site-specific materials for use in the restoration phase, where practicable.	Construction Supervisors and Staff will preserve materials, as practicable, prior to the start of work.
5	Implement restoration practices in a timely manner, thereby reducing secondary effects including soil erosion and establishment of noxious plant species.	Construction Supervisors and Environmental Managers will coordinate to ensure revegetation occurs within a timely manner.



## 2 Roles and Responsibilities

All site Project construction, operation and maintenance (O&M) and decommissioning employees, contractors, and sub-contractors will be familiar with the SRP and will be responsible for implementing this Plan.

All Workers, Contractors, and Contractor Staff shall:

- Minimize initial disturbance within the proposed Project area;
- Preserve site-specific materials for use in the restoration phase where practicable;

Environmental Managers and/or Construction Supervisors shall:

- Implement restoration practices in a timely manner, thereby reducing secondary effects including soil erosion and establishment of noxious plant species; and
- Return areas temporarily disturbed by construction to conditions similar to those that existed prior to Project-initiation, as feasible.

Individuals responsible for general program auditing and reporting include:

- Environmental Managers and Representatives, as they relate to restoration measures.

## 3 Project Description

### 3.1 Project Area

The proposed Yahthumb solar generating facility would be constructed entirely within the Reservation within a lease study area of approximately 1,695 acres of tribal trust land. These lands are all located in a central corner of the Reservation in an area set aside by the Band exclusively for the Yahthumb Project. The solar fields and associated facilities would be in Sections 29, 30, 31, and 32; Township 16 South, Range 64 East; Mount Diablo Base Meridian. **Figure 1** shows the proposed general location for the Project.

The proposed Project would occur in the Basin and Range physiographic province in a part of the Mojave Desert. This physiographic province is characterized by the hundreds of long, narrow, and nearly parallel mountain ranges that are separated by deep valleys. These features are visible at the proposed Project site, with nearly parallel mountain ranges situated generally in a north-south direction that are located near the proposed Project site. The majority of the Project site occurs in a sloping valley. The proposed Project site occurs in the Mojave Desert Scrub biome and is dominated by plants common to this biome including creosote bush (*Larrea tridentata*) and white bur-sage (*Ambrosia dumosa*).

## 3.2 Proposed Project

The following describes the major features of the proposed Project. For a comprehensive description of the proposed Project, refer to the associated Yahthumb Solar Project Draft Environmental Impact Statement (DEIS) for the Project design details (subject to minor design changes).

**Figure 2** shows the locations of the proposed gen-tie lines and access roads. **Figure 3** shows the proposed location of the lease study area for the proposed Project where solar fields would be developed. Major on-site facilities would include a 138 MW alternating current (AC) solar field comprised of multiple blocks of PV solar panels mounted on single-axis tracking systems, associated inverter and transformer equipment, a BESS, and a project substation. The off-site facilities would include a gen-tie and associated facilities, site access roads, and a temporary water pipeline.

The gen-tie line would be a single-circuit 230 kilovolt (kV) line up to approximately 10.3 miles long and located on the Reservation, BLM-administered lands, and private lands. It would generally parallel the ESM gen-tie line (recently constructed) and most of it would be within a federally designated utility corridor on the Reservation managed by BLM. This line would generally require a ROW width of 75 feet. The primary access for the site would be provided by the existing Ute Road from an interchange on I-15, and secondary access would be provided by the existing road network within the utility corridor. Temporary facilities that would be removed/reclaimed at the end of construction include a temporary water pipeline, laydown and construction areas, and temporary construction areas along the gen-tie line.

The water supply required for the Project would be provided by the Moapa Band and drawn from the Moapa Band's existing water rights. This water would be provided either from an existing tribal well located off-site approximately 4.7 miles south of the solar Project or a new well drilled on site. If the selected water supply is the off-site well, water would be delivered to the site during construction by a temporary water pipeline or trucks.

The Project would include the following onsite key elements located within the up to 1,400-acre solar lease boundary. Onsite facilities would impact only a portion of the 1,400-acre lease area and would include:

- Solar fields
- Battery Energy Storage System (BESS)
- On-site electrical collection system and substation
- Site security and fencing
- Communication systems infrastructure
- Internal Project roads
- Lighting
- Waste and hazardous materials management
- Fire protection

Permanent disturbance areas would include piles, inverters/transformers, O&M area, substation, BESS, solar site roads within and between solar arrays, and drainage features. Temporary disturbance areas would include those portions of the solar field that are not graded, mowed to 18 inches and crushed, graded but not permanently occupied, and laydown areas.

## Yahthumb Draft Site Restoration Plan

The Project would include the following off-site permanent elements located outside of the solar lease boundary:

- 230-kV Transmission Line (Gen-Tie)
- Access Roads (primary and secondary)

The Project would also include the following temporary key elements associated with construction that would be removed once construction is complete:

- Equipment laydown areas on the solar field
- Construction areas and pulling sites along the gen-tie line
- Temporary water pipeline

## 4 Existing Conditions

### 4.1 Vegetation

The Mojave Desert hosts a wide variety of vegetation, including approximately 250 species of annual herbaceous plants, at least 80 of which are endemic (Randall et al. 2010). Native Mojave Desert vegetation is typically tolerant of low humidity, prolonged droughts, desiccating winds, high alkalinity or salinity, rocky or very sandy soils, and the periodic influx of high quantities of water in the form of surface flooding (NDOW 2012). The Project is located in the Mojave Warm Desert and Mixed Desert Scrub habitats (Wildlife Action Plan Team 2012).

Vegetation in the lease study area and off-site components is primarily composed of Sonora-Mojave Creosotebush-White Bursage Desert Scrub (90 percent). This community is typically dominated by creosotebush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), which can be sparse to moderately dense (2–50 percent cover). Many other shrubs, dwarf-shrubs, and cacti may be present, often as a sparse understory. In southern Nevada, common species include saltbush (*Atriplex spp.*), Mormon tea (*Ephedra nevadensis*), desert wolfberry (*Lycium andersonii*), brittlebush (*Encelia farinosa*), and beavertail cactus (*Opuntia basilaris*). The herbaceous layer is typically sparse but can be abundant with ephemerals after spring rains. Herbaceous species common in the region include phacelia (*Phacelia spp.*), desert trumpet (*Erigeron inflatum*), cryptantha (*Cryptantha spp.*), and low woollygrass (*Dasyochloa pulchella*).

On the Reservation, the solar facility area includes approximately 1,282 acres of creosote scrub vegetation and the off-site components on Reservation land contain approximately 1 acre. On federal land managed by the BLM, there are approximately 53 acres of creosote scrub vegetation. On private land owned by NV Energy, there are approximately 3 acres of creosote bush scrub vegetation.

The North American Warm Desert Wash vegetation community covers 8 percent of the lease study area and off-site components. The vegetation of desert washes is highly variable, ranging from sparse and patchy to moderately dense. It typically occurs along the banks of washes but may occur within the channel. The woody layer is typically intermittent and relatively open and is usually dominated by shrubs and small trees such as catclaw (*Senegalia greggii*) and desert willow (*Chilopsis linearis*) (U.S. Geological Survey [USGS] 2005). The desert wash vegetation community is generally restricted to the ephemeral washes on the western side of the Project area and several washes along the gen-tie route.

On the Reservation, the solar facility area includes approximately 118 acres of desert wash vegetation and there is no desert wash vegetation on the off-site components on Reservation land. On federal land managed by the BLM, there are approximately 7 acres of desert wash vegetation. No desert wash vegetation occurs on private land owned by NV Energy.

The North American Invasive Southwest Riparian Woodland and Shrubland vegetation community covers 2 percent of the lease study area and off-site components. This community represents areas that are dominated by introduced woody species such as saltcedar and Russian olive (*Elaeagnus angustifolia*). This vegetation community is limited to a few patches of saltcedar

along the larger drainages within the Project area and in a few small areas along the Muddy River on the gen-tie line.

Due to the lack of perennial water in the Project area, this vegetation is limited to approximately 26 acres that includes a few small patches of saltcedar along larger drainages within the solar facility and approximately 2 acres along the gen-tie option on private land owned by NV Energy. This vegetation type does not occur within the Project areas on BLM-managed land.

In southern Nevada, washes tend to support a higher diversity and density of cacti and yucca than the surrounding landscape. Vegetation surveys conducted for previously approved solar projects on the Reservation identified numerous cacti and yucca species including cholla (*Cylindropuntia spp.*), barrel cactus (*Ferocactus cylindraceus*), hedgehog cactus (*Echinocereus engelmannii* var. *chrysoctrus*), and Mojave yucca (*Yucca schidigera*). Higher densities of big galleta grass (*Pleuraphis rigida*) and catclaw acacia (*Acacia greggii*) are also commonly reported in washes in this region (BIA 2012, 2014, 2019).

Throughout the Mojave Desert, native understory vegetation is being replaced with invasive species such as red brome (*Bromus rubens*), cheatgrass (*Bromus tectorum*), Sahara mustard (*Brassica tournefortii*), halogeton (*Halogeton glomeratus*), and Russian thistle (*Salsola spp.*). Non-native annual grasses such as red brome, cheatgrass, and Mediterranean grass (*Schismus barbatus*) compete with native forage plants, and the fuel these plants create has led to increased fires in parts of the Mojave Desert where they were historically rare (Invasive Weed Awareness Coalition 2006).

## **4.2 Federally-Listed and Candidate, Threatened or Endangered Plant Species**

A list of plant species protected under the Endangered Species Act that may occur within the Project area was obtained from the USFWS website Information for Planning and Consultation System (IPaC) (USFWS 2022) on January 20, 2022. No plant species listed as candidate, threatened or endangered species have the potential to occur within the Project area.

## **4.3 BLM Sensitive and State-listed Plant Species**

Multiple plant species are protected under State of Nevada Revised Statute 527 and/or as BLM Sensitive species. However, there is no jurisdiction for protection of these species on BIA-managed lands. The only portion of the Project where protection of BLM-Sensitive Species and Nevada State-listed species is applicable is on the portions of the gen-tie on BLM-managed lands.

## 5 Restoration Actions

### 5.1 Construction Tasks

As previously described, temporary disturbance for the Project occurs on the Reservation, within the BLM-managed designated utility corridor on the Reservation, BLM-managed lands and private lands. Prior to the initiation of Project construction, the Yahthumb Project will be surveyed and staked. Survey work will consist of locating the site and ROW boundaries, the locations of proposed facilities, and the centerlines of linear features.

During construction, vegetation will be permanently cleared from piles, inverters/transformers, O&M area, substation, BESS, solar site roads within and between solar arrays, and drainage features. Within the solar fields, native vegetation will be crushed or left in place to the extent possible with some selective trimming as needed to create a safe work environment and avoid interference with the movement of the solar panels. Vegetation within the solar arrays will be crushed or driven over, and in some cases, trimmed to a height of 18 inches, leaving the roots intact to facilitate regrowth during operations and reduce the establishment of invasive species. Construction equipment will drive over and crush the vegetation during installation of the solar arrays.

Restoration efforts at temporarily disturbed sites will begin as soon as practical during construction, after completing the soil-disturbing activities for the Project. To maximize restoration success, revegetation activities may be timed to occur during cooler temperatures (i.e., spring and fall). For sites that may be disturbed more than once during the construction phase, temporary soil covering, stockpiling and/or erosion control will be implemented.

### 5.2 Post-Construction Tasks

Restoration efforts at temporarily disturbed sites will begin as soon as practical after completing the soil disturbing activities for the entire Project. For sites that may be disturbed again during the construction phase, temporary soil covering, erosion control, and weed monitoring would occur.

Temporarily disturbed areas include the construction laydown areas, temporary roads, and the areas where the vegetation has been mowed (e.g. under the solar arrays, where native vegetation will be left in place and mowed to a height of 18 inches leaving the roots intact and construction equipment would drive over and crush the vegetation during installation of the arrays). Temporarily disturbed areas will be reclaimed as much as practicable. Where appropriate, graded areas could be recontoured and soils would be de-compacted. The soil surface would then be textured. Seeding with local and weed-free seed mixes recommended by the Band, BIA and BLM would be conducted on suitable areas as necessary during appropriate months following construction. Temporary roads built for construction could be reclaimed or could be maintained for use during the operational life of the Project. The portions of construction roads to be reclaimed would be determined at the end of construction.

All restoration efforts should be implemented as soon as practical after disturbance of a site has concluded and prior to the typical rainy season of late summer and early fall. This will minimize the potential for soil loss and establishment of noxious weeds.

## **6 Phases of Restoration**

Restoration and revegetation activities will occur primarily in two phases; 1) post-construction and 2) post-decommissionion.

### **6.1 Post-Construction**

Post-construction restoration activities focus on areas that have been temporarily disturbed and will not experience additional surface disturbing activities (e.g. service roads required during construction, equipment and material laydown areas, etc.). The restoration areas do not include areas where the vegetation has been mowed (e.g. under the solar arrays) since the mowing is performed to facilitate regrowth during operations since the roots are left intact. Seeds of native herbaceous plants may be used to revegetate temporary work areas and other areas that will not be disturbed following construction. Successful revegetation will decrease the potential for soil erosion, preserving suitable conditions for plant growth, as well as maintaining structural support and foundation for the installed solar modules.

### **6.2 Post-Decommissioning**

Post-decommissioning restoration efforts will focus on all areas within the solar facility. Post-decommission restoration will be based on similar regulations, guidelines, practices, and techniques as previously described in this report. The goal of post-decommission restoration is to restore the Project site to pre-construction conditions to the greatest extent practicable.

## **7 Weed Management**

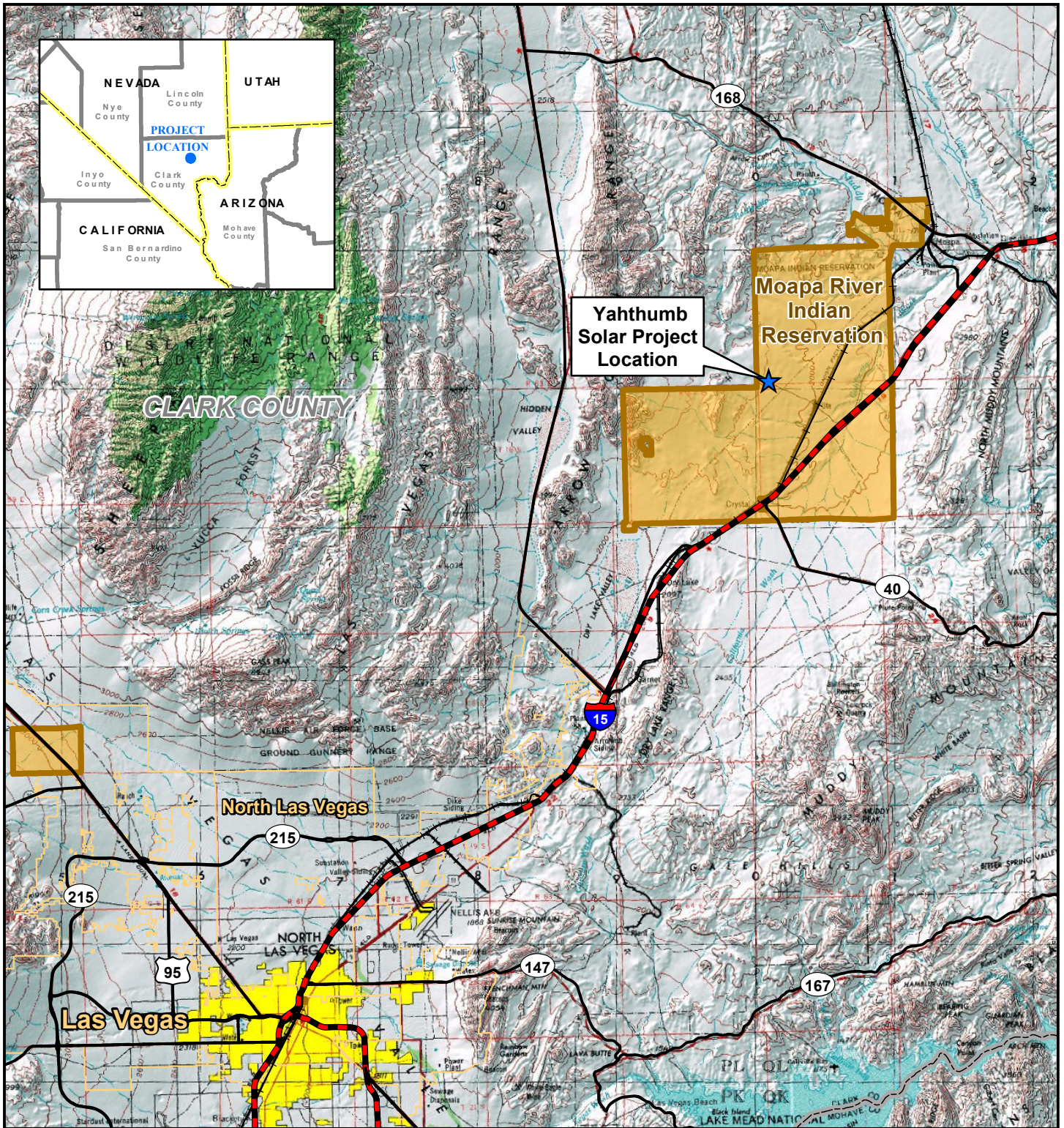
Weed management for this Project will be conducted throughout the life of the Project and in accordance with the Project-specific Weed Management Plan (Appendix F in DEIS).








## 8 References

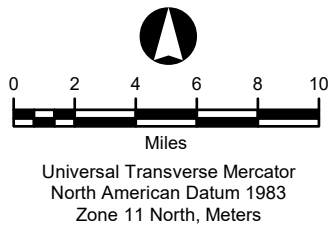
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## FIGURES



**Legend**

-  Solar Project Location
-  Interstate
-  US/ State Highway
-  Railroad
- Jurisdictional Land Ownership**
-  Indian Reservation

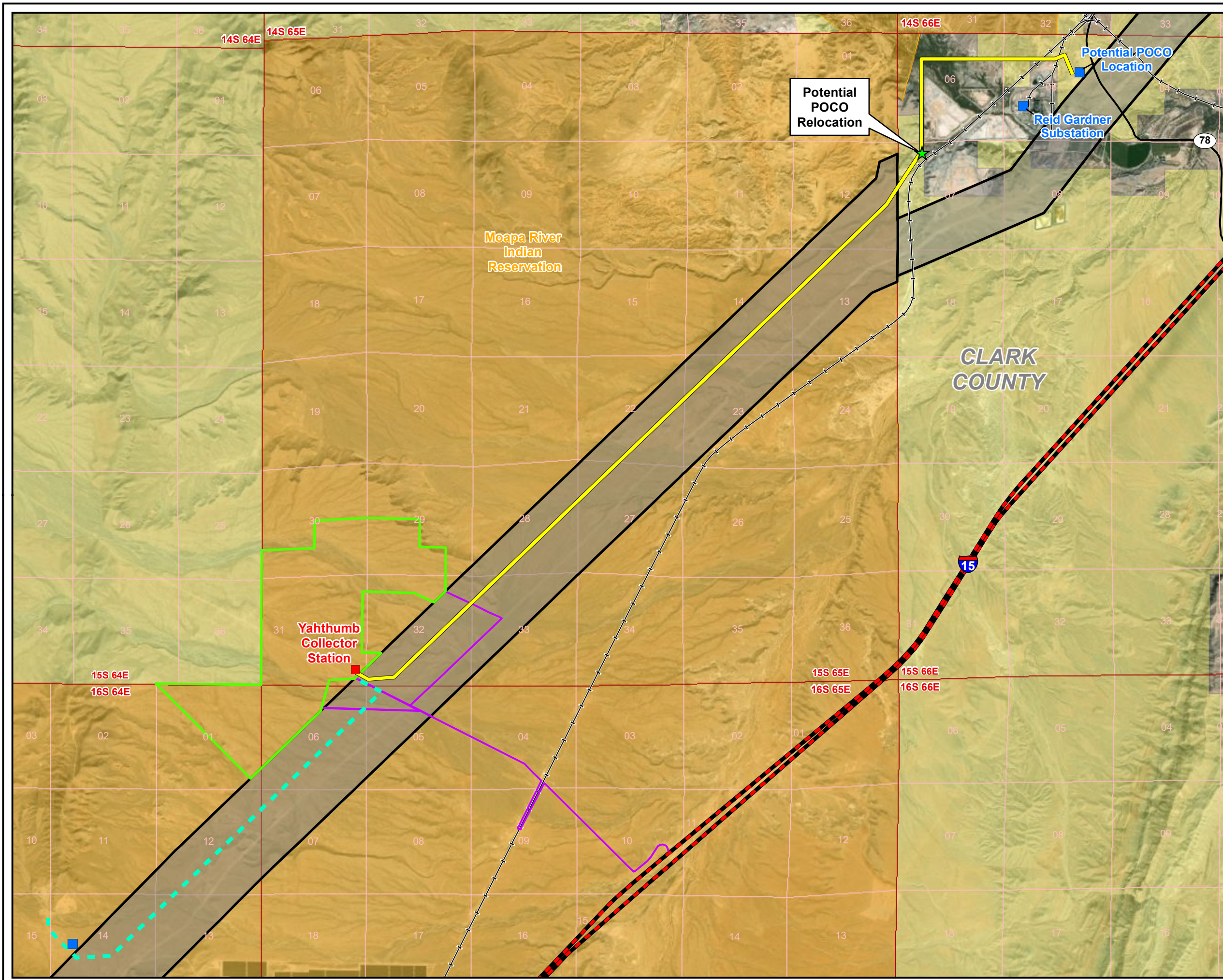


## Yahthumb Solar Project

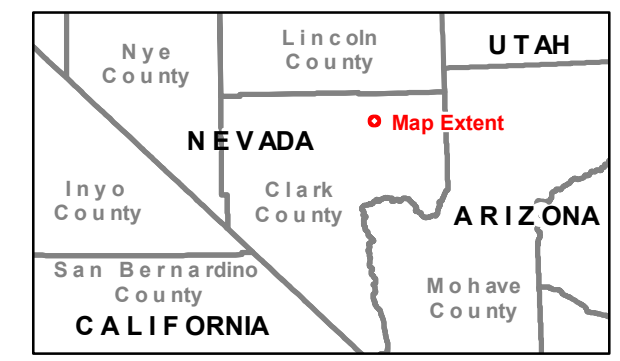
**FIGURE 1**  
**General Location**

Map Extent: Clark County, Nevada

Date: 07-05-21		Author: mrc
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- ### Legend
- Project Components**
- Substation
  - Yahthumb Collector Station
  - ★ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Access Road
  - - - Temporary Water Pipeline
  - Yahthumb Solar Site
- General Features**
- - - Interstate
  - Major Highway
  - + + + Railroad
  - Stream / River
  - Designated Utility Corridor
  - Township
  - Section
- Land Jurisdiction**
- Bureau of Land Management Land
  - Indian Land



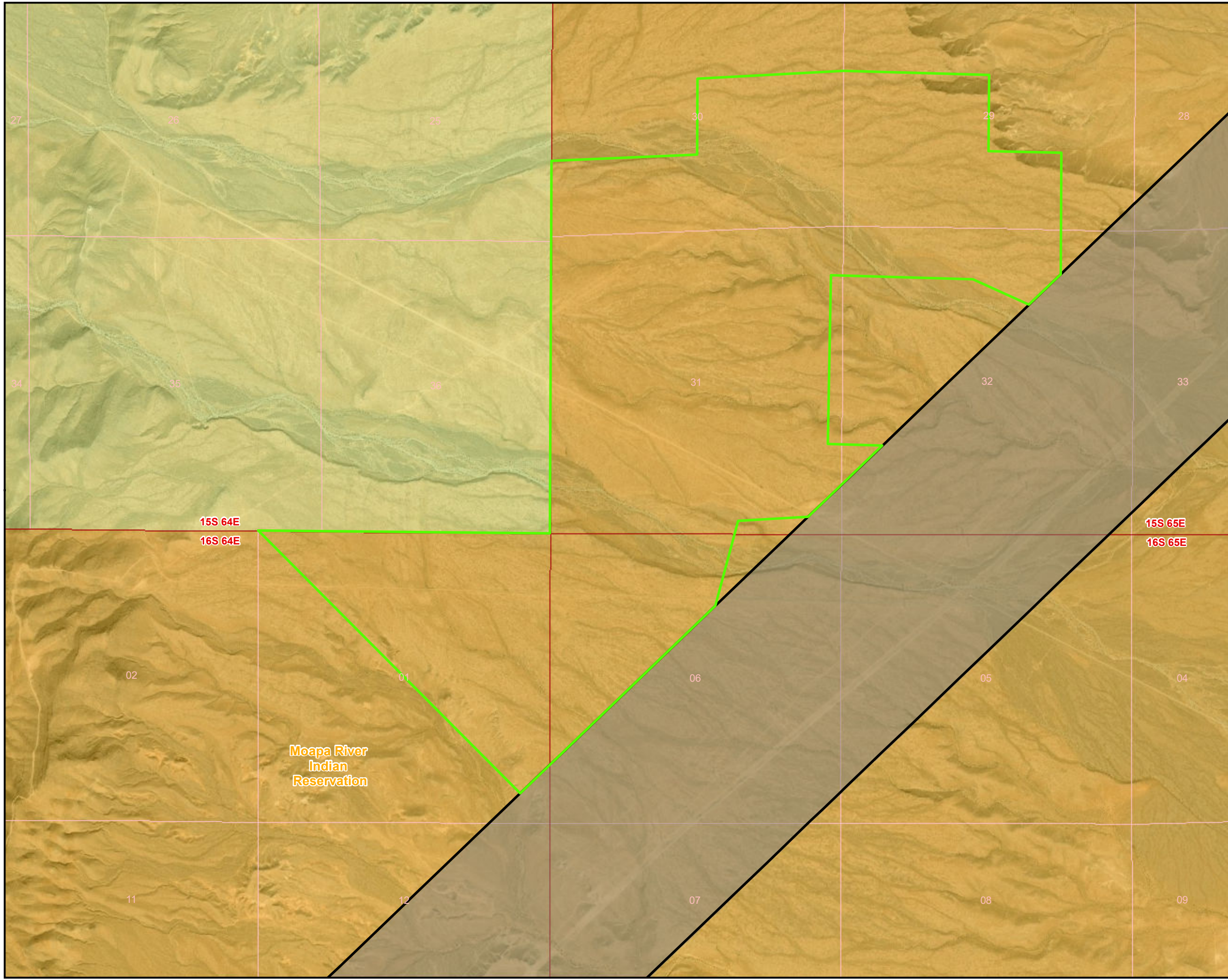
Universal Transverse Mercator  
North American Datum 1983  
Zone 12 North, Meters

## Yahthumb Solar Project

**Figure 2**  
**Project Components**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
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**Legend**

**Project Components**

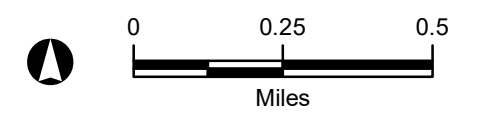
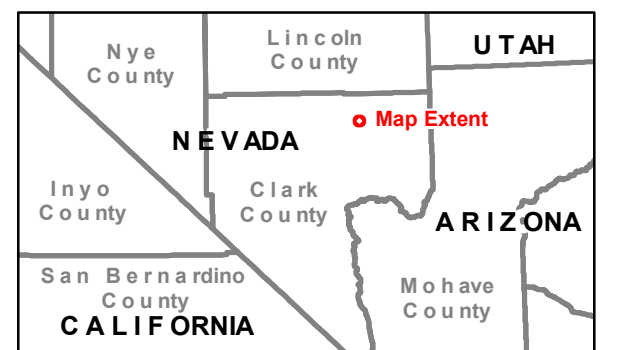
- Yahthumb Solar Site

**General Features**

- Designated Utility Corridor
- Township
- Section

**Land Jurisdiction**

- Bureau of Land Management Land
- Indian Land



Universal Transverse Mercator  
 North American Datum 1983  
 Zone 12 North, Meters

**Yahthumb Solar Project**

**Figure 3**  
**Project Lease Area Map**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
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F:\MXDs\Fig 1-2 Project Lease Area 101921.mxd

## APPENDIX A

## Plant Species Observed on or Adjacent to the Proposed Project Site

Plant Species Observed in the Project Area	
Common Name	Scientific Name
Creosote bush	<i>Larrea tridentata</i>
White bursage	<i>Ambrosia dumosa</i>
Desert senna	<i>Senna armata</i>
Desert trumpet	<i>Eriogonum inflatum</i>
Big galleta	<i>Pleuraphis rigida</i>
Devil's spineflower	<i>Chorizanthe rigida</i>
Desert globemallow	<i>Sphaeralcea ambigua</i>
Catclaw acacia	<i>Senegalia greggii</i>
Spiny menodora	<i>Menodora spinescens</i>
Rough joint fir	<i>Ephedra nevadensis</i>
Compact brome	<i>Bromus madritensis</i>
Mediterranean grass	<i>Schismus barbatus</i>
Three awn	<i>Aristida purpurea</i>
Desert marigold	<i>Baileya multiradiata</i>
Wingnut cryptantha	<i>Cryptantha pterocarya</i>
Cleftleaf phacelia	<i>Phacelia crenulata</i>
Red brome	<i>Bromus tectorum</i>
Russian thistle	<i>Salsola tragus</i>
Gilia	<i>Gilia sp.</i>
Buckwheat	<i>Eriogonum sp.</i>
Threadleaf snakeweed	<i>Gutierrezia microcephala</i>
Cottontop cactus	<i>Echinocactus polycephalus</i>
Mojave yucca	<i>Yucca schidigera</i>
Golden cholla	<i>Cylindropuntia echinocarpa</i>
Common fishhook cactus	<i>Mammillaria tetrancistra</i>
Desert barrel cactus	<i>Ferocactus cylindraceus</i>
Beavertail cactus	<i>Opuntia basilaris</i>
Buckhorn cholla	<i>Cylindropuntia acanthocarpa</i>
Pencil cholla	<i>Cylindropuntia ramosissima</i>
Grizzlybear prickly pear	<i>Opuntia polyacantha var. erinacea</i>
Pincushion flower	<i>Chaenactis fremontii</i>
Brownplume wirelettuce	<i>Stephanomeria pauciflora</i>

Plant Species Observed in the Project Area	
Common Name	Scientific Name
Four o'clock	<i>Mirabilis sp.</i>
Desert indianwheat	<i>Plantago ovata</i>
Desert needlegrass	<i>Achnatherum speciosum</i>
Indian ricegrass	<i>Achnatherum hymenoides</i>
Low woollygrass	<i>Dasyochloa pulchella</i>
Four-winged salt brush	<i>Atriplex canescens</i>
Cheesebush	<i>Hymenoclea salsola</i>
Broom snakeweed	<i>Gutierrezia sarothrae</i>
Mormon tea	<i>Ephedra nevadensis</i>
*Heritage 2019, Newfields 2018, BIA 2019	

## **Appendix F**

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### Weed Management Plan



# Integrated Weed Management Plan

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*Yahthumb Solar Project*

July 2022

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## 1.0 INTRODUCTION

Yahthumb Solar Project, LLC (Applicant) has entered into an option agreement with the Moapa Band of Paiute Indians (Moapa Band or Band) to lease up to 1,400 acres for the development of a solar project referred to as the Yahthumb Solar Project (Yahthumb Project or Project) to be located on the Moapa River Indian Reservation (Reservation) in Clark County, Nevada.

The solar project would generate up to 138 megawatts (MWs) of solar energy generation using photovoltaic (PV) technology and incorporating battery energy storage systems (BESS). The Yahthumb Project would include the solar project and all associated facilities. The Bureau of Indian Affairs (BIA), as lead agency in cooperation with the Moapa Band of Paiute Indians (Moapa Band), and other agencies, intends to prepare an Environmental Impact Statement (EIS) that will evaluate the Project.

Invasive, non-native plants, often referred to as “weeds,” are considered undesirable and warrant effective management and control for a variety of reasons including competition with native and agricultural plant species, impacts to habitat function and capability, degradation of the aesthetic qualities and values of viewsheds and landscapes, and more. In the Nevada Revised Statutes (NRS 555.005) a noxious weed is defined as “any species of plant which is, or is likely to be, a public nuisance, detrimental or destructive and difficult to control.” As human presence and activity increases, the potential for spreading and establishing noxious and invasive plants increases.

The Nevada Department of Agriculture Plant Industry Division maintains a list of noxious weeds for the State of Nevada. Noxious weeds on this list are assigned to one of three categories, including:

- Category A Weeds: Weeds that are generally not found or that are limited in distribution throughout the State. Category A weeds are subject to active exclusion from the State and active eradication where found, including the premises of a dealer of nursery stock.
- Category B Weeds: Weeds that are generally established in scattered populations in some counties of the State. Such weeds are subject to active exclusion where possible; and active eradication from the premises of a dealer of nursery stock.
- Category C Weeds: Weeds that are generally established and generally widespread in many counties of the State. Such weeds are subject to active eradication from premises of a dealer of nursery stock.

**Appendix A** of this report includes a list of the state-listed noxious and invasive plant species that are relevant to the proposed Yahthumb Solar Project in Clark County, Nevada and the focus of this Weed Management Plan (WMP).

### 1.1 Purpose and Goals of this Plan

The purpose and goal of this plan is to describe methods to prevent, mitigate, and control the spread and establishment of weeds during the implementation of the Project. The proponent of the Project and its approved contractors would be responsible for implementing this plan, working with relevant agencies to control weeds in the Project area, understanding the type and distribution of weeds in the Project area, and implementing effective control and monitoring efforts toward reducing the spread and establishment of weeds in the Project area. This WMP is applicable to the construction, operations, and decommissioning of the proposed Project.

## 1.2 Project Description

### 1.2.1 Project Area

The proposed Yahthumb solar generating facility would be constructed entirely within the Reservation within a lease study area of approximately 1,695 acres of tribal trust land. These lands are all located in a central corner of the Reservation in an area set aside by the Band exclusively for the Yahthumb Project. The solar fields and associated facilities would be in Sections 29, 30, 31, and 32; Township 16 South, Range 64 East; Mount Diablo Base Meridian. **Figure 1** shows the proposed general location for the Project.

The proposed Project would be located in the Basin and Range physiographic province in the Mojave Desert. This physiographic province is characterized by the hundreds of long, narrow, and nearly parallel mountain ranges that are separated by deep valleys. These features are visible at the proposed Project site, with nearly parallel mountain ranges situated generally in a north-south direction that are located near the proposed Project site. The majority of the Project site occurs in a sloping valley. The proposed Project site occurs in the Sonora-Mojave creosotebush-white bursage desert scrub vegetation community and is dominated by plants common to this community including creosotebush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*).

### 1.2.2 Proposed Project

The following describes the major features of the proposed Project. For a comprehensive description of the proposed Project, refer to the associated Yahthumb Solar Project Draft Environmental Impact Statement (DEIS) for the Project design details (subject to minor design changes).

**Figure 2** shows the locations of the proposed gen-tie lines and access roads. **Figure 3** shows the proposed location of the lease study area for the proposed Project where solar fields would be developed. Major on-site facilities would include a 138 MW alternating current (AC) solar field comprised of multiple blocks of PV solar panels mounted on single-axis tracking systems, associated inverter and transformer equipment, a BESS, and a project substation. The off-site facilities would include a gen-tie and associated facilities, site access roads, and a temporary water pipeline.

The gen-tie line would be a single-circuit 230 kilovolt (kV) line up to approximately 10.3 miles long and located on the Reservation, BLM-administered lands, and private lands. It would generally parallel the ESM gen-tie line (recently constructed) and most of it would be within a federally designated utility corridor on the Reservation managed by BLM. This line would generally require a ROW width of 75 feet. The primary access for the site would be provided by the existing Ute Road from an interchange on I-15, and secondary access would be provided by the existing road network within the utility corridor. Temporary facilities that would be removed/reclaimed at the end of construction include a temporary water pipeline, laydown and construction areas, and temporary construction areas along the gen-tie line.

The water supply required for the Project would be provided by the Moapa Band and drawn from the Moapa Band's existing water rights. This water would be provided either from an existing tribal well located off-site approximately 4.7 miles south of the solar project or a new well drilled

on site. If the selected water supply is the off-site well, water would be delivered to the site during construction by a temporary water pipeline or trucks.

The Project would include the following onsite key elements located within the up to 1,400-acre solar lease boundary. Onsite facilities would impact only a portion of the 1,400-acre lease area and would include:

- Solar fields
- Battery Energy Storage System (BESS)
- On-site electrical collection system and substation
- Site security and fencing
- Communication systems infrastructure
- Internal Project roads
- Lighting
- Waste and hazardous materials management
- Fire protection

Permanent disturbance areas would include piles, inverters/transformers, O&M area, substation, BESS, solar site roads within and between solar arrays, and drainage features. Temporary disturbance areas would include those portions of the solar field that are not graded, mowed to 18 inches and crushed, graded but not permanently occupied, and laydown areas.

The Project would include the following off-site permanent elements located outside of the solar lease boundary:

- 230-kV Transmission Line (Gen-Tie)
- Access Roads (primary and secondary)

The Project would also include the following temporary key elements associated with construction that would be removed once construction is complete:

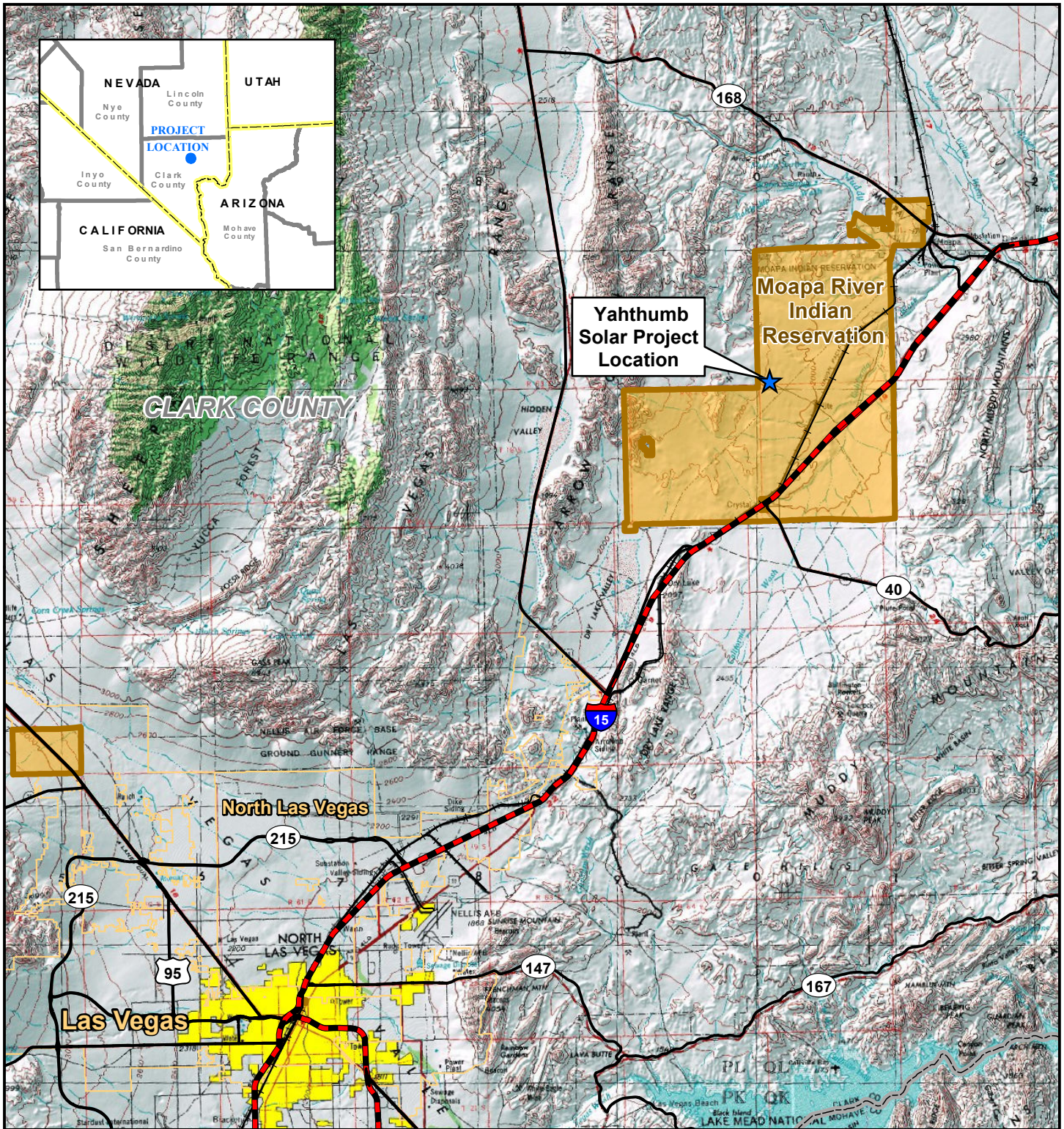
- Equipment laydown areas on the solar field
- Construction areas and pulling sites along the gen-tie line
- Temporary water pipeline

### ***Fire Prevention***

The Project's fire protection water system may be supplied from the water storage tank(s) which would have the appropriate fire department connections to facilitate use for fire suppression purposes and be consistent with Clark County requirements. During construction, one temporary firewater pump would deliver water to the fire protection water-piping network. Fire protection pump flow rates would be in accordance with applicable fire safety standards.

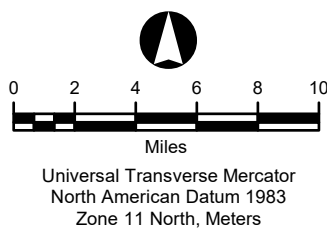
The electrical equipment enclosures that house the inverters, transformers, and BESS would be metal structures. Any fire that could occur would be contained within the structures which would be designed to meet National Electric Manufacturers Association (NEMA) 1 or NEMA 3R IP44 standards for electrical enclosures (heavy duty sealed design to withstand harsh outdoor environmental conditions).

The construction contractor would develop and implement a Fire Management Plan for construction and the Applicant would prepare and implement a Fire Management Plan for operations.



**Legend**

- Solar Project Location
- Interstate
- US/ State Highway
- Railroad
- Jurisdictional Land Ownership**
- Indian Reservation

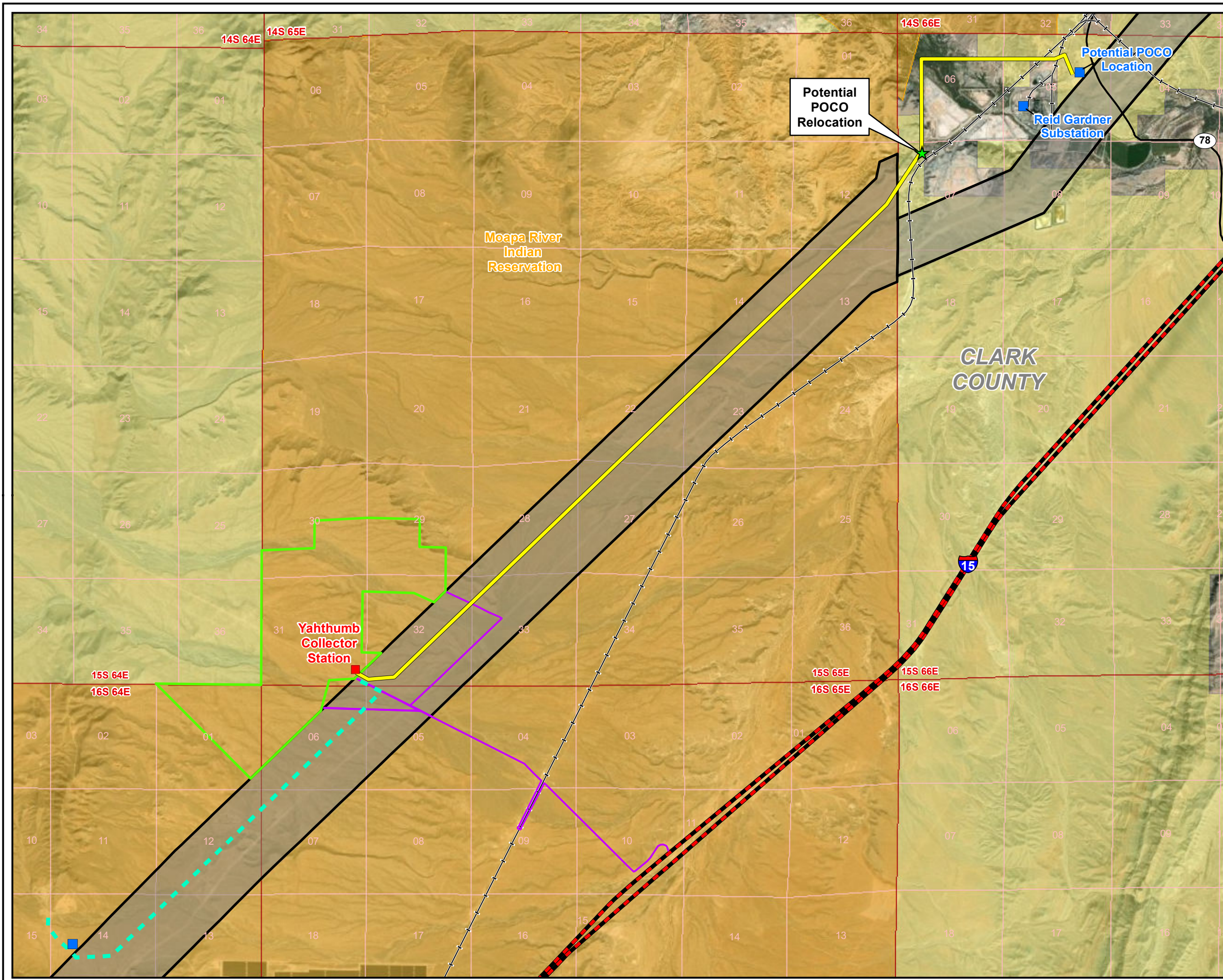


## Yahthumb Solar Project

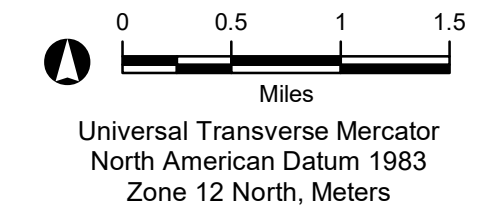
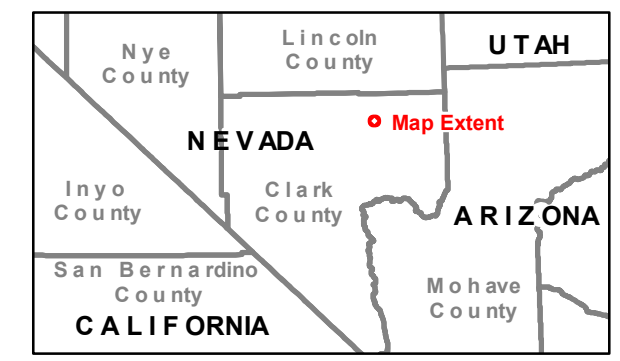
**FIGURE 1**  
**General Location**

Map Extent: Clark County, Nevada

Date: 07-05-21		Author: mrc
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- ### Legend
- Project Components**
- Substation
  - Yahthumb Collector Station
  - ★ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Access Road
  - - - Temporary Water Pipeline
  - Yahthumb Solar Site
- General Features**
- - - Interstate
  - Major Highway
  - + + + Railroad
  - Stream / River
  - Designated Utility Corridor
  - Township
  - Section
- Land Jurisdiction**
- Bureau of Land Management Land
  - Indian Land



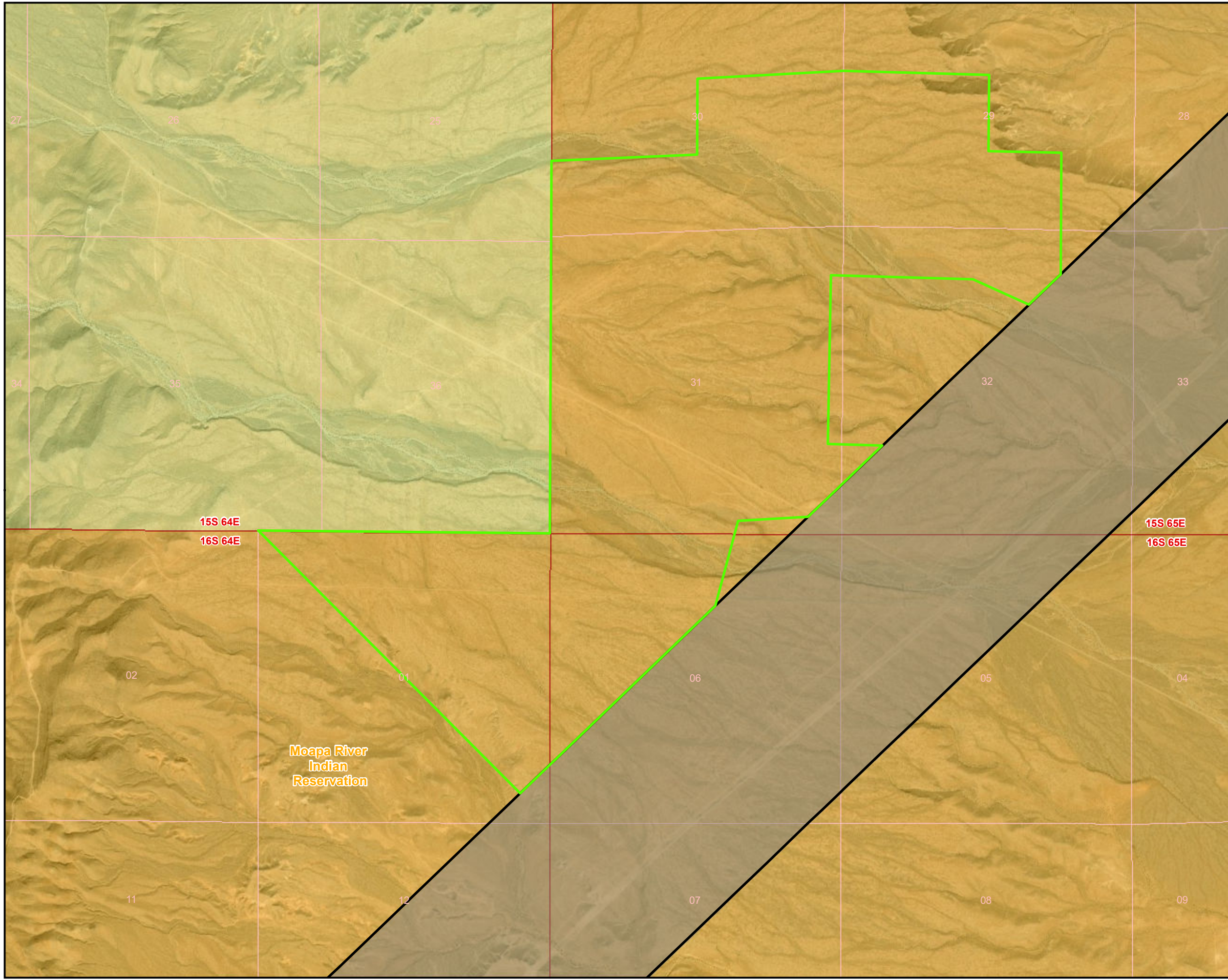
## Yahthumb Solar Project

**Figure 2**  
**Project Components**

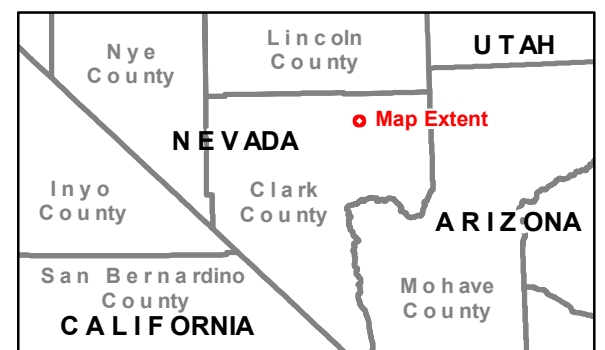
Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
G:\IMXD's\Figure 3-1 Project Overview 101921.mxd	





- Legend**
- Project Components**
- Yahthumb Solar Site
- General Features**
- Designated Utility Corridor
  - Township
  - Section
- Land Jurisdiction**
- Bureau of Land Management Land
  - Indian Land



Universal Transverse Mercator  
 North American Datum 1983  
 Zone 12 North, Meters

<b>Yahthumb Solar Project</b>		
<b>Figure 3</b>		
<b>Project Lease Area Map</b>		
Map Extent: Clark County, Nevada		
Date: 10-19-21		Author: sjw
F:\MXDs\Fig 1-2 Project Lease Area 101921.mxd		

## 2.0 WEED SURVEYS

A weed survey of the Project site will be completed prior to conducting surface disturbing activities. These surveys will be focused on identifying and mapping occurrences of noxious weed species described in the Nevada Revised Statutes (NRS Chapter 555, **Appendix A**). Occurrences of cheatgrass (*Bromus tectorum*), red brome (*Bromus rubens*), halogeton (*Halogeton glomeratus*), Russian thistle (*Salsola kali*), ravenegrass (*Saccharum ravennae*), ripgut brome (*Bromus diandrus*), and Mediterranean grass (*Schismus spp.*) will also be identified and described, although these species are not listed as noxious weeds by the State of Nevada. The State of Nevada has not categorized or designated these species as noxious weeds because their distribution and occurrence are far too widespread for management efforts to successfully eradicate these species. The management efforts described in this plan will rely on the results of these initial weed surveys.

The results of the weed surveys will contribute to the identification of problem areas within the proposed Project site. The weed surveys will include botanists walking parallel transects, searching for weeds on both sides of each transect. Identified weed occurrences will be described to species, assigned a ground cover rating, and individuals will be counted or estimated, as appropriate. The location of identified weed occurrences will be recorded using a hand-held global positioning system (GPS) unit and all recorded occurrences will be mapped using geographic information system (GIS) software. All identified weed occurrences will be marked in the field, either by flagging, pin flags or other means indicating to construction personnel that such areas are to be avoided until appropriately treated.

### 3.0 WEED MANAGEMENT

Weed management at the proposed Yahthumb solar site will include identification of problem areas, implementation of measures intended to prevent the spread and establishment of new weed occurrences, and application of appropriate measures to treat known occurrences of weeds. These steps toward effective weed management are described in the following sections.

#### 3.1 Preventative Measures

The prevention of weed establishment is the most effective weed management practice. Preventing or reducing the potential for weed establishment reduces additional efforts, costs, and time invested in subsequent weed control or eradication measures. Several measures have proven to be effective toward preventing the spread and establishment of weeds on projects where surface disturbing activities are proposed. The following preventative measures will be implemented:

- Vehicles and equipment to be used on the sites will be washed with water or high-pressure air to remove residual soils or plant materials prior to gaining entry and before leaving the site (if not trucked off site). Vehicle washing efforts will concentrate on areas that are most likely to be in contact with the ground and or likely to transport weed seeds including vehicle tracks, feet, tires; vehicle under carriage, steps, running boards, bumpers, and brush guards. Washing will occur off site at existing car washes with appropriate containment facilities. Each piece of equipment will have a vehicle wash log stating the location, date and time, type of equipment used, and methods used to wash the vehicle. These logs will be verified by the environmental site monitor before vehicles enter the site.
- Vehicle cabs will be subject to cleaning in an effort to remove refuse, soil, or other materials susceptible to transporting weed seeds or other plant structures. The use of compressed air is recommended for cleaning vehicle cabs immediately prior to arriving at and departing from the site.
- All materials used during site reclamation, revegetation, and installation of stormwater/erosion control measures will be certified as weed free.
- Vehicle travel in the proposed Project area will be restricted to designated roads and established overland travel routes.

#### 3.2 Treatment Methods

Treatment methods are necessary to control and eradicate known weed occurrences. Treatment methods include a variety of approaches such as mechanical, chemical, and biological controls. The most appropriate and effective weed treatment measures will be determined following the assessment of existing weed populations on the proposed Project site. The Project site occurs within suitable and occupied desert tortoise habitat. Treatment methods on Tribal lands will use the BLM's *Chemical Pest Control Manual* as a guideline for weed control.

Mechanical treatments include the use of physical means to remove plants, reproductive parts, or propagules. These treatments may entail manual methods (pulling weed plants from the soil), use of hand tools and hand-held power tools, mowing, and more aggressive efforts that involve removing above and below ground plant structures. The designation of the appropriate mechanical treatment will depend on variables including season, plant life stage, weed species, size and population of each occurrence, and more. The weed management contractor will coordinate with the appropriate agencies before implementing any weed treatment methods.

Chemical treatments involve the use and application of herbicides. The use of herbicides is highly regulated and involves a variety of specific protocols, safety measures, and precautions for eliminating, reducing, and mitigating for uncontrolled releases. The possible use of herbicides as a treatment method is described in additional detail in **Section 5** of this plan.

Biological treatments include the use of plants and animals (particularly insects) that parasitize, ingest, or out-compete weed species. Based on the weed species expected to occur in the Project area and other factors, biological controls are not expected to be a viable or appropriate alternative for treating weed occurrences at the proposed site.

### **3.3 Agency Specific Requirements**

#### **3.3.1 Nevada Revised Statute (NRS): The Nevada Control of Insects, Pests, and Noxious Weed Act**

The following section applies to federal and private lands; the BIA has the discretion to utilize existing State regulatory guidelines as appropriate.

##### ***NRS 555.150***

NRS 555.150 (Eradication of Noxious Weeds by Owner or Occupant of Land) of the Nevada Revised Statute reads:

*”Every railroad, canal, ditch, or water company, and every person owning, controlling, or occupying lands in this State, and every county, incorporated city or district having the supervision and control over streets, alleys, lanes, rights-of-way, or other lands, shall control all weeds declared and designated as noxious in NRS 555.130 in any manner specified by and whenever required by the State Quarantine Officer.”*

##### ***NRS 555.210***

NRS 555.210 (Performance of Necessary Work by Weed Control Officer on Failure by Landowner; Charges as Lien) of the Nevada Revised Statute reads:

*“If any landowner fails to carry out a plan of weed control for his or her land in compliance with the regulations of the district, the weed control officer may enter upon the land affected, perform any work necessary to carry out the plan, and charge such work against the landowner. Any such charge, until paid, is a lien against the land affected coequal with a lien for unpaid general taxes, and may be enforced in the same manner.”*

#### **4.0 WEED MONITORING**

Monitoring is the repeated collection and assessment of information with the purpose of evaluating attainment of a resource management object. If management objectives are not being met, weed control measures should be scrutinized and modified to improve their effectiveness. Effective monitoring will increase the likelihood of timely detection and control of weed occurrences on the Project site.

Weed monitoring will be conducted by qualified biologists and appropriately trained personnel. All portions of the Project area that are proposed for surface disturbance will be monitored for weeds before construction begins and weed infestations will be mapped. Monitoring will occur when weed species are most likely to be detected and can be easily identified. New or previously unidentified weed infestations identified during monitoring will be described, their locations recorded using a hand-held GPS unit, and reported to the BIA and BLM.

##### **4.1 Ongoing Monitoring**

Weed monitoring will occur as an ongoing process during implementation of the proposed Project. Qualified and appropriately trained personnel will use the results of the initial weed inventory to monitor known weed occurrences and will observe activity areas for opportunistic weed occurrences.

##### **4.2 Post-Construction**

Weed monitoring will begin immediately following each completed activity that includes surface disturbance. Weed monitoring will occur at all disturbed sites at least twice a year (March and September) for an estimated three years or until restoration efforts are deemed complete by the Tribe and BIA. The goal of weed monitoring is to ensure no net increase in weed species or overall weed cover compared to the baseline conditions that will be mapped before construction begins. Identified weed occurrences will be noted and recorded in the same manner as was described for the weed inventory effort. A monitoring report will be submitted to the BIA and BLM following monitoring on an annual basis for three years. The report will help determine whether success criteria (e.g., no net increase in weeds) are being met. Adaptive management strategies would be implemented if necessary and could include extended weed control and monitoring past three years.

##### **4.3 Monitoring of Known Infestation Areas**

As previously mentioned, known occurrences of weed infestations will be evaluated on a regular basis. Evaluations will determine if noteworthy changes have occurred at each infestation, particularly if the number or area covered by an infestation has changed dramatically. At a minimum, annual monitoring is recommended for each known infestation. A brief summary will be prepared for each annual monitoring effort and will include sufficient detail to allow for an evaluation of the effectiveness of the weed management program, including weed infestation identification, weed monitoring, and weed control.

## **5.0 HERBICIDE APPLICATION, HANDLING, SPILLS, AND CLEANUP**

### **5.1 Herbicide Application**

Weed management contractors/personnel that are responsible for applying herbicides will obtain all of the required Federal, State, or local agency permits and will hold all necessary certifications and have received all relevant training. In general, guidelines in BLM's Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (BLM 2007) would be implemented. Permits may include terms and conditions that are not included in this WMP. A licensed contractor will apply herbicides in accordance with all applicable laws, regulations, and permit stipulation, including U.S. Environmental Protection Agency (EPA) label instructions. If faced with any of the following scenarios, herbicide application shall be suspended until such conditions no longer exist:

- Wind velocities in excess of 6 miles per hour (mph) during application of liquid herbicides and 15 mph during application of dry herbicides;
- Snow or ice present on weed foliage; or
- Precipitation is occurring or imminent.

For weed infestations that are readily accessible and passable by vehicle, vehicle-mounted applicators will be used. Manual application methods will be used in weed occurrences that are relatively small, inaccessible by established road, or in rough, varied terrain. All herbicide applicators, spreaders and sprayers, will be calibrated before each use to ensure all applications rates and procedures are appropriately implemented.

Herbicide transport and handling will follow these methods:

- No herbicides will be stored onsite.
- Only the quantity of herbicide expected for each day's use will be transported.
- Herbicide concentrate will be transported in approved containers in a controlled manner that prevents spills. Concentrate will be positioned in delivery or work vehicles so as to be secured and separated from the driving compartment, food, clothing, and safety equipment.
- The mixing of herbicide materials will be conducted at an offsite location or within a controlled space in the Operations and Management Area that is designated onsite. All mixing will take place over a drip/spill containment device and at a distance more than 200 feet from open or flowing water, wetlands, or other sensitive resources.
- Herbicides will not be applied to areas of open or flowing water, wetlands, or other sensitive resources unless authorized by the appropriate regulatory agency.
- All equipment and containers used for herbicide storage, application, and transport will be subject to inspection for leaks or damage.
- Emptied herbicide containers will be disposed of in accordance with instructions provided on the label.

### **5.2 Herbicide Spills and Cleanup**

All spills and inadvertent releases of herbicides will be addressed immediately upon detection. Spill response kits approved for the correct spill size will be readily available in herbicide contractor vehicles and in daily onsite herbicide storage areas.

Spill response will vary depending on a variety of conditions, including location, amount of spill, area impacted by spill, type of herbicide spilled, and more. For each spill the following procedures should be implemented:

- Notify appropriate onsite personnel and agencies of a spill.
- Secure the affected area by barring pedestrian and vehicle traffic.
- All spill response personnel shall don the appropriate personal protective equipment (PPE) prior to entering the spill containment area.
- Personnel, while wearing the appropriate PPE and equipped with the necessary tools and equipment, shall stop the herbicide leak or release.
- All materials associated with spill response, including the released herbicide, affected soils and plants, absorptive material, clothing, and PPE shall be removed and containerized according to appropriate regulations and procedures.

All containers generated during a spill response shall be transported, following appropriate regulations, and disposed legally at an approved disposal facility.

### **5.3 Worker Safety and Spill Reporting**

All contractors responsible for herbicide use, transport, application, and control at the sites will hold the appropriate certifications. Such certifications shall be made available. Contractors transporting herbicides to the site shall also have legible material safety data sheets (MSDSs) and labels onsite. All herbicide spills and inadvertent releases shall be reported in accordance with all applicable laws and regulations.

## 6.0 REFERENCES

- BLM. 2007. Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement. Available on the internet at:  
<https://eplanning.blm.gov/eplfrontoffice/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=103592>.
- State of Nevada. 2005. Nevada Revised Statutes Chapter 555 – Control of Insects, Pests, and Noxious Weeds. Accessed at:  
<https://www.leg.state.nv.us/NAC/NAC-555.html#NAC555Sec005>



**Appendix A – Nevada Designated Noxious Weed Species**

**Table A-1: Designated Noxious Weed Species of the State of Nevada**

<b>Common Name</b>	<b>Scientific Name</b>	<b>State of Nevada Category</b>
African rue	<i>Peganum harmala</i>	A
Austrian fieldcress	<i>Rorippa austriaca</i>	A
Austrian peaweed	<i>Sphaerophysa salsula</i>	A
Barbed goatgrass	<i>Aegilops triuncialis</i>	A
Bufflegrass	<i>Pennisetum</i>	A
Camelthorn	<i>Alhagi psedualhagi</i>	A
Common crupina	<i>Crupina vulgaris</i>	A
Curly-leaf pondweed	<i>Potamogeton crispus</i>	A
Desert knapweed	<i>Volutaria tubuliflora</i>	A
Dyer's woad	<i>Isatis tinctoria</i>	A
Eurasian water-milfoil	<i>Myriophyllum spicatum</i>	A
Flowering rush	<i>Butomus umbellatus</i>	A
Giant salvinia	<i>Salvinia molesta</i>	A
Goats rue	<i>Galega officinalis</i>	A
Green fountain grass	<i>Pennisetum setaceum</i>	A
Houndstongue	<i>Cynoglossum officinale</i>	A
Hydrilla	<i>Hydrilla verticillata</i>	A
Iberian starthistle	<i>Centaurea iberica</i>	A
Jointed goatgrass	<i>Aegilops cylindrical</i>	A
Klamath weed	<i>Hypericum peerforatum</i>	A
Malta starthistle	<i>Centaurea melitensis</i>	A
Mediterranean sage	<i>Salvia aethiopsis</i>	A
Purple loosestrife	<i>Lythrum salicaria, L. virgatum</i>	A
Purple starthistle	<i>Centaurea calcitrapa</i>	A
Rush skeletonweed	<i>Chondrilla juncea</i>	A
Squarrose knapweed	<i>Centaurea virgate var. squarrosa</i>	A
Sulfur cinquefoil	<i>Potentilla recta</i>	A
Syrian bean caper	<i>Zygophyllum fabago</i>	A
Ventenata	<i>Ventenata dubia</i>	A
Yellow starthistle	<i>Centaurea solstitialis</i>	A
Yellow toadflax	<i>Linaria vulgaris</i>	A
Black henbane	<i>Hyoscyamus niger</i>	B
Carolina horse nettle	<i>Solanum carolinense</i>	B
Dalmation toadflax	<i>Linaria dalmatica</i>	B
Diffuse knapweed	<i>Centaurea diffusa</i>	B
Giant reed	<i>Arundo donax</i>	B
Leafy spurge	<i>Euphorbia esula</i>	B
Medusahead	<i>Taeniatherum caput-medusae</i>	B
Mayweed chamomile	<i>Anthemis cotula</i>	B
Perennial sowthistle	<i>Sonchus arvensis</i>	B
Sahara mustard	<i>Brassica tournefortii</i>	B

<b>Common Name</b>	<b>Scientific Name</b>	<b>State of Nevada Category</b>
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>	B
Spotted knapweed	<i>Centaurea masculosa</i>	B
Canada thistle	<i>Cirsium arvense</i>	C
Hoary cress	<i>Cardaria draba</i>	C
Johnson grass	<i>Sorghum halepense</i>	C
Musk thistle	<i>Carduus nutans</i>	C
Perennial pepperweed	<i>Lepidium latifolium</i>	C
Poison hemlock	<i>Conium maculatum</i>	C
Puncture vine	<i>Tribulus terrestris</i>	C
Russian knapweed	<i>Acroptilon repens</i>	C
Salt cedar (tamarisk)	<i>Tamarix spp.</i>	C
Scotch thistle	<i>Onopordum acanthium</i>	C
Water hemlock	<i>Cicuta maculate</i>	C

A: Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated where found; control required by the state in all infestations.

B: Weeds established in scattered populations in some counties of the state; actively excluded where possible; control required by the state in areas where populations are not well established or previously unknown to occur.

C: Weeds currently established and generally widespread in many counties of the state; abatement at the discretion of the State Quarantine Office.

# **Appendix G**

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## **Decommissioning Plan**

# DRAFT CONCEPTUAL DECOMMISSIONING PLAN

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*Yahthumb Solar Project*

July 2022

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**Acronyms Used in the Report**

BESS	Battery Energy Storage System
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
NEPA	National Environmental Policy Act
O&M	Operations and Maintenance
PV	Photovoltaic
PPA	Power Purchase Agreement
RCRA	Resource Conservation and Recovery Act
Reservation	Moapa River Indian Reservation
SPGF	Solar Power Generation Facility
SRP	Site Restoration Plan
TSCA	Toxic Substances Control Act

## 1.0 INTRODUCTION

Yahthumb Solar Project, LLC (Applicant) has entered into an option agreement with the Moapa Band of Paiute Indians (Moapa Band or Band) to lease up to 1,400 acres for the development of a solar project referred to as the Yahthumb Solar Project (Yahthumb Project or Project) to be located on the Moapa River Indian Reservation (Reservation) in Clark County, Nevada. The solar project would generate up to 138 megawatts (MWs) of solar energy generation using photovoltaic (PV) technology and incorporating battery energy storage systems (BESS). The Yahthumb Project would include the solar project and all associated facilities. The Bureau of Indian Affairs (BIA), as lead agency in cooperation with the Moapa Band of Paiute Indians (Moapa Band), and other agencies, intends to prepare an Environmental Impact Statement (EIS) that will evaluate the Project.

The proposed Yahthumb solar generating facilities would be constructed entirely within the Reservation within a lease study area of approximately 1,695 acres of tribal trust land. These lands are all located at a central corner of the Reservation in an area set aside by the Band exclusively for the Yahthumb Project. The solar fields and associated facilities would be in Sections 29, 30, 31, and 32; Township 16 South, Range 64 East; Mount Diablo Base Meridian. **Figure 1** shows the proposed general location for the Project.

Primary access to the Yahthumb site would be provided via an interchange on Interstate-15 to the existing Ute Road on the Reservation. This road would be upgraded as needed. Secondary access would be provided via an existing road within the designated utility corridor that would also be upgraded as needed. **Figure 2** shows the locations of the proposed gen-tie lines and access roads.

The water supply required for the Project would be provided by the Moapa Band and drawn from the Moapa Band's existing water rights. This water would be provided either from an existing tribal well located off-site approximately 4.7 miles south of the solar project or a new well drilled on site. If the selected water supply is the off-site well, water would be delivered to the site during construction by a temporary water pipeline or trucks.

### 1.1 Purpose of the Decommissioning Plan

The purpose of this Decommissioning Plan is to establish the conceptual methodologies that would be employed for decommissioning activities associated with the permanent closure of the Project. The actual actions implemented in the facility closure would be determined by the expected future use of the sites. Therefore, a more detailed decommissioning plan would be developed in advance of the start of decommissioning activities.

The Project is expected to operate at a minimum for the life of its lease with the Tribe (up to 5-year construction term plus 30-year operation term with two 10-year extensions and an 18-month post-operational term for a total term of up to 56 ½ years) and the term of its Power Purchase Agreement (PPA) or other energy contracts. It is possible, because much of the needed electrical infrastructure will have been developed, the Solar Power Generation Facility (SPGF) would continue to be upgraded and used to generate solar energy even beyond the term of the initial lease and energy purchase agreements. Therefore, it is possible that the SPGF site would remain in solar energy production for the foreseeable future.

It is also possible that the Tribe could re-purpose the Project site at the termination of the solar Project. Certain facility components such as the access road, electrical transmission lines and others could be used to support other future uses on the site.



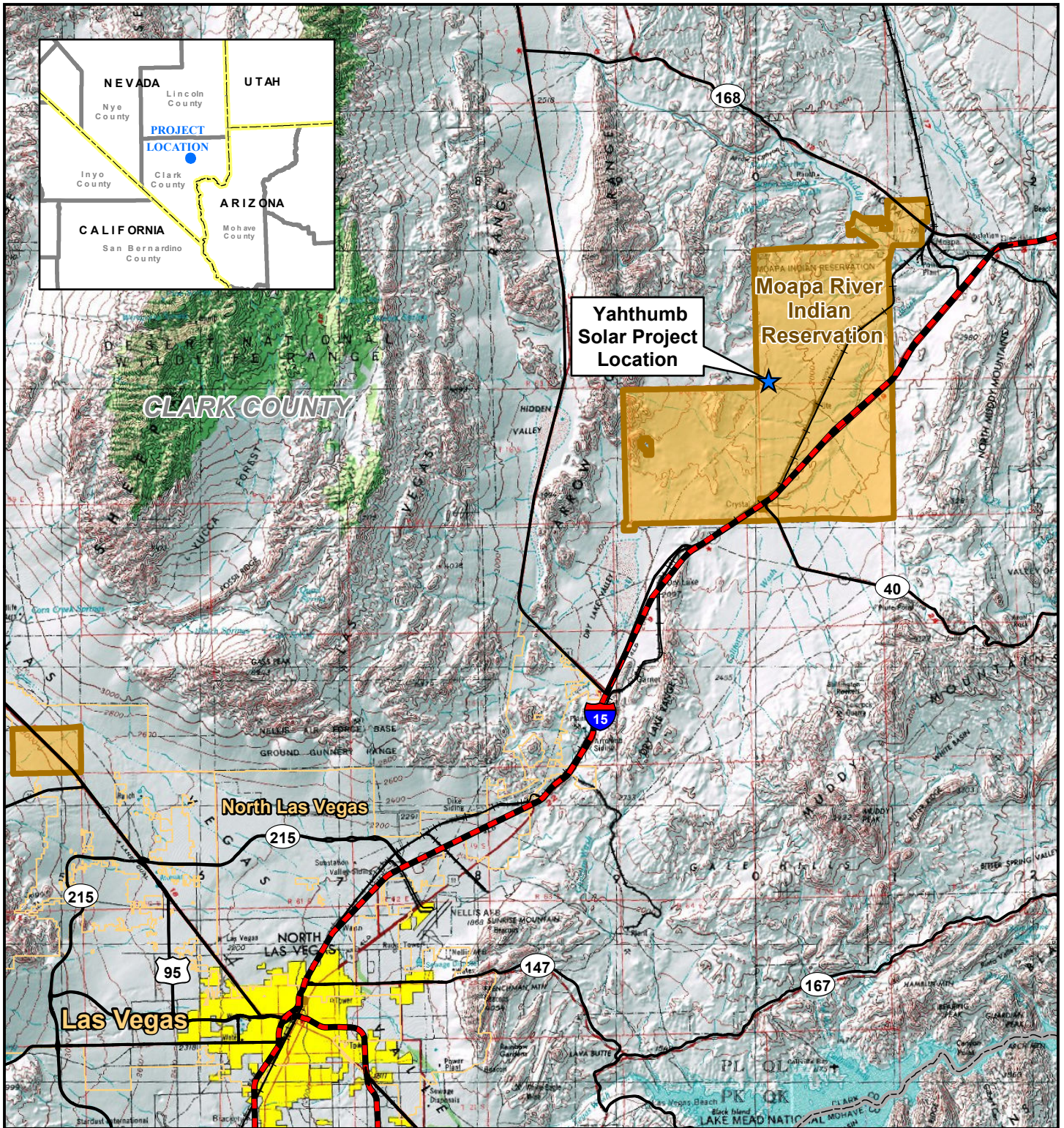
For purposes of developing this plan, it is assumed that if and when the Project is decommissioned, all Project structures and electrical equipment would be removed from the site and associated right-of-ways (ROWs) and the disturbed areas would be reclaimed in accordance with the Restoration and Revegetation Plan(s).

## **1.2 Organization of the Plan**

This conceptual decommissioning plan addresses the following:

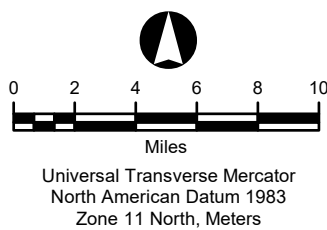
- Project Description
- Regulatory Criteria
- Decommissioning Activities
  - Pre-Decommissioning
  - Removal of Facilities
  - Hazardous Waste Management
  - Debris Management, Disposal, and Recycling
  - Post-Demolition Site Stabilization
- Project Decommissioning Costs and Bonding

As mentioned earlier, because this document addresses Project actions that would occur well in the future, it will be updated and finalized in the months prior to any scheduled decommissioning to ensure that the final plan addresses the proposed future land use of the sites and the applicable rules and regulations in place at that time.



**Legend**

- Solar Project Location
- Interstate
- US/ State Highway
- Railroad
- Jurisdictional Land Ownership**
- Indian Reservation

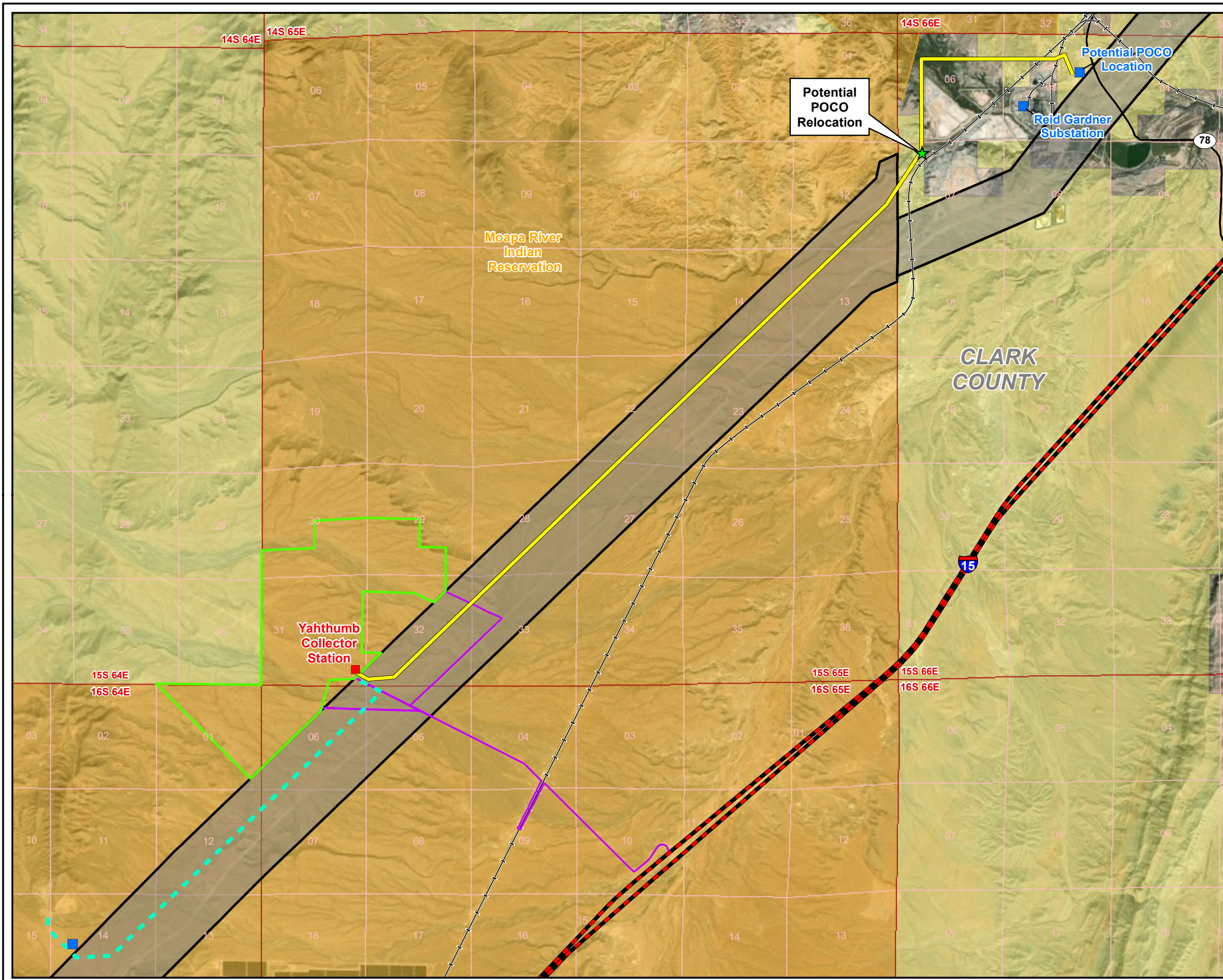


## Yahthumb Solar Project

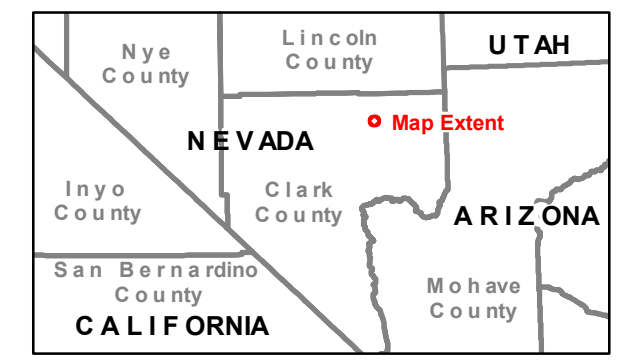
**FIGURE 1**  
**General Location**

Map Extent: Clark County, Nevada

Date: 07-05-21		Author: mrc
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- ### Legend
- Project Components**
- Substation
  - Yahthumb Collector Station
  - ★ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Access Road
  - - - Temporary Water Pipeline
  - Yahthumb Solar Site
- General Features**
- - - Interstate
  - Major Highway
  - + + + Railroad
  - Stream / River
  - Designated Utility Corridor
  - Township
  - Section
- Land Jurisdiction**
- Bureau of Land Management Land
  - Indian Land



Universal Transverse Mercator  
North American Datum 1983  
Zone 12 North, Meters

## Yahthumb Solar Project

**Figure 2**  
**Project Components**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
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## 2.0 PROJECT DESCRIPTION

The following describes the major features of the proposed Project. For a comprehensive description of the proposed Project, refer to the associated Yahthumb Solar Project Draft Environmental Impact Statement (DEIS) for the Project design details (subject to minor design changes).

### 2.1 Proposed Solar Project Components

The solar fields for the Yahthumb Project would be located wholly on lands within the Reservation. They would be developed using PV solar technology to generate up to 138 MWs of solar energy.

**Figure 2** shows the locations of the proposed gen-tie lines and access roads. **Figure 3** shows the proposed location of the lease study area for the proposed Project where solar fields would be developed. Major on-site facilities would include a 138 MW alternating current (AC) solar field comprised of multiple blocks of PV solar panels mounted on single-axis tracking systems, associated inverter and transformer equipment, a BESS, and a project substation. The off-site facilities would include a gen-tie and associated facilities, site access roads, and a temporary water pipeline.

The gen-tie line would be a single-circuit 230 kilovolt (kV) line up to approximately 10.3 miles long and located on the Reservation, BLM-administered lands, and private lands. It would generally parallel the ESM gen-tie line (recently constructed) and most of it would be within a federally designated utility corridor on the Reservation managed by BLM. This line would generally require a ROW width of 75 feet. The primary access for the site would be provided by the existing Ute Road from an interchange on I-15, and secondary access would be provided by the existing road network within the utility corridor. Temporary facilities that would be removed/reclaimed at the end of construction include a temporary water pipeline, laydown and construction areas, and temporary construction areas along the gen-tie line.

The water supply required for the Project would be provided by the Moapa Band and drawn from the Moapa Band's existing water rights. This water would be provided either from an existing tribal well located off-site approximately 4.7 miles south of the solar project or a new well drilled on site. If the selected water supply is the off-site well, water would be delivered to the site during construction by a temporary water pipeline or trucks.

The Project would include the following onsite key elements located within the up to 1,400-acre solar lease boundary. Onsite facilities would impact only a portion of the 1,400-acre lease area and would include:

- Solar fields
- Battery Energy Storage System (BESS)
- On-site electrical collection system and substation
- Site security and fencing
- Communication systems infrastructure
- Internal Project roads
- Lighting
- Waste and hazardous materials management

- Fire protection

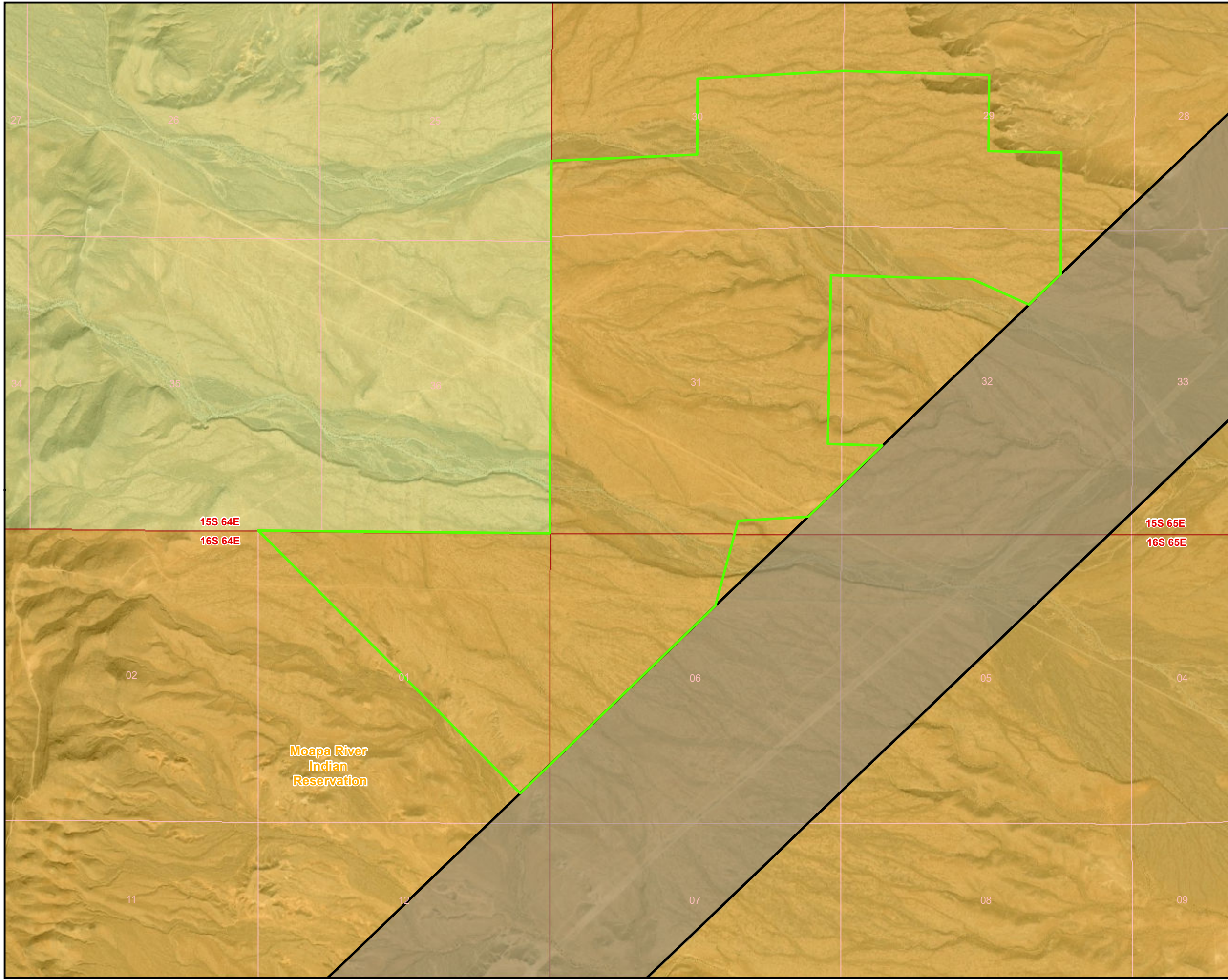
Permanent disturbance areas would include piles, inverters/transformers, O&M area, substation, BESS, solar site roads within and between solar arrays, and drainage features. Temporary disturbance areas would include those portions of the solar field that are not graded, mowed to 18 inches and crushed, and laydown areas.

The Project would include the following off-site permanent elements located outside of the solar lease boundary:

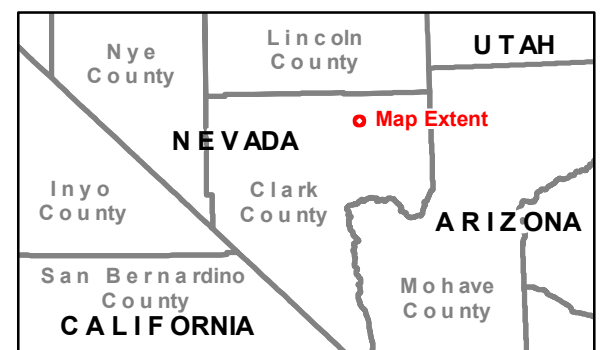
- 230-kV Transmission Line (Gen-Tie)
- Access Roads (primary and secondary)

The Project would also include the following temporary key elements associated with construction that would be removed once construction is complete:

- Equipment laydown areas on the solar field
- Construction areas and pulling sites along the gen-tie line
- Temporary water pipeline



- Legend**
- Project Components**
- Yahthumb Solar Site
- General Features**
- Designated Utility Corridor
  - Township
  - Section
- Land Jurisdiction**
- Bureau of Land Management Land
  - Indian Land



Universal Transverse Mercator  
 North American Datum 1983  
 Zone 12 North, Meters

<b>Yahthumb Solar Project</b>		
<i>Figure 3</i>		
<b>Project Lease Area Map</b>		
Map Extent: Clark County, Nevada		
Date: 10-19-21		Author: sjw
F:\MXDs\Fig 1-2 Project Lease Area 101921.mxd		

### **3.0 REGULATORY CRITERIA**

During the decommissioning process, all activities will be conducted in compliance with all applicable Federal and Tribal regulations in place at the time. Consultation with the Tribe, BIA, BLM and any other involved entities would be conducted to ensure that all Federal and Tribal requirements are addressed. The primary guidance documents for decommissioning will be the Final Decommissioning Plan (prepared just in advance of project closure) and the Site Restoration Plan (SRP).

Federal requirements involving hazardous wastes and toxic substances will also be followed during decommissioning activities. Among these are the Toxic Substances Control Act (TSCA) (15 U.S.C. §2601) that requires reporting, record-keeping and testing requirements and restrictions relating to the use and disposal of chemical substances and/or mixtures. TSCA also addresses the production, importation, use and disposal of specific chemicals (EPA 2019a). The Resource Conservation and Recovery Act (RCRA) (42 U.S.C. §6901) gives the EPA the authority to control hazardous waste from its generation till disposal, also including transportation, treatment, and storage (EPA 2019b).

Coordination with the Tribe and agencies throughout the life of the Project, including decommissioning, is critical so that applicable regulations are not violated and the public and the environment are not impacted by the Project.

## 4.0 PROJECT DECOMMISSIONING

The procedures described for decommissioning are designed to promote public health and safety, environmental protection and compliance with applicable regulations. It is assumed that decommissioning will begin approximately 50 or more years after Project operation is initiated. Some buried components (such as cabling) could potentially remain in place. The Project plans to incorporate the sale of some of the facility components via the used equipment market and recycling of components, where feasible. Decommissioning will be conducted in accordance with a Final Decommissioning Plan that will be developed in the months prior to decommissioning being initiated. This decommissioning plan assumes that all equipment and facilities within and associated with the SPGF would be removed.

### 4.1 Pre-Decommissioning Activities

Pre-decommissioning activities will be conducted to prepare the Project for demolition. This would include assessing the existing site conditions, itemizing relevant NEPA and Biological Opinion (BO) requirements, and development of the final Decommissioning Plan and schedule, as described above.

An Environmental Site Assessment (ESA) will be conducted before any decommissioning activities occur. The ESA will document the existing conditions of the SPGF including the location and presence of hazardous materials on the sites. The results of the ESA will be used to define any remediation or cleanup methodologies that could be required and incorporated into the Final Decommissioning Plan. This documentation would ensure that areas containing hazardous materials can be decommissioned appropriately.

Other pre-decommissioning activities would include removing hazardous materials from the sites, including residues that occur in equipment. All operational liquids and chemicals are expected to be removed and disposed of, as discussed in **Section 4.4**. Hazardous material and petroleum containers, pipelines, and other similar structures shall be rinsed clean, when feasible, and the waste liquid collected for off-site disposal. Locations for decommissioned structures, non-hazardous waste, and debris will be designated in the final decommissioning plan to facilitate the decommissioning process and off-site removal.

### 4.2 Removal of Facilities

Site decommissioning and equipment removal can take a year or more. Therefore, access roads, fencing, electrical power, and raw/sanitary water facilities will remain in place for use by the decommissioning and restoration workers until no longer needed; these components would be the last to be removed prior to site rehabilitation, unless otherwise requested to maintain by the Band.

#### 4.2.1 SPGF Above- and Below-Ground Facilities

Structures to be dismantled during decommissioning include the on-site substation, on-site O&M area, perimeter fence, solar field, BESS, water storage tanks, septic system, underground cabling, transformers and inverters. These structures will be dismantled and moved to designated areas for either recycling, disposal at an approved landfill, or other disposition (e.g., resale).

Above-ground structures will be removed through mechanical or other approved methods. Below-ground structures will be removed or, upon agency approval, may remain in place to minimize soil disturbance. Below-ground facilities/utilities that potentially may be removed include pipelines, electrical lines and conduits concrete slabs.



#### **4.2.2 Roads**

On-site roads will remain in place to accomplish decommissioning at the end of the facility's life and would be one of the last components of the Project to be removed. Following removal, on-site roads will be restored to approximate preconstruction conditions in accordance with the SRP.

#### **4.3 Debris Management, Disposal, and Recycling**

All removed material and demolition debris will be placed in designated locations within the SPGF site. Each stockpile will be transported off-site to either a used equipment market, off-site recycling center, or approved landfill depending on the material type. Debris will be broken down into manageable sizes so that transportation is simplified.

#### **4.4 Hazardous Waste Management**

All disposal and transportation of hazardous waste will be conducted in compliance with RCRA (42 U.S.C. §6901), and TSCA (15 U.S.C. §2601), and other regulations, as needed. In areas where no record of hazardous waste exposure occurred, a visual inspection would be conducted as part of the pre-decommissioning ESA, described in **Section 4.1**. If a concern is identified, further evaluation of the area shall occur and the area or structure will be treated accordingly. A licensed state waste contractor would be used to ensure that all required laws and regulations have been met and to address any remaining requirements needed to successfully close the Project.

#### **4.5 Post-Demolition Site Stabilization**

After all removal of existing structures of the SPGF and ancillary facilities, the Project area will be restored to conditions similar to pre-construction. Then, revegetation and reclamation activities required to return the disturbed areas to an as near to a pre-construction state as possible will be conducted in accordance with the plans prepared as part of the Project. These plans include:

- Site Restoration Plan
- Integrated Weed Management Plan

The objectives of these plans include the following:

- Restore and reduce potential for erosion
- Restore habitat suitable to support desert fauna
- Implement the weed management program that minimizes the need for non-native species eradication.

**5.0 PROJECT DECOMMISSIONING COSTS AND BONDING**

Prior to the issuance of the notice to proceed for the Project, the Applicant will be required to provide performance and reclamation bonding in an amount sufficient to ensure the implementation of the approved Decommissioning Plan for restoration and performance.

The bond instrument will be based on a decommissioning cost estimate provided by the Applicant and based on the final design of the Project. This estimate will consider any components of the Project that are expected to be left in place at the request of and for the benefit to the Tribe or BLM. The decommissioning, performance, and reclamation estimate will also include the residual value of any salvageable or recyclable property, as well as the then-current cost of decommissioning.

## 6.0 REFERENCES

United States Environmental Protection Agency (EPA). 2019a. Summary of the Toxic Substances Control Act. <https://www.epa.gov/laws-regulations/summary-toxic-substances-control-act>

United States Environmental Protection Agency (EPA). 2019b. Summary of the Resource Conservation and Recovery Act. <https://www.epa.gov/laws-regulations/summary-resource-conservation-and-recovery-act>

## **Appendix H**

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### **Bird and Bat Conservation Strategy**

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**Yahthumb Solar Project**  
**Bird and Bat Conservation Strategy**

July 2022

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## **Appendices**

- A Mortality Reporting Form**
- B Nest Reporting Form**

# 1 Introduction

---

This Bird and Bat Conservation Strategy (BBCS) is a voluntary, project-specific document that outlines a plan to reduce the risks that result from bird and bat interactions with components of the Yahthumb Solar Project (Yahthumb Project or Project). The goal of this, and any, BBCS is to reduce bird and bat mortality (USFWS 2012). The statutory authority for addressing effects to birds stems primarily from the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), as well as the Endangered Species Act (ESA); for bats, the United States Fish and Wildlife Service's (USFWS) statutory authority arises primarily from the ESA (USFWS 2010a).

## 1.1 Purpose

This BBCS has been prepared to outline Project-specific practices and measures for reducing avian and bat impacts potentially resulting from construction and operation of the Project. Two of the greatest concerns with respect to the Project are the potential for avian and, to a lesser degree, bat collision with Project components such as solar panels or utility lines, as well as the permanent loss of golden eagle (*Aquila chrysaetos*) foraging habitat.

## 1.2 Goals

Implementation of this BBCS would fulfill multiple goals in an effort to reduce avian and bat mortality throughout construction, operation and maintenance of the Project. The goals specific to this BBCS are to:

1. Identify and isolate where avian and bat mortality has the potential to occur and reduce the potential for avian and bat mortality by implementing specific mortality reduction actions;
2. Design Project utility lines to be raptor safe in accordance with Avian Power Line Interaction Committee (APLIC) design standards (APLIC 2006, 2012), including ensuring that electrified systems do not present an electrocution risk and minimizing the risk of collisions with associated infrastructure;
3. Conduct preconstruction surveys to avoid impacts to nesting birds;
4. Establish an avian and bat reporting system to document incidents of electrocution and collision mortality during construction and operations.



## **2 Laws, Regulations, and Cultural Traditions**

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Native birds and bats in Nevada are protected primarily under three pieces of legislation: the ESA, MBTA, and BGEPA. The Moapa Band of Paiutes (Moapa Band or Band) does not have tribal guidance or regulations concerning birds and bats within the Moapa River Indian Reservation (Reservation) where the Proposed Project is primarily located.

### **2.1 Migratory Bird Treaty Act**

The Migratory Bird Treaty Act of 1918 (16 US Code [U.S.C.] §§ 703-712) is administered by the USFWS (USFWS 1998a) and is the cornerstone of migratory bird conservation and protection in the U.S. The Act authorizes the Secretary of the Interior to regulate the taking of migratory birds; and provides that it shall be unlawful, except as permitted by regulations, “to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird” (16 U.S.C. § 703). The list of species protected by the Act was revised in 2013 and includes almost all bird species that are native to the U.S.

### **2.2 Endangered Species Act**

Section 9 of the ESA prohibits everyone, private person and federal agency alike, from “taking” endangered and threatened wildlife. “Take” is defined as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct (16 U.S.C. § 1532(19)). “Harm” is further defined by USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. “Harass” is defined by USFWS as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering (USFWS 1998b). Any activity that may result in the “incidental take” of threatened or endangered species requires permission from the USFWS under ESA Sections 7 or 10.

### **2.3 Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act of 1940 (as amended 1959, 1962, 1972, and 1978) prohibits the take, disturbance, or possession of bald and golden eagles with limited exceptions. Take, in the Act, is defined as to “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb” (16 U.S. Code § 668c). Disturb is defined in USFWS regulations as, “to agitate or bother a bald or golden eagle to a degree that causes or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding or sheltering behavior” (50 C.F.R. § 22.3). Important eagle-use areas include eagle nests, foraging areas, or roost sites that eagles rely on for breeding, sheltering, or feeding, and the surrounding landscape features, foraging areas, or roost sites that are essential for the continued viability of the site for breeding, feeding, or sheltering eagles.

## 3 Proposed Project

---

### 3.1 Project Area and Description

The proposed Yahthumb solar generating facility would be constructed entirely within the Reservation within a lease study area of approximately 1,695 acres of tribal trust land. These lands are all located in a central corner of the Reservation in an area set aside by the Band exclusively for the Yahthumb Project. The solar fields and associated facilities would be in Sections 29, 30, 31, and 32; Township 16 South, Range 64 East; Mount Diablo Base Meridian. **Figure 1** shows the proposed general location for the Project.

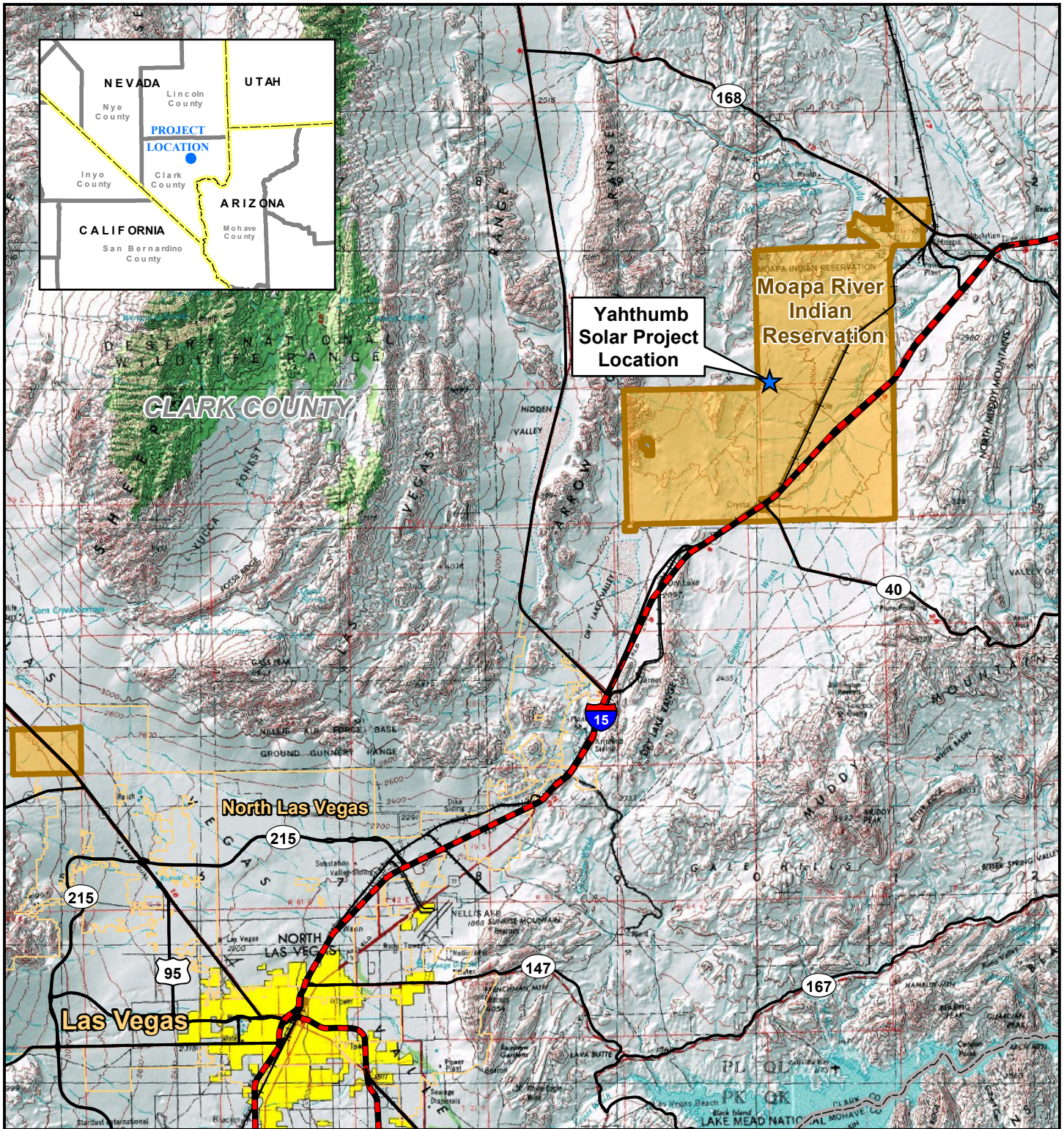
The proposed Project would occur in the Basin and Range physiographic province in a part of the Mojave Desert. This physiographic province is characterized by the hundreds of long, narrow, and nearly parallel mountain ranges that are separated by deep valleys. These features are visible at the proposed Project site, with nearly parallel mountain ranges situated generally in a north-south direction that are located near the proposed Project site. The majority of the Project site occurs in a sloping valley. The proposed Project site occurs in the Mojave Desert Scrub biome and is dominated by plants common to this biome including creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*).

The Project is located in the Basin and Range physiographic province in the north central portion of the Mojave Desert. Basin and Range structure in the Mojave Desert is characterized by abrupt mountain ranges, generally of moderate height. The Project site is situated in the northern Dry Lake Valley. The sites consist primarily of low-profile bajada slopes and ephemeral washes, which drain to California Wash, which drains to the Muddy River, which drains to the Virgin River and the Overton Arm of Lake Mead, which drains to the Colorado River.

The general ecological setting of the Project is Mojave Desert scrub. Vegetation in the solar facility and off-site components is primarily composed of Sonora-Mojave Creosotebush-White Bursage Desert Scrub (90 percent). This community is typically dominated by creosotebush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), which can be sparse to moderately dense (2–50 percent cover). Many other shrubs, dwarf-shrubs, and cacti may be present, often as a sparse understory. In southern Nevada, common species include saltbush (*Atriplex spp.*), Mormon tea (*Ephedra nevadensis*), desert wolfberry (*Lycium andersonii*), brittlebush (*Encelia farinosa*), and beavertail cactus (*Opuntia basilaris*). The herbaceous layer is typically sparse but can be abundant with ephemerals after spring rains. Herbaceous species common in the region include phacelia (*Phacelia spp.*), desert trumpet (*Erigonium inflatum*), cryptantha (*Cryptantha spp.*), and low woollygrass (*Dasyochloa pulchella*). Additionally, the North American Warm Desert Wash and North American Invasive Southwest Riparian Woodland vegetation communities are present within the solar facility and off-site components in lesser amounts. A more detailed description of the Project Area and vegetation communities can be found in the Draft Environmental Impact Statement (DEIS) for the Project.

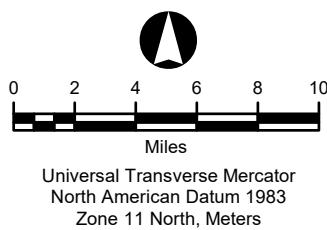
The Project facilities are anticipated to permanently disturb approximately 308 acres and temporarily disturb approximately 1,185 acres on Reservation, BLM-managed, and privately owned land. Most of the Project Area will be mowed to a height of approximately 18 inches and drive and crush construction techniques would be implemented in order to retain as much native vegetation as possible. All disturbance would occur on the Reservation, except for the 5.3-mile portion of the genetic crossing BLM-administered lands and private lands. The Project location allows efficient

connection of the energy from solar resources to existing transmission infrastructure.



**Legend**

- Solar Project Location
- Interstate
- US/ State Highway
- Railroad
- Jurisdictional Land Ownership**
- Indian Reservation



## Yahthumb Solar Project

**FIGURE 1**  
**General Location**

Map Extent: Clark County, Nevada

Date: 07-05-21		Author: mrc
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## 3.2 Proposed Project

The Project's solar field main components are listed in **Section 3.2.1**. Only the components that pose potential risks to birds and bats are discussed further below. **Figure 2** shows the Yahthumb Project components.

### 3.2.1 Solar Field

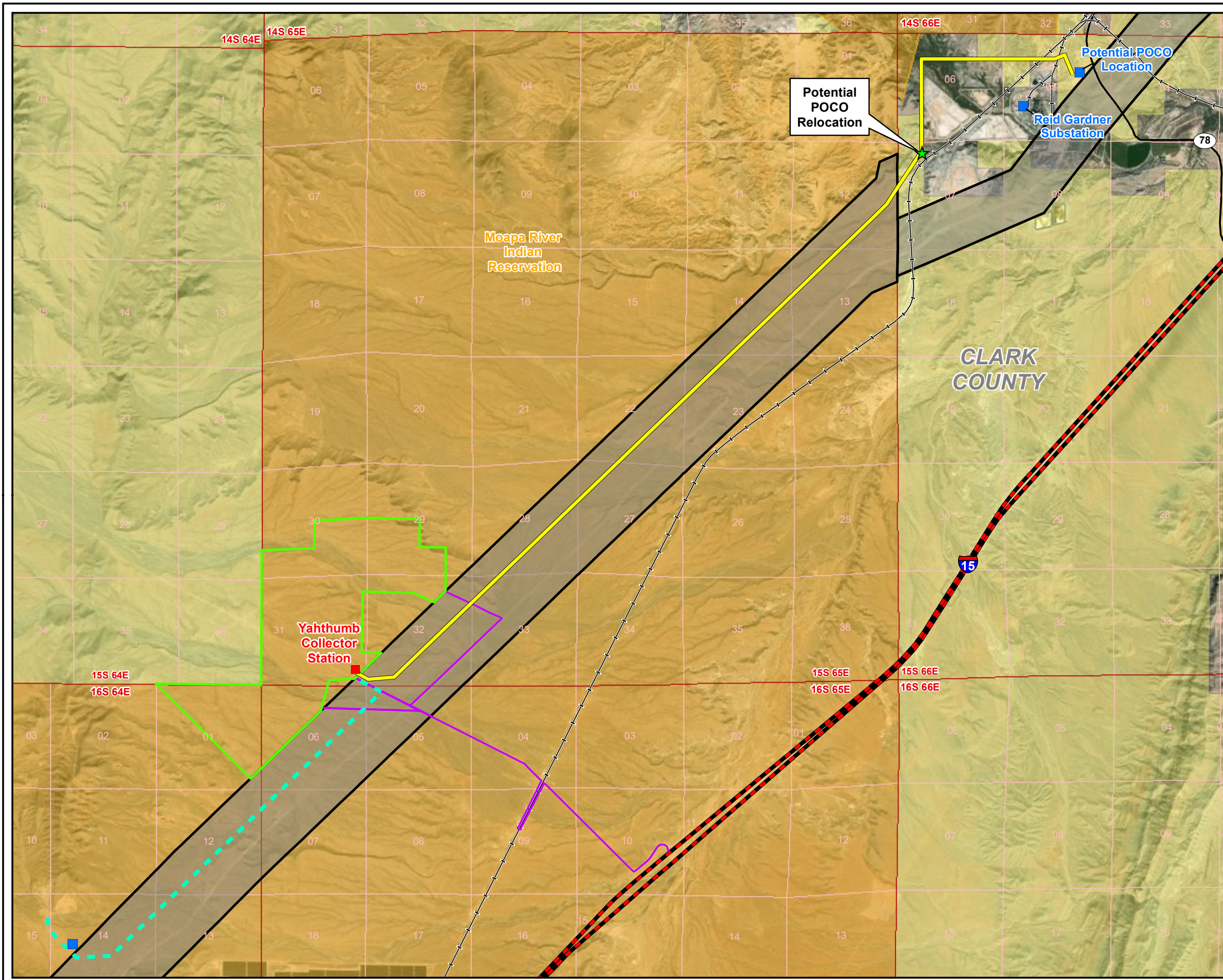
The solar field would utilize PV panels or modules that would be mounted on single-axis trackers. Onsite facilities would impact only a portion of the 1,400-acre lease area on the Reservation. and would include:

- Solar Fields with Single-axis Tracking Systems
- On-site Electrical Collection System and Substation
- Site Security and Fencing
- Communication Systems Infrastructure
- Internal Project Roads
- Battery Energy Storage System (BESS)
- Lighting
- Water Supply
- Wastewater Treatment
- Drainage and Stormwater Controls
- Waste and Hazardous Materials Management
- Fire Protection
- Equipment Laydown Areas on the Solar Fields

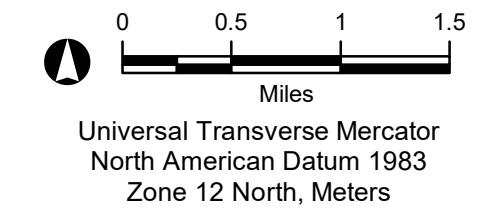
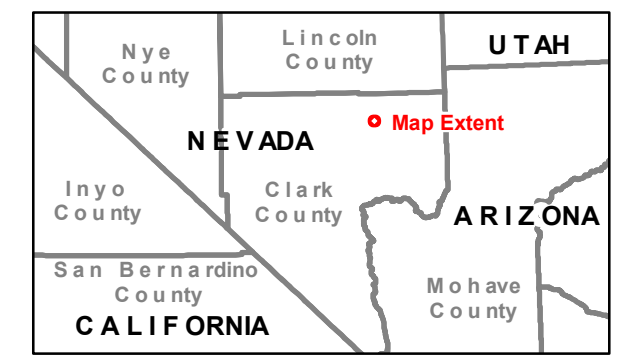
### 3.2.2 Substation

The on-site Project substation would include auxiliary power transformers, distribution cabinets, revenue metering systems, a microwave transmission tower, voltage switch gear, a small control building, and a mechanical electrical equipment room. The substation would occupy an area of up to 10 acres and would be secured separately by an additional chain-link fence. The proposed location of the Project substation would be near the main site entrance. Converted AC electricity would be delivered to the on-site substation via the 34.5 kV AC collection system. At the substation, the electricity again would be stepped up to 230 kV for delivery to NV Energy's transmission grid at the Reid-Gardner Substation.

The substation would be fenced for safety in accordance with applicable codes and one or more structures may be outside the fence for meters and control equipment. The communication system for the substation may include above-ground fiber optic cable and/or a microwave tower mounted on the control building or on a lattice tower up to 100 feet tall. If a fiber optic line is used, it would be mounted on the gen-tie line structures as one of the shield-wires.



- ### Legend
- Project Components**
- Substation
  - Yahthumb Collector Station
  - ★ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Access Road
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  - Yah-Thumb Solar Site
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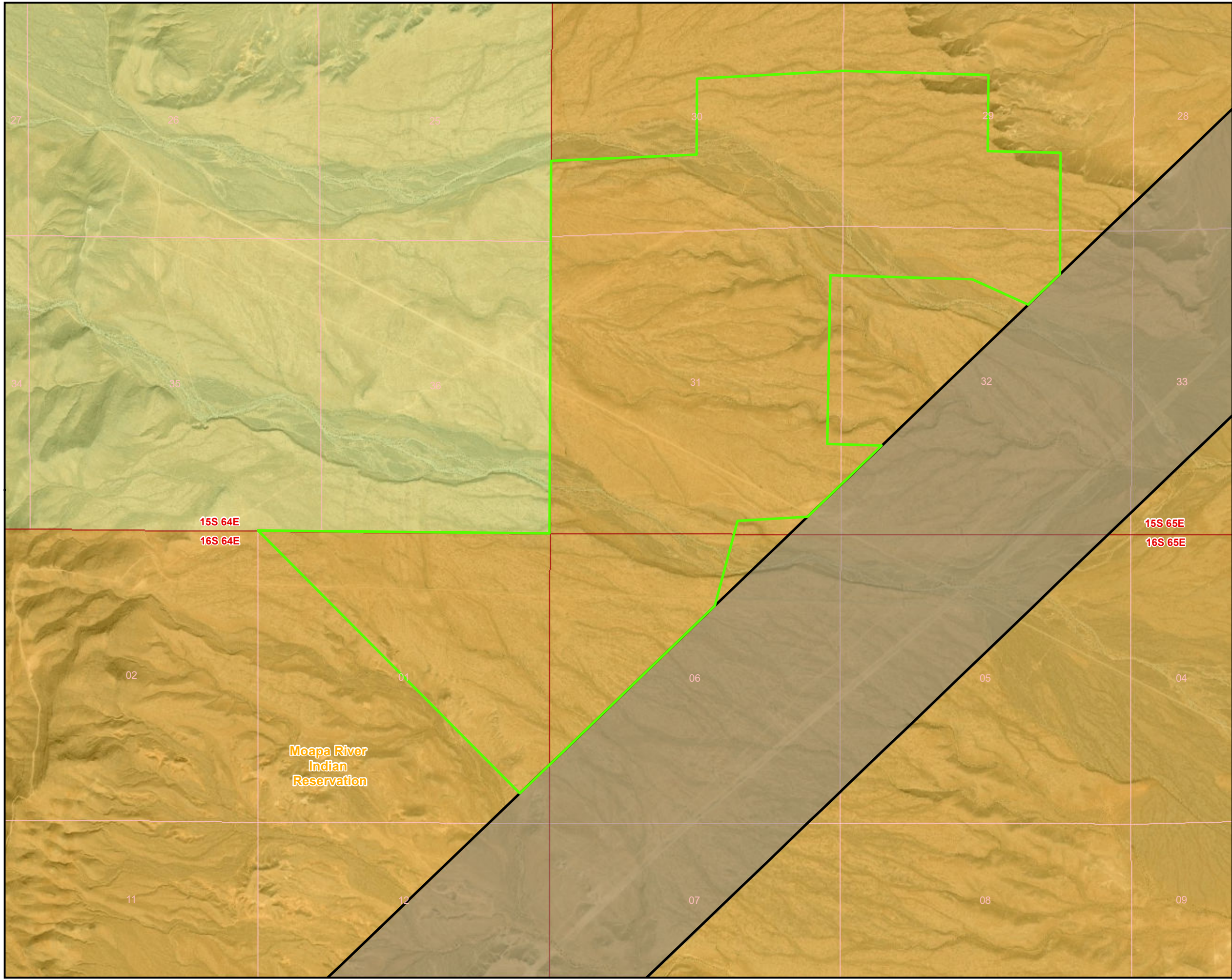


## Yah-Thumb Solar Project

**Figure 2**  
**Project Components**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
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**Legend**

**Project Components**

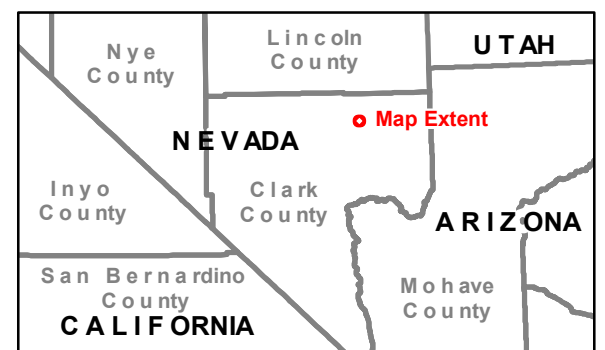
- Yahthumb Solar Site

**General Features**

- Designated Utility Corridor
- Township
- Section

**Land Jurisdiction**

- Bureau of Land Management Land
- Indian Land



Universal Transverse Mercator  
 North American Datum 1983  
 Zone 12 North, Meters

**Yahthumb Solar Project**

**Figure 3**  
**Project Lease Area Map**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
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### 3.2.3 Gen-tie Line

The Project would use single steel pole (monopole) structures that would be made of self-weathering or galvanized steel for the 230 kV gen-tie line. The structures would be approximately 150 feet tall (above grade). Illustrations of the typical steel pole structures that could be used for this Project are provided in **Figure 4**.

The design, construction, operation, and maintenance of the transmission lines would meet requirements of the National Electrical Safety Code (NESC); U.S. Department of Labor, Occupational Safety and Health Standards; and the Resource Management Plan's requirements for safety and protection of landowners and their property. Transmission line design would also be consistent with recommendations for reducing negative impacts of power lines on birds found in Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 by Edison Electric Institute and the Avian Power Line Interaction Committee (APLIC 2006) and Reducing Avian Collisions with Power Lines by the U.S. Fish and Wildlife Service and the APLIC (APLIC 2012).



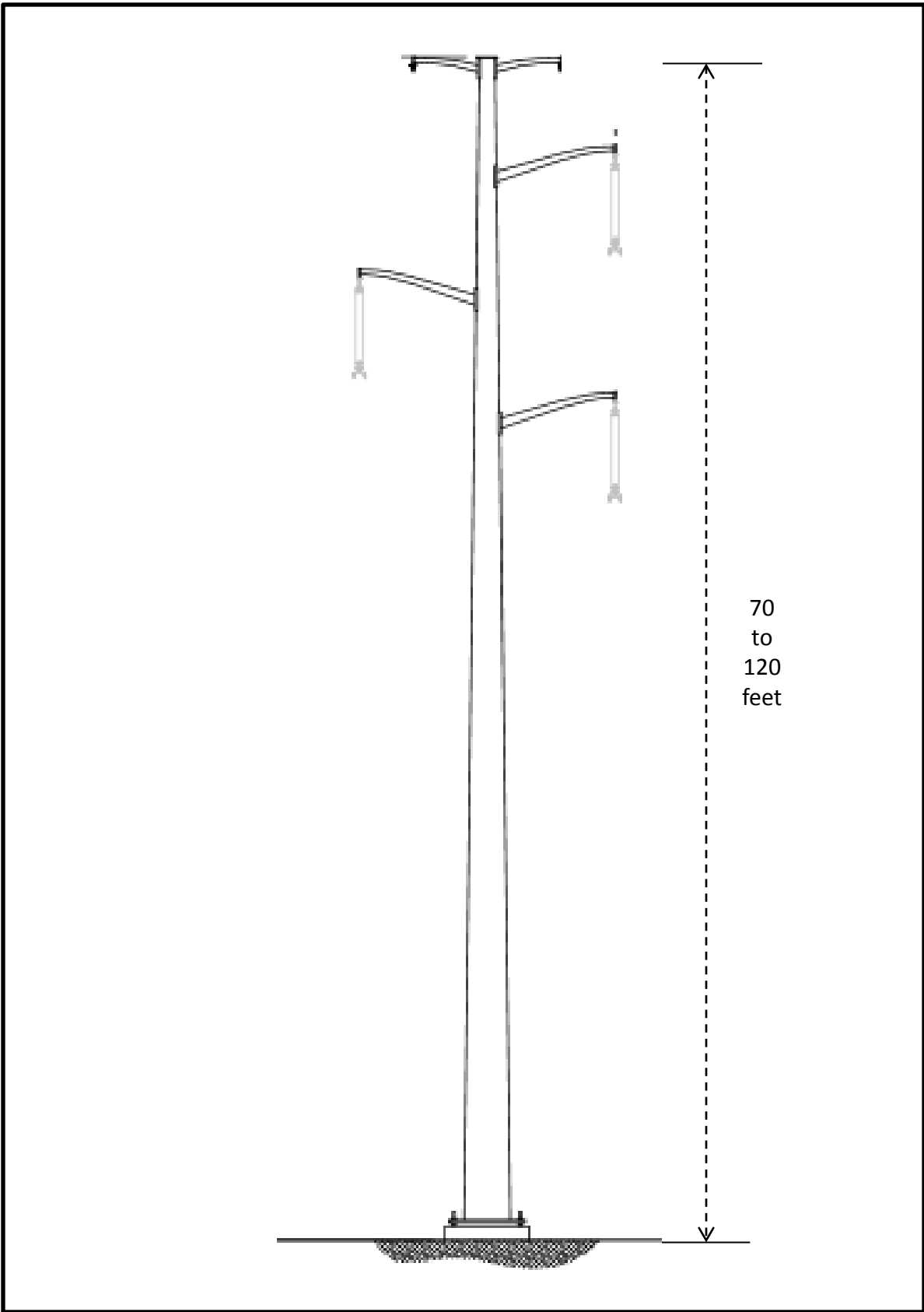


Figure 4

Typical 230 kV Single-Circuit Steel Pole Structure

### **3.2.4 Artificial Lighting**

The Project's lighting system would provide operation and maintenance personnel with illumination for both normal and emergency conditions near each main entrance, the Project substation, and at the BESS facilities. Lighting would be designed to provide the minimum illumination needed to achieve safety and security objectives and would be downward facing and shielded to focus illumination on the desired areas only. There would be no lighting in the solar field except for emergency lighting at the BESS facilities. Therefore, light trespass on surrounding properties would be minimal. If lighting at individual solar panels or other equipment is needed for night maintenance, portable lighting would be used.

## 4 Species of Concern

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The Proposed Project Area supports suitable nesting and/or foraging habitat for several avian species and potentially suitable foraging habitat for several species of bat. Species observed in or adjacent to the Project Area during Yahthumb Project biological surveys and site visits were typical of the Mojave desert and included several species of birds. Commonly observed avian species include: horned lark (*Erimophila alpestris*), black-throated sparrow (*Amphispiza bilineata*), ash-throated flycatcher (*Myiarchus cinerascens*), black-tailed gnatcatcher (*Polioptila melanura*), loggerhead shrike (*Lanius ludovicianus*), common raven (*Corvus corax*), burrowing owl (*Athene cunicularia*) and red tailed-hawk (*Buteo jamaicensis*). The following section describes the known and predicted occurrences of sensitive avian and bat resources in and around the proposed Project Area.

### 4.1 Bat Species

No bats are currently listed by the USFWS as threatened or endangered in Nevada or Clark County (USFWS 2022a and 2022b). One species of bat is listed as threatened by the Nevada Natural Heritage Program as threatened in Clark County, Nevada (NNHP 2022). Twelve species of bat could occur within the Proposed Project Area, and the Nevada Natural Heritage Program (NNHP) has designated nine as sensitive, protected, or threatened species. If present at all, these species are only expected to be present within the Proposed Project Area during nocturnal foraging events and are addressed in **Table 1**. Based on field surveys, there are no known or expected roosting locations or hibernacula within or in the immediate vicinity of the Proposed Project Area.

**TABLE 1 – BAT SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name	Status	Habitat	Potential to Occur
California leaf-nosed bat	<i>Macrotus californicus</i>	NS <sup>1</sup> , BLM-S <sup>4</sup>	Caves, mines and rock shelters mostly in lower elevation creosote bush scrub habitat in proximity to riparian habitat. Forages in open areas over flats and washes near roosting sites.	Low potential to occur. Occurs at lower elevations and near riparian habitats, which are not present in the Project Area.
California myotis	<i>Myotis californicus</i>	BLM-S	Semiarid deserts and grasslands, forests, coastal forests, and montane forests. Roost in tree bark and rock crevices.	Moderate potential to occur. Common species, may forage within the Project area
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	NS, BLM-S	Use a variety of habitats from arid desert scrub to pine forests, but always near roosting areas which are in caves/mines. Forages along riparian areas and generally prefers mesic habitats.	Low potential to occur. Mine and cave obligates and none are present in the Project Area. Foraging habitat not present within the Project Area.
Western red bat	<i>Lasiurus blossevillii</i>	NS, BLM-S	Found primarily in wooded habitats including mesquite bosque and cottonwood/willow riparian areas. Typically roosts in trees.	Low potential to occur. No suitable woodland or riparian habitat in the vicinity of the Project Area.
Fringed myotis	<i>Myotis thysanodes</i>	NP <sup>2</sup> , BLM-S	Roosts in caves, mines and is mainly found in woodlands/pine forests at higher elevations, but will sometimes occupy desert scrub.	Low potential to occur. No caves or mines are present in the Project Area.
Cave myotis	<i>Myotis velifer</i>	BLM-S	Cave dwelling; will roost in rock or wall crevices, old buildings, and under bridges.	Low potential to occur, rare. No caves are present in the Project Area

Common Name	Scientific Name	Status	Habitat	Potential to Occur
Pallid bat	<i>Antrozous pallidus</i>	NP, BLM-S	Arid regions with rocky outcroppings, roosting in caves/mines, deep canyon crevices, under bridges and human structures. Forages over open areas near roosting locations.	Low potential to occur, no roosting habitat present in the Project area.
Spotted bat	<i>Euderma maculatum</i>	NT <sup>3</sup> , BLM-S	Occurs primarily in arid or ponderosa pine forests and marshlands. Sometimes in deserts and grasslands Prefers to roost in rock crevices on vertical cliffs and open canyons. Associated with rocky cliffs. Forages in canyons, in open areas, and over riparian vegetation.	Low potential to occur, no cliff or canyon roosting or foraging habitat present in the Project Area.
Allen's big-eared bat	<i>Idionycteris phyllotis</i>	NP, BLM-S	Inhabits mountainous areas and uses a variety of habitats, including desert scrub, coniferous forests, and riparian woodlands. Roosts in rocks, snags, and cliffs, but most roosts are found in mines.	Low potential to occur, no suitable roosting habitat is present in the vicinity of the Project area.
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	NP, BLM-S	Roosts in caves, trees and man-made structures, typically near water sources where foraging primarily occurs, but will also forage over open areas. Found from low desert to high mountains.	Low potential to occur, no water sources nearby and no roosting habitat.
Big free-tailed bat	<i>Nyctinomops macrotis</i>	BLM-S	Inhabits rocky terrain, roosts in rocky cliffs in weathered rock fissures and crevices. Also roost in buildings	Low potential to occur, rare. No rocky cliffs in the Project Area.

Common Name	Scientific Name	Status	Habitat	Potential to Occur
			and plants including pines and desert shrubs.	
Western pipistrelle	<i>Parastrellus hesperus</i>	BLM-S	Desert habitats of blackbrush, creosotebush, salt desert shrub, and sagebrush. Nests in caves and under loose rocks.	Moderate potential to occur. Common species in desert habitats.
Western mastiff bat	<i>Eumops perotis</i>	NS, BLM-S	Roosts in deep rock crevices or crevices in man-made structures high above the ground. Found in open areas in a variety of habitats with abundant roost locations.	Low potential to occur, reliance on significant rock features for roosting which are not present in the Project Area.

NNHP 2021, Bradley et al. 2006

<sup>1</sup> NS Nevada State Sensitive Species protected under NRS 501, NAC 503.

<sup>2</sup> NP Nevada State Protected Species protected under NRS 501, NAC 503.

<sup>3</sup> NT Nevada State Threatened Species protected under NRS 501, NAC 503.

<sup>4</sup> BLM-S BLM Sensitive Species

## 4.2 Federally Protected Avian Species Likely to Occur in the Project Area

### 4.2.1 Golden Eagles

The golden eagle is protected under the BGEPA, which includes the September 11, 2009 Eagle Rule (Rule) (50 C.F.R. parts 13 and 22), as well as the MBTA. Periodic helicopter surveys by the Nevada Department of Wildlife (NDOW) indicate that suitable nesting and remnant nests occur approximately 5 to 6.5 miles west of the Proposed Project.

The entire Proposed Project site is considered suitable foraging habitat for golden eagles and the species is likely to occasionally forage within the Proposed Project site. No suitable nesting habitat is present in the Proposed Project site and no known active nests occur closer than five miles from the Project Area. The construction, operation, and maintenance of the Project is not expected to result in take of golden eagles. However, the potential for collision with project infrastructure would be increased by the construction of the Project if proper precautions are not taken.

### 4.3 Special Status Avian Species

In addition to the BGEPA, ESA, and MBTA, the State of Nevada has additional protection for endemic avian species. **Table 2** addresses these special status species that could be found in the Proposed Project site, the protection afforded these species, the associated habitat, and the likelihood of occurrence.

**TABLE 2 – SPECIAL STATUS AVIAN SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name	Status	Habitat	Potential to Occur
Golden eagle	<i>Aquila chrysaetos</i>	BGEPA <sup>9</sup> , BCC <sup>8</sup> , NW <sup>5</sup> , BLM-S <sup>10</sup>	Rolling foothills and mountain terrain as well as wide arid plateaus, open desert and scrubland. Uses cliffs, rock outcroppings and tall trees for nesting.	Low likelihood to occur. See in depth discussion in Section 4.2.1.
Yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	LT <sup>7</sup> , NS <sup>2</sup> , BLM-S	Open woodland, parks, deciduous riparian woodland; nests in tall cottonwood and willow riparian woodland.	Low likelihood to occur. No suitable riparian woodland habitat present, but may occur flying over the Project area during migration periods.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	BCC, NW, BLM-S	Open grasslands, desert scrub, agricultural lands and open stages of pinyon-juniper habitat. Utilizes abandoned burrows for nesting purposes.	High likelihood to occur. May forage or nest in the Project Area. None detected during biological surveys.
Ferruginous hawk	<i>Buteo regalis</i>	NW, BLM-S	Breeds in open grasslands, sagebrush flats, low foothills, sparse riparian areas, canyons, and fingers of pinyon-juniper and other forest types. Winters in open terrain from grassland to desert, especially in areas where small mammals are abundant.	Moderate likelihood to occur during winter months for foraging. No likelihood to occur during breeding season. No suitable breeding habitat present.
Swainson's hawk	<i>Buteo swainsoni</i>	NW, BLM-S	Nests in agricultural valleys or open grasslands with scattered trees for nesting. Forages near nesting area in grasslands or agricultural fields. Migrates to S. America during winter.	Low likelihood to occur. No suitable habitats for foraging or nesting present, but may occur flying over the Project Area during migration.
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	NW, BLM-S	Beaches, dry mud or salt flats, sandy shores of rivers, lakes, and ponds are used for foraging and nesting purposes. Some populations migrate from inland regions to the	Low likelihood to occur. No suitable nesting or foraging habitat present, but may occur flying over the Project Area during migration.

Common Name	Scientific Name	Status	Habitat	Potential to Occur
			coast during winter.	
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	LE <sup>6</sup> , NE <sup>4</sup> , BLM-S	Thickets, scrubby and brushy areas, open second growth, swamps, and open woodland near running water.	Low likelihood to occur. No suitable riparian habitat present for breeding and foraging, but may occur flying over the Project Area between water sources or during migration.
Peregrine falcon	<i>Falco peregrinus</i>	NE, BLM-S	Utilizes various open environments including open water, desert shrub, and marshes usually in close association with suitable nesting cliffs; also, mountains, open forested regions, and human population centers.	Low likelihood to occur. No suitable cliff nesting habitat and little potentially suitable foraging habitat present.
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	NW, BLM-S	Pinyon-juniper woodland, less frequently pine, also occurs in scrub oak and sagebrush. Forages in woodlands and grasslands.	No likelihood to occur. No suitable habitat present.
Loggerhead shrike	<i>Lanius ludovicianus</i>	NS, BLM-S	Open country with scattered trees and shrubs, grassland or pastureland, savanna, and desert scrub.	High likelihood to occur. May forage within the Project Area. Individuals have been observed during biological surveys.
Yuma Ridgway's rail	<i>Rallus obsoletus yumanensis</i>	LE, NE	Freshwater marshes dominated by emergent plant species such as cattails and bulrushes.	Low likelihood to occur. No suitable freshwater marsh breeding or foraging habitat present, but may occur flying over the Project Area between water sources and/or during migration.
LeConte's thrasher	<i>Toxostoma lecontei</i>	NP <sup>1</sup> , BLM-S	Habitat consists of sparsely vegetated desert flats, dunes, alluvial fans, or gently rolling hills. Typically nests in spiny shrubs and trees or cacti.	High likelihood to occur. Suitable habitat present.
Brewer's sparrow	<i>Spizella breweri</i>	NS, BLM-S	Strongly associated with big sagebrush in areas with scattered shrubs and short grass, especially	Low likelihood to occur. No suitable sagebrush habitat present for breeding, but may use the



Common Name	Scientific Name	Status	Habitat	Potential to Occur
			during breeding season. During the winter, open creosote bush scrub is used as well.	area during winter months.
Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA, NE, BLM-S	Large bodies of water for foraging. Mature trees along a habitat edge near a water source are preferred for roosting.	No likelihood to occur. No suitable nesting or foraging habitat present.
Bendire's thrasher	<i>Toxostoma bendirei</i>	BCC, NP, BLM-S	Variety of desert habitats with fairly large shrubs or cacti and open ground, or open woodland with scattered shrubs and trees. Very rare species.	Low likelihood to occur. Suitable desert habitat present, but species is very rare.
Least bittern	<i>Ixobrychus exilis</i>	BLM-S	Fresh marshes, reedy ponds. Mostly freshwater but also brackish, in areas with tall, dense vegetation standing in water.	Low likelihood to occur. Lack of marshes and ponds.
Lewis' woodpecker	<i>Melanerpes lewis</i>	BLM-S	Open forest and woodland, often logged or burned, including oak, coniferous forest.	Low likelihood to occur. No suitable forest habitats.
Phainopepla	<i>Phainopepla nitens</i>	BLM-S	Desert, riparian woodlands, and chaparral. Depend on fruiting desert mistletoe ( <i>Phoradendron californicum</i> ), which parasitizes the same trees used for nesting, and produces a stable, long-lasting supply of berries.	Moderate likelihood to occur within the Project Area. Could nest in desert wash and mesquite bosque habitats in the vicinity of the Project.
Crissal thrasher	<i>Toxostoma crissale</i>	BLM-S	Dense brush along desert streams, mesquite thickets. Habitat varies from dense mesquite along washes to sparse brush in open areas. Also in chaparral, manzanita, and other scrub. Nests in dense shrubs.	Moderate likelihood to occur and nest within or near the Project Area. Suitable habitat exists within the Project area.
Green-tailed towhee	<i>Pipilo chlorurus</i>	BCC	Dense, shrubby habitat, sometimes with scattered trees or cacti. In winter they move to dry washes,	Moderate likelihood to occur during winter months. Suitable wintering habitat present.

Common Name	Scientific Name	Status	Habitat	Potential to Occur
			arroyos, mesquite thickets, creosote bush, and desert grasslands	
Sagebrush sparrow	<i>Artemisiospiza nevadensis</i>	BCC	Breeds in shrub-steppe habitats with tall shrubs such as sagebrush, saltbush and rabbitbrush. Winters in dry shrublands or grasslands, including creosote and saltbush-dominated desert scrub.	Moderate likelihood to occur during winter months. Suitable wintering habitat present.

NatureServe 2021, NNHP 2021, USFWS 2022.

<sup>1</sup> NP Nevada State Protected Species protected under NRS 501.

<sup>2</sup> NS Nevada State Sensitive Species protected under NRS 501.

<sup>3</sup> NT Nevada State Threatened Species protected under NRS 501.

<sup>4</sup> NE Nevada State Endangered Species protected under NRS 501.

<sup>5</sup> NW Nevada NNHP Watch-List Species

<sup>6</sup> LE USFWS Listed Endangered

<sup>7</sup> LT USFWS Listed Threatened

<sup>8</sup> BCC USFWS Bird of Conservation Concern.

<sup>9</sup> BGEPA Bald and Golden Eagle Protection Act

<sup>10</sup>BLM-S BLM Sensitive Species

## 5 Areas of Risk

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This section outlines potential risks to birds and bats resulting from the Project. Based on the Project location and details and results of the wildlife surveys completed for the Project, potential Project related risks associated with the construction and operation would include collision with overhead utility lines (including the substation), solar panels and other Project features, electrocution, territory abandonment and nest disturbance, loss of foraging habitat and habitat fragmentation, artificial lighting, and disturbance due to ongoing human presence at the facility.

### 5.1 Collision Risk

Vulnerability to collision depends on many factors including bird behavior and maneuverability, topography, weather, solar facility and collector line design, and placement of components on the landscape. Bird collision with power lines has been documented for decades, and risk of collision is considered highest in areas where birds congregate, such as power lines that bisect daily flight paths to meadows, wetlands, and river valleys (APLIC 2006). Bird collisions with PV panels has been documented and studied for a relatively short period of time, and there are a small number of peer-reviewed publications documenting fatality risks to birds associated with PV panels.

Birds may have significant “blind spots,” increasing risk of collision even during daylight hours. Scanning below for prey or roost sites can render them blind to objects in the direction of travel (Martin and Shaw 2010). Structures associated with the Project, PV panels, overhead collector lines, or the onsite substation could present a collision risk. This risk should be minimal due to the relatively low height of the majority of substation structures (up to 16 feet). If constructed, overhead collector lines (pole height of up to 75 feet) would cause an insignificant effect on in-air collisions. Given that the Project is located near an existing utility corridor that is currently occupied by five electric transmission lines ranging in size from 230 kV to 500 kV (between approximately 75-foot tall and 200-foot tall poles), the addition of another gen-tie line (150-foot tall poles) in this existing utility corridor is unlikely to have an appreciable cumulative effect on in-air collisions. Transmission lines are the Project components that present the greatest risk of avian collision. The existing lines have been in place for many years and foraging flight patterns of resident birds have most likely modified their behavior due to the vast size and locations of the utility infrastructure.

### 5.2 Electrocution

Power lines are present in many wildlife habitats and may result in the electrocution of raptors and other bird species (APLIC 2006; Lehman et al., 2010 and references therein). The potential for electrocutions depends on the arrangement and spacing of energized and grounded components of poles and towers that are sometimes used for perching, nesting and other activities (APLIC 2006, 2012). However, nearly all electrocutions occur on smaller, more tightly spaced residential and commercial electrical distribution lines that are less than 69 kV (APLIC 2006, 2012).

To protect avian species from electrocution, APLIC has established guidelines for electric line design. Incorporating appropriate design standards into any collector or other electric lines on the Project will minimize electrocution risk. The overhead collector lines and gen-tie line will have clearances between electrical components as recommended by APLIC (2006, 2012), e.g., at least 60 inches of horizontal separation and a vertical separation of 40 inches between phase conductors, which is greater than the physical dimensions of all large birds, including eagles, that could potentially use the structures for perching. In situations where particular hardware would present

an electrocution risk (e.g., jumpers, cutouts, arrestors, transformers, etc.), perch guards and/or insulators will be installed, per APLIC guidelines, to minimize electrocution risk. Therefore, electrocution of all birds including raptors would be unlikely.

### 5.3 Territory Abandonment and Nest Disturbance

The Tribe and Bureau of Indian Affairs (BIA) do not have regulations quantitatively limiting noise generation or effects from the Project during the temporary construction phases or operational phase. The EPA has developed and published a criterion to be used as an acceptable guideline when no other local, tribal, county, or state standard has been established (EPA 1974). The Project would affect ambient noise and vibration levels if they would result in the generation of noise levels or exposure of sensitive species to noise levels or ground-borne vibration in excess of standards established in applicable federal, state, and local general plans or noise ordinances (in this case, EPA standards).

There is the potential for golden eagles, as well as other bird species, to use the Project area for foraging and other birds for nesting. Birds would be susceptible to noise disturbance as described in Section 3.3 of the DEIS, potentially resulting in alteration of foraging and/or nesting behaviors. There is potential for nest disturbance of migratory birds including burrowing owl burrows during the construction phase of the Project from noise, removal of vegetation, and leveling the ground. Known golden eagle nesting areas are located approximately 5 to 6.5 miles from the Project. Noise and other construction activity would affect nesting behavior of these known nests at this distance.

Short term impacts could result to birds. Vegetation within the solar arrays will be crushed and rolled and is expected to grow back quickly after construction; this vegetation will likely provide suitable nesting habitat for birds. The presence of humans and machinery may deter some, but not all birds from nesting within the solar facility during operations. Noise from inverters and tracking panels may impact wildlife species within and immediately adjacent to the facility. Only short-term impacts would occur from noise and vibration during the construction phase. Most non-listed bird species would return to the area after construction if significant habitat and foraging opportunity exists.

### 5.4 Habitat Loss and Fragmentation

An estimated 308 acres within the Project area is considered suitable foraging habitat for Golden Eagles and other avian/bat species discussed in this BBCS and would be permanently affected by construction of the Project. Temporary losses of an estimated 1,185 acres of foraging habitat would also occur during construction activities. Loss of foraging habitat could impact foraging behaviors of these avian and bat species. The Proposed Project's permanent impact of 308 acres of this habitat is very small (<0.01% assuming 10-mile foraging area) in comparison to available habitat within the area.

The Project Area currently supports suitable nesting and foraging habitat for some avian species, and foraging habitat for some bats. These species could potentially be adversely affected during construction and operation activities. Bird nesting could also occur in the limited vegetation in the Project area and in ground burrows in or near the Project. In the vicinity of the Project, the avian nesting season for most bird species is from late February to early July. The human activity at the Yahthumb Project could attract undesired species, such as common ravens, that could affect the ability of other species to nest in the area. Workers will be trained to avoid activities that attract ravens and other scavengers/predators such as coyotes (*Canis latrans*) to the Project, per the Project's Raven Control Plan.

Bat roosts or nursery colonies can occur in a variety of natural substrates or manmade structures that provide specific thermal properties and protection from predators. Typically, these are large, stable structures, uninhabited or with minimal use by humans, such as buildings, barns, bridges, or caves, mines, and trees. Likewise, aquatic features that produce insects can be an important resource for foraging bats. No bat roosting habitat currently exists for sensitive bat species within or near the Project site, but the site potentially provides bat foraging habitat. Because bats do not forage during daylight hours and the majority of the construction would take place during the daytime, with the potential for limited night work, the potential for Project-related construction or operations impacts on bats is limited.

Direct habitat loss will occur from the Project, and habitat fragmentation may reduce the functionality of this area for birds and bats; however, because an abundance of similar lands are available in the vicinity to provide habitat for any avian individuals displaced from the Project site, and since this Project site is not located in a sensitive, unique, or significant area of ecological importance to bird or bat species, the impacts are likely to be small and have no significant population level effects on any bird or bat species in the area.

## **5.5 Artificial Lighting**

Additional light sources during the operation of the Yahthumb Project could result in concentrated foraging locations of avian and bat species that feed on insects nocturnally since the artificial lighting could attract insects. Artificial lighting also has the potential to negatively affect migration patterns of migratory birds and bats that move through the area. Lighting impacts would be reduced by designing all lights to provide the minimum illumination needed to achieve safety and security objectives and by facing all lights downward and shielding them to focus illumination on the desired areas only. If lighting at individual solar panels or other equipment is needed for night maintenance, portable lighting will be used.

## **5.6 Ongoing Human Disturbance**

Maintenance would consist of dust control and grounds upkeep, cleaning and repair of modules, repair and upkeep of all transformers, inverters and wiring collection systems, control systems upkeep, building maintenance and water treatment, and permanent storm water controls and maintenance.

Routine Preventative Maintenance (PM) activities would be scheduled in accordance with the frequencies outlined in the Original Equipment Manufacturer (OEM) specifications. O&M would require the use of vehicles and equipment including but not limited to welding, re-fueling, lubricating, panel washing equipment, forklifts, manlifts, and chemical sprayers for weed abatement. Flatbed trucks and pick-up trucks as well as utility vehicles would be used on a daily basis during construction at the facility and on-site.

Major equipment maintenance and overhauls would be completed at intervals of approximately 5-10 years. Replacement of non-functioning equipment may require the use of heavy haul transport equipment and large overhead cranes. Noise and activity disturbance would occur as a result of the O&M activities, but the impacts would be minor and intermittent in nature and are expected to have little or no added impacts to birds or bats in the area.

## 6 Mitigation Measures

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As discussed in **Section 4**, the Proposed Project Area supports suitable habitat for avian species, thereby creating a potential for impacts on these species from construction and O&M activities. The potential for impacts to bats is low because they are not known to breed in the Proposed Project Area.

The following construction and operation measures will be implemented to minimize potential impacts on avian and bat species.

### 6.1 Electrocutation

All utility poles would be designed to be avian-safe in accordance with the *Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines* by the U.S. Fish and Wildlife Service and the APLIC (APLIC, 2012). All aspects of the substations, switching stations, and transformers would be constructed utilizing avian-safe practices as suggested by APLIC using industry standards (APLIC 2006). Any potential electrocution caused mortality to a bird or bat would be reported to the USFWS (**Appendix A**).

### 6.2 Anti-Perching and Nesting

To reduce perching along segments of the overhead collector lines or substation, perch deterrents would be installed during construction. Anti-perching and nesting devices are important tools for reducing the risk of avian electrocution, protecting desert tortoise from increased predation, and keeping the entire electrical system running smoothly. Perch deterrents are expected to be used primarily to eliminate hunting perches for raptor species. Deterring this kind of perching would limit the predation of other avian species or animals which use surrounding vegetation for foraging and nesting.

Inspections of lines and other areas where raptor or corvids (crows and ravens) might nest along the overhead collector lines or on the substation towers would be conducted monthly during the breeding season (February 15<sup>th</sup> to August 31<sup>st</sup>) for the first 3 years of operation. Unoccupied nests with no eggs or chicks are not protected by MBTA and removal would be conducted prior to the next breeding season. Should nesting activity become a long-term issue, alternate measures to discourage nesting activities should be implemented. Prior to removing or relocating any nests, facility personnel would consult with USFWS and when necessary, proper USFWS permits would be obtained. Reporting of nests and nest relocation would be completed using forms found in **Appendix B**. Removal of unoccupied nests with no eggs or chicks discovered by O&M staff would occur for the life of the project. Any hollow mine claim markers discovered on site would also be removed to prevent birds from becoming entrapped.

### 6.3 Habitat Loss and Fragmentation

Construction of the Project would have temporary and permanent impacts on vegetation, but the temporary impact areas would be allowed to re-vegetate, and wildlife species would be able to utilize them for habitat and foraging during O&M. Grading and vegetation removal would be minimized to the extent practicable for the Project. Where feasible, site preparation activities would first implement mowing existing vegetation to a height of approximately 18 inches with the remaining standing vegetation flattened by the construction equipment using drive and crush techniques to minimize impacts to the roots of plants. Grading would be implemented for internal access roads, the substation,

the O&M area, BESS locations, electrical equipment pads, etc. and in areas within the solar arrays only where necessary. Where grading is not necessary, panels will be mounted at a height sufficient to avoid contact with vegetation and vegetation will only be trimmed as needed to allow for safe installation and maintenance of the PV tracking system. Since much of the vegetation within the Project will be allowed to re-colonize after construction is complete, it is anticipated that certain bat and bird species would use the site to some extent during operations.

An Integrated Weed Management Plan (IWMP) will be prepared and submitted to the BLM, BIA and the Tribe for review and approval before construction begins. Methods of noxious weed and invasive species identification, prevention and treatment for the Project are outlined in the IWMP. The IWMP recognizes the Project's impact on vegetation and defines the expected treatments and activities necessary to both maintain the determined desired conditions for the vegetation community within the Reservation and control the weeds that may arise within the up to 1,400-acre Yahthumb Project footprint.

## **6.4 Lighting**

Lighting would be designed to provide minimum illumination needed to achieve O&M objectives and not emit excessive light to the night sky by installing light absorbing shields on top of all light fixtures and focusing desired light in a downward direction (Reed et al. 1985). This would reduce the visibility of the lights to migratory birds traveling through the area. Downward facing lights would also reduce the number of insects attracted to lights resulting in a decrease of potential concentrated feeding areas for bats. Any additional lighting needed to perform activities such as repairs would be kept to a minimum and only used when these actions are in progress.

## **6.5 Nest Disturbance and Territory Abandonment**

Vegetation clearing and ground disturbing activities would be conducted outside the migratory bird nesting season when practical. If ground-disturbing activities cannot be avoided during this time period, pre-construction nest surveys shall be conducted by a qualified biological monitor within 3 days prior to the initiation of ground disturbing activities. For all non-raptor bird species, surveys would cover all potential nesting habitat in and within 300 feet of the area to be disturbed. Any disturbance or harm to active nests would be reported within 24 hours to the USFWS and the BLM, if on BLM lands. The biological monitor would halt work in the immediate vicinity if it is determined that active nests are being disturbed by construction activities and the appropriate agencies would be consulted.

If vegetation clearing is proposed to begin during the breeding season, a qualified biologist would conduct pre-construction nest surveys within 3 days prior to any vegetation clearing activities to identify all active nests within the construction area, and the vegetation and habitat type in which each nest is found will be recorded. Nest locations would be marked using handheld GPS (but not marked in the field in order to avoid attracting potential nest predators); an avoidance area would be clearly marked on the ground in order to prevent equipment from impacting the nest. Environmental monitors would be in place during initial ground-disturbing activities during the construction period to minimize impacts to natural resources. During clearing activities associated with construction, qualified biologists would destroy bird nests only after young have fledged and perform any mitigation measures necessary to reduce or eliminate negative effects on avian species inhabiting the construction area. Activities associated with the removal of nests or relocation of western burrowing owls are regulated by the USFWS under the MBTA.

If construction is scheduled to commence during the breeding season, a qualified biologist would conduct pre-construction surveys within 14 days prior to construction for western burrowing owl within suitable habitat prior to breeding season. All areas within 250 feet of the Projects would be surveyed, per USFWS 2007 Burrowing Owl guidance (USFWS 2007). If an active nest is identified, there would be no construction activities allowed within 250 feet of the nest location to prevent disturbance until the chicks have fledged or the nest has been abandoned, as determined by a qualified biologist. The occurrence and location of any western burrowing owl would be documented by biological monitors in daily reports and submitted to the lead biologist on a daily basis. The authorized biologist would report all incidents of disturbance or harm to western burrowing owls within 24 hours to the USFWS and report any incidence of mortality on the proper form (**Appendix A**).

When removal of occupied burrows is unavoidable, the following mitigation measures shall be implemented outside of the breeding season:

- Passive relocation methods are to be used by the biological monitors to move the owls out of the impact zone. This includes covering or excavating all unoccupied burrows and installing one-way doors into occupied burrows. This will allow any animals inside to leave the burrow, but will exclude any animals from re-entering the burrow. A period of at least 48 hours is required after the relocation effort to allow the birds to leave the impacted area before excavation of the burrow can begin. The burrows should then be excavated and filled in to prevent their reuse.

## **6.6 Trash Disposal and Removal**

To minimize activities that attract prey and predators during construction and operations, garbage will be placed in approved containers with lids and removed promptly when full to avoid creating attractive nuisances for birds and bats, in compliance with the Raven Control Plan. Open containers that may collect rainwater will also be removed or stored in a secure or covered location to not attract birds. Litter from the proposed Project may also attract opportunistic scavengers such as common ravens, which have been known to predate juvenile desert tortoises. The above measures would help minimize common raven attraction to the Project site. For additional information on reducing the impacts of common raven predation see the Raven Control Plan for the Project.



## **7 Monitoring**

---

Bird mortalities observed during construction of the Project would be documented on the attached Mortality Reporting Form (Appendix A) and reported to the USFWS within 48 hours. Bird nests would be documented on the attached Nest Reporting Form (Appendix B).

### **7.1 Pre-construction Avian Monitoring**

Biological monitors would be assigned to the Project in areas of sensitive biological resources. The monitors would be responsible for ensuring that impacts to special status species, native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent possible. Where appropriate, monitors would flag the boundaries of areas where activities would need to be restricted to protect the species of concern and their nests discussed in this BBCS as well as other plant and animal species not listed. Those restricted areas would be monitored to ensure their protection during construction.

### **7.2 Post-construction Mortality Monitoring**

Post-construction monitoring is not proposed for this Project. The Moapa Solar Project (formerly the K-Road Solar Project) is located on the reservation very close to and within the same habitat types as the Yahthumb Project (approximately 2 miles to the south). Moapa Solar (K-Road) has been conducting avian mortality surveys since January 2017. Surveys from January 2017 – July 2019 (29 months) have found only 9 total avian mortalities at the solar site, four of which were determined to be caused by collision and all are common species. No post-construction mortality monitoring would be necessary at the Yahthumb Project because the current data from the nearby existing project suggests limited avian mortalities at this location and within these habitat types. Following construction, O&M staff would be required to take the Worker Environmental Awareness Program (WEAP) training described below which would include a reporting protocol if avian mortalities were incidentally found during regular O&M activities. A Special Purpose Utility Permit (SPUT Permit) would be obtained by the owner to allow for handling, collection, and transport of dead or injured birds.

### **7.3 Permit Compliance**

The Proponents may find it necessary in some situations to obtain federal and state permits regarding avian and bat species, including nest removal or relocation permits (depredation permit). In such situations, the Proponent may seek to obtain them by working with the federal and state resource agencies to determine which permits are necessary. Under no circumstances would the Proponent perform any activity requiring a permit without first obtaining the proper permit or authorization to do so.

### **7.4 Worker Environmental Awareness Program**

A WEAP would be prepared and implemented. All construction crews and contractors would be required to participate in WEAP training prior to starting work on the Projects. The WEAP training would include a review of the special status species and other sensitive resources that could exist in the Project Area, the locations of sensitive biological resources and their legal status and protections, and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel would be maintained.

## 7.5 Injured Birds and Rehabilitation Centers

If any injured birds or bats are discovered during the course of construction activities, biological monitoring, or operations, they would be safely captured and transported to a NDOW licensed wildlife rehabilitator. A mortality reporting data form will be completed for the injured individual for reporting purposes. Rehabilitators would provide guidance on transportation of the injured animal to their locations.

- Wild Wing Project  
4232 Tuffer Lane  
Las Vegas, NV 89130  
Primary Contact: Lisa Ross  
(702) 338-4382
- Animal Kingdom Veterinary Hospital  
1325 Vegas Valley Drive  
Las Vegas, NV 89109  
Primary Contact: Joanne Stefanatos  
(702) 735-7184

## **8 Adaptive Management**

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### **8.1 Agency Collaboration**

This BBCS is a “living” document. Adaptive management will ensure an ongoing open communication between the Proponent and the agencies. The parties will cooperatively evaluate issues if they arise. The Applicant will work collaboratively with the BLM, BIA, Tribe and USFWS to comply with legal requirements as well as the requirements contained within this BBCS.

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## 9 References

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Appendix A – Mortality Reporting Data Form

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**YAHTHUMB SOLAR PROJECT**  
**MORTALITY REPORTING FORM**

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ OBSERVER: \_\_\_\_\_

PROXIMAL TO PROJECT COMPONENT: \_\_\_\_\_

**CARCASS POSITION**

GPS COORDINATES East: \_\_\_\_\_ North: \_\_\_\_\_

BEARING (degrees) to PROJECT COMPONENT: \_\_\_\_\_

DISTANCE (meters) to PROJECT COMPONENT: \_\_\_\_\_

**CARCASS DESCRIPTION**

SPECIES: \_\_\_\_\_

SEX (*circle*): M F U AGE (*circle*): A J U Tag/Band Number: \_\_\_\_\_

CONDITION (*circle*): intact scavenged dismembered feather spot injured

ESTIMATED TIME SINCE DEATH/INJURY (no. of days): <1 1 2 3 4 5 6 7 7+

CAUSE OF DEATH: \_\_\_\_\_

\_\_\_\_\_

OBSERVABLE INJURIES: \_\_\_\_\_

\_\_\_\_\_

SUBSTRATE/GROUND COVER (*at carcass location*): \_\_\_\_\_

DISPOSITION OF CARCASS<sup>1</sup> (*circle*): left in place removed collected for trials collected for other:

\_\_\_\_\_

SHIPPED TO:

[name of institution] \_\_\_\_\_

[physical address] \_\_\_\_\_

[phone/email] \_\_\_\_\_

**WEATHER CONDITIONS**

AIR TEMPERATURE (degrees Fahrenheit): \_\_\_\_\_

PRECIPITATON (last 24 hours, *circle*): none light rain rain heavy rain hail snow

CLOUD COVER (*circle*): clear mostly clear partly cloudy mostly cloudy cloudy

WIND DIRECTION: \_\_\_\_\_ SPEED (mph, *circle*): 0-10 10-20 20-30 30+ gusty

NOTES (describe noteworthy weather conditions since last search, including high wind, fog, precipitation, and storm events):

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**PHOTOGRAPHS<sup>2</sup>:**

Close Up: Photo 1 \_\_\_\_\_

Photo 2 \_\_\_\_\_

Landscape: Photo 3 \_\_\_\_\_

Photo 4 \_\_\_\_\_

PHOTO NOTES: \_\_\_\_\_

---

**NOTIFICATION<sup>3</sup>:**

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

NAME: \_\_\_\_\_

AGENCY/ASSOCIATION: \_\_\_\_\_

**NOTES:**

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<sup>1</sup> Permit required to handle bird carcasses.

<sup>2</sup> At least four photographs should be taken. Two should be close-in shots of the carcass and should be taken from at least two different angles. Two should be shots taken farther away showing the landscape (project components, surrounding habitat, etc.) and should be taken from at least two different angles).

<sup>3</sup> Indicate who was notified of the event, date, time, etc.

Appendix B – Nest Reporting Data Form

---



# YAHTHUMB SOLAR PROJECT

## NEST REPORTING FORM

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ OBSERVER: \_\_\_\_\_

PROXIMAL TO PROJECT COMPONENT: \_\_\_\_\_

### **NEST POSITION**

GPS COORDINATES East: \_\_\_\_\_ North: \_\_\_\_\_

BEARING (degrees) to PROJECT COMPONENT: \_\_\_\_\_

DISTANCE (meters) to PROJECT COMPONENT: \_\_\_\_\_

### **NEST DESCRIPTION**

SPECIES: \_\_\_\_\_

SEX OF INDIVIDUALS AT NEST (*circle all that apply*): M F U

AGE (*circle all that apply*): A J U

ESTIMATED NUMBER OF EGGS/CHICKS (IF APPLICABLE) \_\_\_\_\_

### GENERAL DESCRIPTION OF NEST SITE

Substrate (e.g., cliff or outcrop [rock type], tree/shrub [species, live/dead], ground, artificial structure [type]):

\_\_\_\_\_

Estimated height of substrate: \_\_\_\_\_(m) Estimated height of nest above ground: \_\_\_\_\_(m)

Nest type and location on substrate (e.g., stick nest in upper/lower canopy stick nest on/in ledge, pothole, or crevice; scrape on/in ledge, pothole, or crevice; stick nest on artificial platform mounted in tree; tree cavity; burrow; etc.):

\_\_\_\_\_

Protection from weather (YES/NO; describe nature of protection, e.g., tree canopy, cliff backdrop, pothole/crevice, burrow, etc.):

\_\_\_\_\_

Approximate compass direction of exposure to elements (wind, sun, etc.): \_\_\_\_\_

Nest size—indicate whether estimated or measured: \_\_\_\_\_

Height (top to bottom)\_\_\_\_\_ Width (left to right)\_\_\_\_\_ Depth (back to front)\_\_\_\_\_ (meters)

Known or probable alternative nests within territory and associated nest #'s:

---

---

**PHOTOGRAPHS<sup>1</sup>:**

Close Up: Photo 1 \_\_\_\_\_

Photo 2 \_\_\_\_\_

Landscape: Photo 3 \_\_\_\_\_

Photo 4 \_\_\_\_\_

PHOTO NOTES: \_\_\_\_\_

---

NOTIFICATION<sup>2</sup>:

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

NAME: \_\_\_\_\_

AGENCY/ASSOCIATION: \_\_\_\_\_

**NOTES:**

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<sup>1</sup> At least four photographs should be taken. Two should be close-in shots of the nest and should be taken from at least two different angles. Two should be shots taken farther away showing the landscape (project components, surrounding habitat, etc.) and should be taken from at least two different angles).

<sup>2</sup> Indicate who was notified of the event, date, time, etc.

# **Appendix I**

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## Raven Control Plan

# Raven Control Plan

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*Yahthumb Solar Project*

July 2022

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## **List of Acronyms and Abbreviations**

APLIC	Avian Power Line Interaction Committee
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CORA	Common Raven
EDFR	EDF Renewables Development, Inc.
EIS	Environmental Impact Statement
MBTA	Migratory Bird Treaty Act
Mph	Miles per Hour
PV	Photovoltaic
RCP	Raven Control Plan
USFWS	U.S. Fish and Wildlife Service

## 1.0 INTRODUCTION

### 1.1 Background

Yahthumb Solar Project, LLC (Applicant) has entered into an option agreement with the Moapa Band of Paiute Indians (Moapa Band or Band) to lease up to 1,400 acres for the development of a solar project referred to as the Yahthumb Solar Project (Yahthumb Project or Project) to be located on the Moapa River Indian Reservation (Reservation) in Clark County, Nevada.

The solar project would generate up to 138 megawatts (MWs) of solar energy generation using photovoltaic (PV) technology and incorporating battery energy storage systems (BESS). The Yahthumb Project would include the solar project and all associated facilities. The Bureau of Indian Affairs (BIA), as lead agency in cooperation with the Moapa Band of Paiute Indians (Moapa Band), and other agencies, intends to prepare an Environmental Impact Statement (EIS) that will evaluate the Project.

This Raven Control Plan (RCP) lists procedures the Project will follow for the protection of wildlife species, such as the desert tortoise (*Gopherus agassizii*), from predation by other species that may be attracted to the Project as a result of construction or operation activities. The RCP is being submitted to the United States Fish and Wildlife Service (USFWS) and Bureau of Indian Affairs (BIA) for approval prior to implementation. Once approved, the Applicant will be responsible for implementing the plan during the construction and operational phases of the Project. This RCP addresses activities that will occur during construction and operation of the Project regarding control of ravens as a nuisance species.

The desert tortoise is a federally-listed threatened species known to occur in and around the Project area. The proposed Project area is not located in designated Critical Habitat for the desert tortoise. This RCP has been developed as a mitigation measure to reduce the effects of the common raven (*Corvus corax*; CORA) and other avian predation on the desert tortoise and other native wildlife species as a result of increased human presence, the addition of potential roost and nest site structures, increased availability of water sources and facility operation.

Avian predators such as CORA, loggerhead shrikes (*Lanius ludovicianus*), and American kestrels (*Falco sparverius*) may be drawn to the Project area based on an increase in refuse (e.g. food sources) such as garbage cans and an increase in nesting/perching areas such as the site perimeter fence and generation interconnection (gen-tie) line structures. The solar generating facility site provides suitable habitat for the desert tortoise. Avian predators drawn to the Project site may forage nearby. An increase in avian predators within a Project area is a known secondary negative project effect on the desert tortoise. Implementing this RCP is intended to reduce this potential impact.

### 1.2 Purpose of this Plan

The purpose of this RCP is to offset direct and indirect environmental impacts to the desert tortoise and other species of wildlife from Project development by implementing specific measures designed to limit wildlife attractions and discourage avian and other scavengers that may prey on wildlife (including sensitive species) in and around the Project area. This includes, but is not limited to, collecting and disposing of all litter and trash found or produced at the site, as well as limiting the availability of water. All employees will be familiar with the RCP, and littering will not be permitted. The Project proponent and its approved contractors would be responsible for

implementing aspects of this RCP. This RCP is applicable to the construction and operation of the proposed Project.

### 1.3 Project Description

#### 1.3.1 Project Area

The proposed Yahthumb solar generating facility would be constructed entirely within the Reservation within a lease study area of approximately 1,695 acres of tribal trust land. These lands are all located in a central corner of the Reservation in an area set aside by the Band exclusively for the Yahthumb Project. The solar fields and associated facilities would be in Sections 29, 30, 31, and 32; Township 16 South, Range 64 East; Mount Diablo Base Meridian. **Figure 1** shows the proposed general location for the Project.

The proposed Project would occur in the Basin and Range physiographic province in a part of the Mojave Desert. This physiographic province is characterized by the hundreds of long, narrow, and nearly parallel mountain ranges that are separated by deep valleys. These features are visible at the proposed Project site, with nearly parallel mountain ranges situated generally in a north-south direction that are located near the proposed Project site. The majority of the Project site occurs in a sloping valley. The proposed Project site occurs in the Mojave Desert Scrub biome and is dominated by plants common to this biome including creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*).

#### 1.3.2 Proposed Project

The following describes the major features of the proposed Project. For a comprehensive description of the proposed Project, refer to the associated Yahthumb Solar Project Draft Environmental Impact Statement (DEIS) for the Project design details (subject to minor design changes).

**Figure 2** shows the locations of the proposed gen-tie lines and access roads. **Figure 3** shows the proposed location of the lease study area for the proposed Project where solar fields would be developed. Major on-site facilities would include a 138 MW alternating current (AC) solar field comprised of multiple blocks of PV solar panels mounted on single-axis tracking systems, associated inverter and transformer equipment, a BESS, and a project substation. The off-site facilities would include a gen-tie and associated facilities, site access roads, and a temporary water pipeline.

The gen-tie line would be a single-circuit 230 kilovolt (kV) line up to approximately 10.3 miles long and located on the Reservation, BLM-administered lands, and private lands. It would generally parallel the ESM gen-tie line (recently constructed) and most of it would be within a federally designated utility corridor on the Reservation managed by BLM. This line would generally require a ROW width of 75 feet. The primary access for the site would be provided by the existing Ute Road from an interchange on I-15, and secondary access would be provided by the existing road network within the utility corridor. Temporary facilities that would be removed/reclaimed at the end of construction include a temporary water pipeline, laydown and construction areas, and temporary construction areas along the gen-tie line.

The water supply required for the Project would be provided by the Moapa Band and drawn from the Moapa Band's existing water rights. This water would be provided either from an existing tribal well located off-site approximately 4.7 miles south of the solar Project or a new well drilled



on site. If the selected water supply is the off-site well, water would be delivered to the site during construction by a temporary water pipeline or trucks.

The Project would include the following onsite key elements located within the up to 1,400-acre solar lease boundary. Onsite facilities would impact only a portion of the 1,400-acre lease area and would include:

- Solar fields
- Battery Energy Storage System (BESS)
- On-site electrical collection system and substation
- Site security and fencing
- Communication systems infrastructure
- Internal Project roads
- Lighting
- Waste and hazardous materials management
- Fire protection

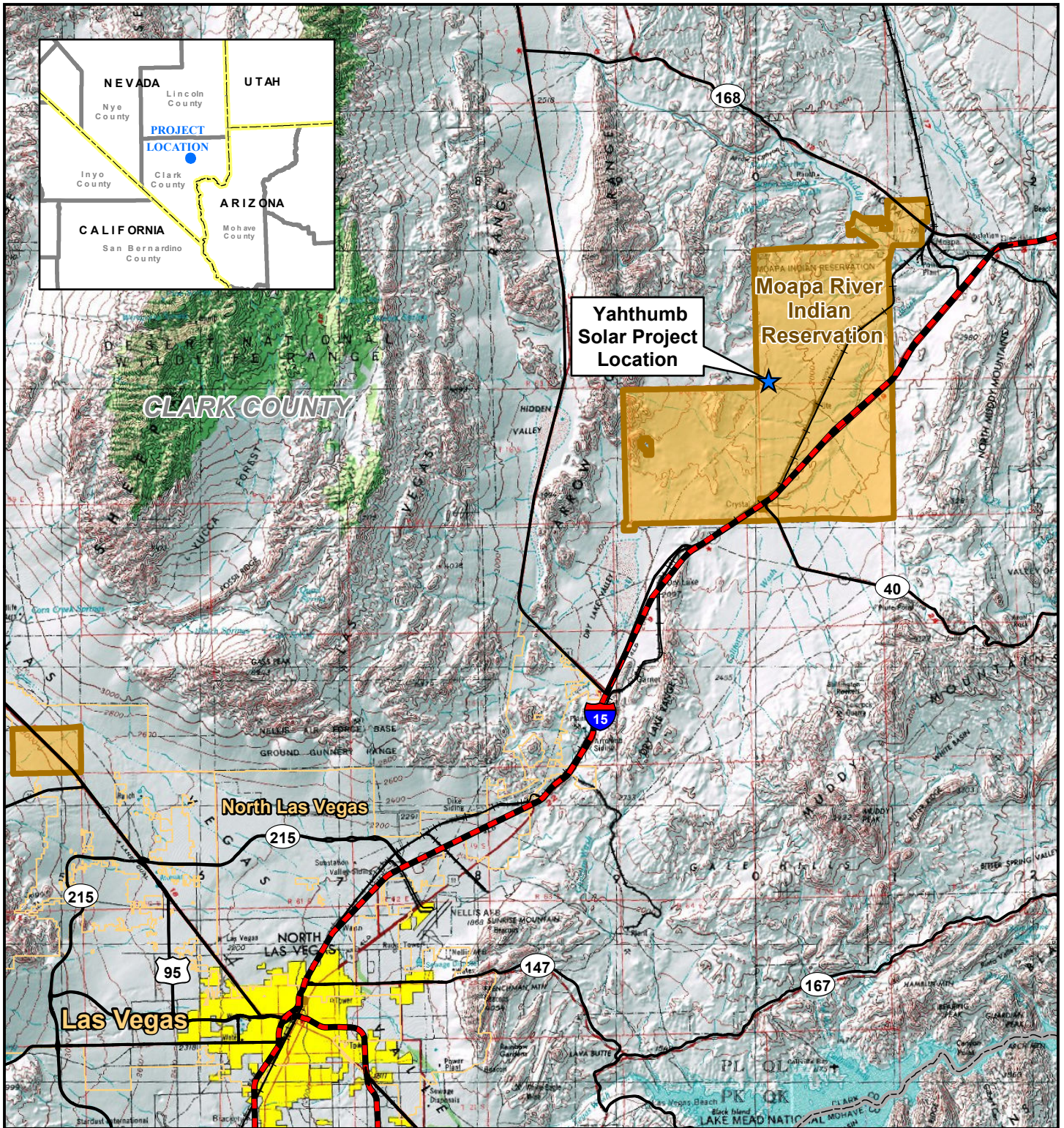
Permanent disturbance areas would include piles, inverters/transformers, O&M area, substation, BESS, solar site roads within and between solar arrays, and drainage features. Temporary disturbance areas would include those portions of the solar field that are not graded, mowed to 18 inches and crushed, graded but not permanently occupied, and laydown areas.

The Project would include the following off-site permanent elements located outside of the solar lease boundary:






- 230-kV Transmission Line (Gen-Tie)
- Access Roads (primary and secondary)

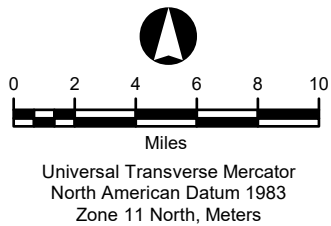
The Project would also include the following temporary key elements associated with construction that would be removed once construction is complete:

- Equipment laydown areas on the solar field
- Construction areas and pulling sites along the gen-tie line
- Temporary water pipeline



**Legend**

-  Solar Project Location
-  Interstate
-  US/ State Highway
-  Railroad
- Jurisdictional Land Ownership**
-  Indian Reservation

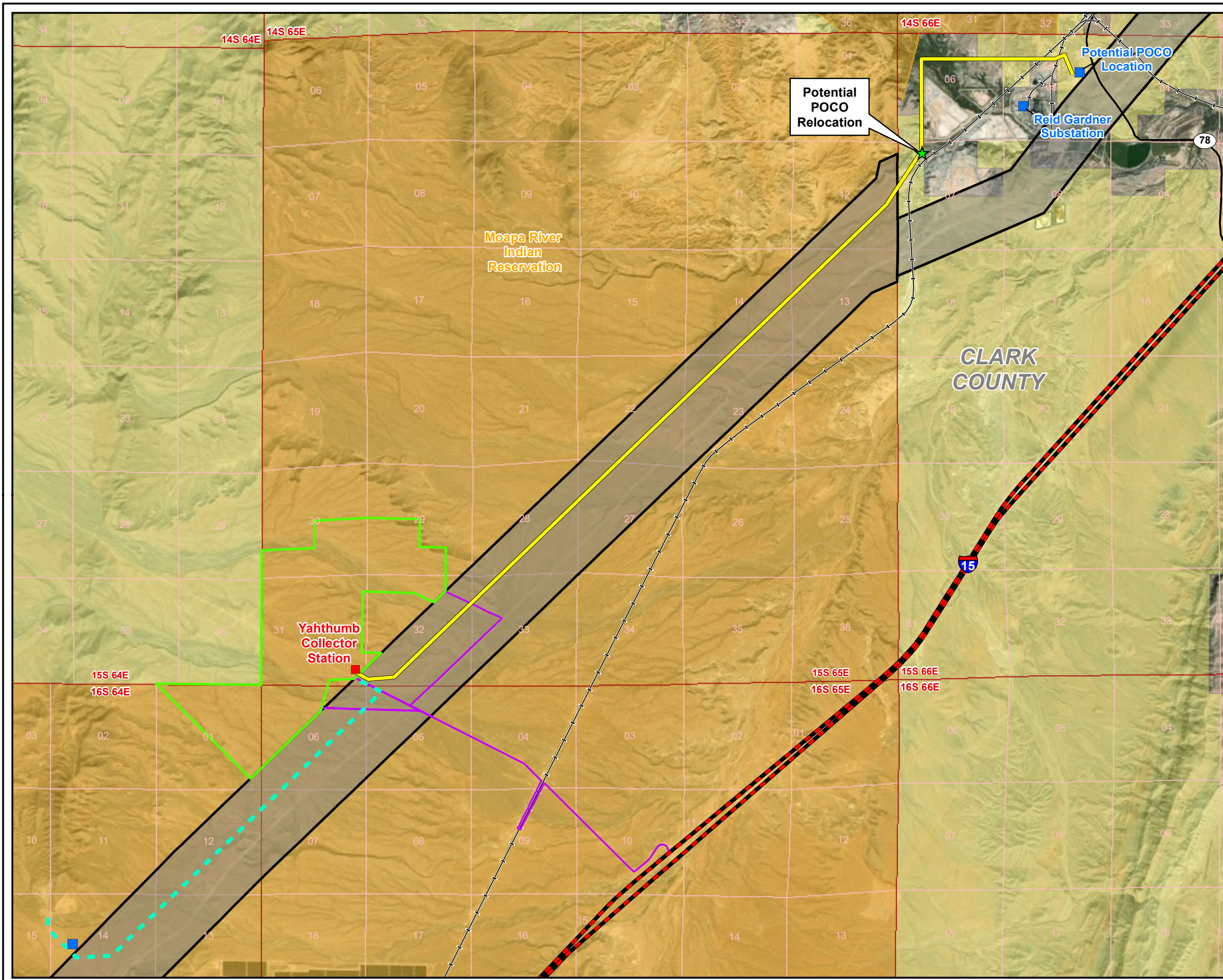


## Yahthumb Solar Project

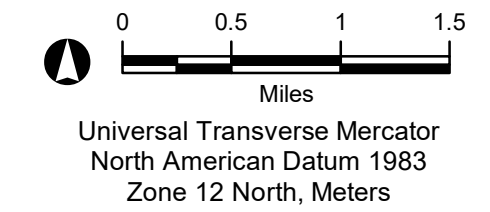
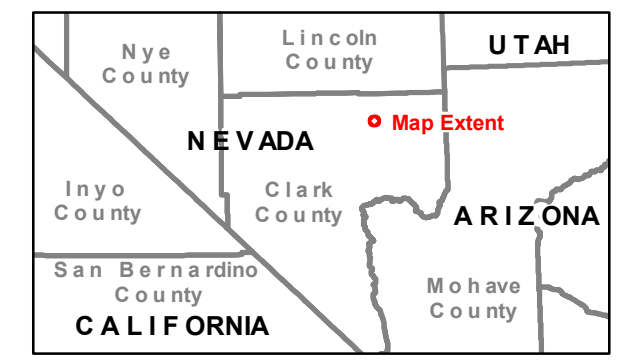
**FIGURE 1**  
**General Location**

Map Extent: Clark County, Nevada

Date: 07-05-21		Author: mrc
G:\Yah-Thumb Solar Project\MXD's\Project Location 8.5x11 070521.mxd		



- ### Legend
- Project Components**
- Substation
  - Yahthumb Collector Station
  - ★ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Access Road
  - Temporary Water Pipeline
  - Yahthumb Solar Site
- General Features**
- Interstate
  - Major Highway
  - Railroad
  - Stream / River
  - Designated Utility Corridor
  - Township
  - Section
- Land Jurisdiction**
- Bureau of Land Management Land
  - Indian Land

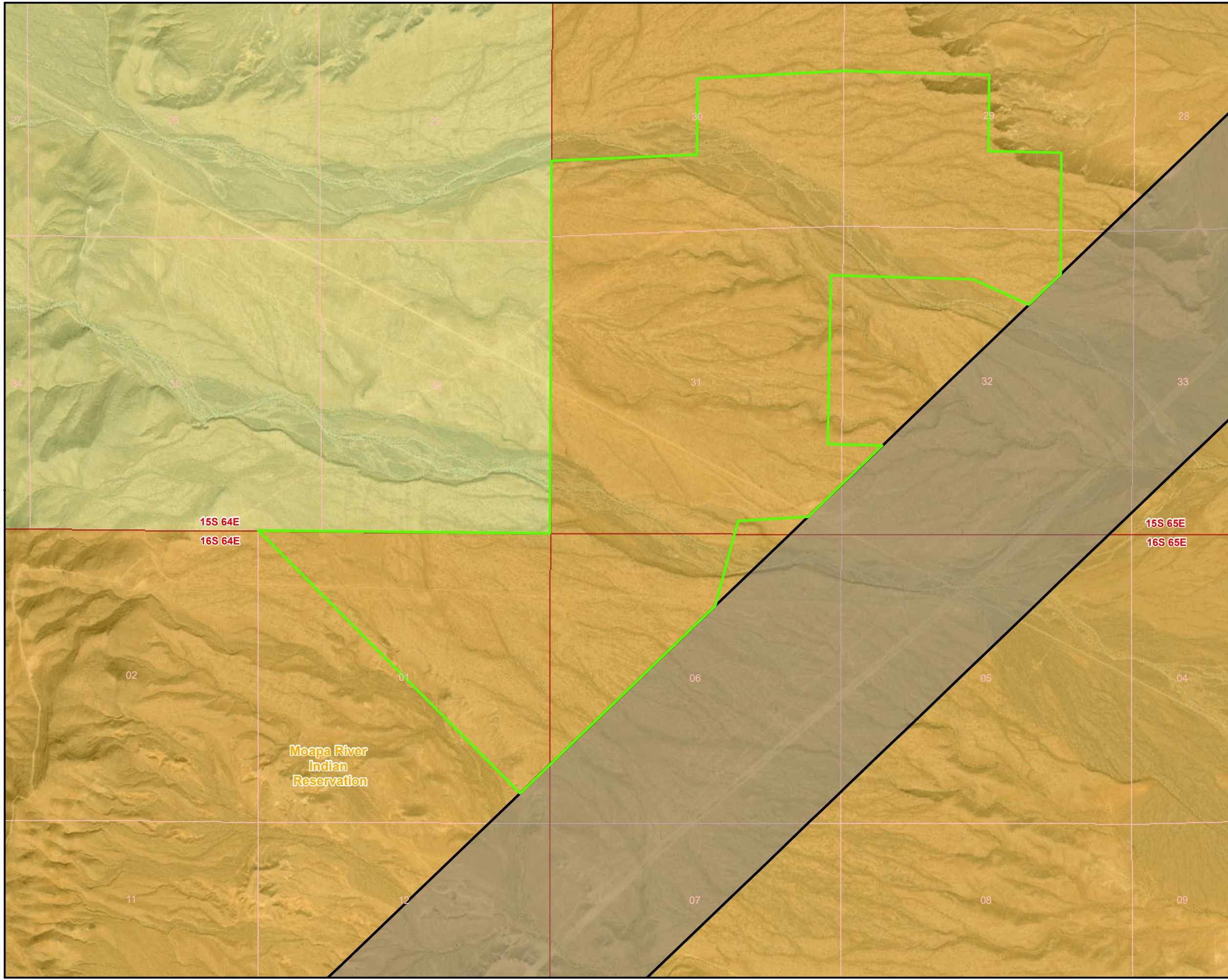


## Yahthumb Solar Project

**Figure 2**  
**Project Components**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
G:\MXD's\Figure 3-1 Project Overview 101921.mxd	



**Legend**

**Project Components**

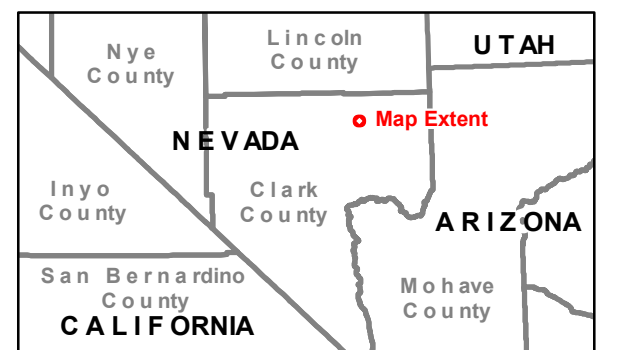
- Yahthumb Solar Site

**General Features**

- Designated Utility Corridor
- Township
- Section

**Land Jurisdiction**

- Bureau of Land Management Land
- Indian Land



Universal Transverse Mercator  
 North American Datum 1983  
 Zone 12 North, Meters

**Yahthumb Solar Project**

**Figure 3**  
**Project Lease Area Map**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
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F:\MXDs\Fig 1-2 Project Lease Area 101921.mxd

## **2.0 RAVEN MANAGEMENT**

### **2.1 Introduction**

The raven management measures provided in this section were designed to discourage the presence of common ravens and other avian scavengers by limiting the availability of anthropogenic (human-caused) food and water resources, as well as roost and nest site opportunities on the Yahthumb Solar Project. Implementing the raven management measures will be the responsibility of the Project owners. Responsible parties, including Field Contact Representatives (FCR), biological monitors, etc. would be determined with agency approval prior to operation of the Project. References to “ravens” or “CORA” in this RCP should be interpreted to mean ravens and other avian scavengers.

### **2.2 Prevent Access to Anthropogenic Food and Water Sources**

Ravens are opportunistic feeders with a varied diet and are known to make long-distance flights of up to 65 kilometers in a single day and several hundred kilometers over multiple days in search of food and water (Engel and Young, 1992; Boarman, 2003). Currently, garbage associated with existing land uses in the nearby city of Las Vegas provides a consistent local source of food for ravens.

Project construction activities are likely to attract ravens. To prevent the addition of food and water subsidies, as well as to avoid attracting ravens to the Project site, the Applicant will implement the following measures: garbage management, prohibitions on intentionally feeding ravens, and limiting water availability. Each of these measures is described below.

#### **2.2.1 Garbage Management**

All garbage associated with the Project during construction and operation will be contained in secure receptacles to prevent the introduction of food resources that could potentially attract or support ravens, coyotes, and other predators or scavengers. Secure, wildlife-proof self-closing waste bins will be used during construction for all organic waste. To reduce the possibility of ravens or other scavengers, such as coyotes, ripping into bags and exposing the garbage, plastic bags containing garbage will not be left out for pick up. All such waste material must be in secure waste bins or dumpsters at all times.

#### **2.2.2 Prohibitions on Intentionally Feeding Ravens**

Project personnel will be prohibited from intentionally feeding ravens and other wildlife on and in the vicinity of the Project site. The Worker Environmental Awareness Program (WEAP) will inform Project personnel that they are prohibited from intentionally feeding ravens and will explain why feeding is detrimental to wildlife, including sensitive species, in and around the Project site.

#### **2.2.3 Limit Availability of Water**

Water is a valuable resource in the desert and very limited during the late spring and summer. Unnatural water sources, such as retention basins, ponds, and aboveground water storage tanks have the potential to support a higher raven population by providing water during the driest times of the year. In order to ensure that Project activities do not create an unnatural water source during construction and operation, water will be used in a manner that does not result in ponding or puddling, excluding storm water detention/retention basins, which will be designed to eliminate standing water in the basins within several days after significant rain events. If evaporation ponds or water storage ponds are required during Project construction or decommissioning phases,

tortoise-proof fencing will be installed around the perimeter of each pond to prevent access by desert tortoises. All ponds will be lined and covered to discourage use by ravens and other wildlife..

Truck cleaning areas and aboveground water storage tank filling stations will be kept free of standing water during construction. Water used for dust suppression during construction will be applied at a rate that does not result in ponding or puddling; if puddling occurs, these areas would not be watered again until dry. If PV module washing is necessary, it will be conducted in a manner that avoids ponding or puddling of water during times that ravens are active (early morning and late afternoon). During construction and operations, Project personnel will immediately remove areas of ponding or puddling water.

### 2.3 Prevent Nesting

To prevent nesting on Project structures, the Applicant will implement the following measures:

1. **Limiting Raptor Enhancement Measures.** Utility pole construction will include raptor-friendly designs or retrofits (outlined in the Avian Power Line Interaction Committee guidelines [APLIC 2006]) that are intended to discourage or eliminate the potential for raptor nests that could also be used by ravens.
2. **Utility and building structures.** Acquire a Migratory Bird Treaty Act (MBTA) Depredation Permit in order to remove any raven nests that are found on Project infrastructure. Nest removal will be at the direction of the Project's Designated Biologist, in cooperation with U.S. Fish and Wildlife Service (USFWS).
3. **Hazing.** Focus on limiting raven attractants rather than hazing. Unless implemented properly, hazing could have unintended consequences. Therefore, hazing will be implemented only under the direction of USFWS in situations where it is considered the best course of action.
4. **Structure removal following decommission.** Elevated structures including utility poles will be removed when decommissioned and dormant.
5. **Perch deterrents.** To reduce perching along segments of the onsite collector line and gen-tie line, perch deterrents may be installed during construction. Anti-perching and nesting devices are important tools for reducing the risk of avian electrocution and keeping the entire electrical system running smoothly. These deterrents also eliminate the use of transmission lines and transmission line towers as hunting perches for raptor species, limiting the predation of other avian species or animals that use surrounding vegetation for foraging and nesting. Exact locations of perch deterrent poles would be determined in consultation with wildlife agencies prior to construction of the collector and gen-tie lines.
6. **Annual inspections.** Inspections of utility lines and other areas where raptors or corvids (crows and ravens) might nest would be conducted annually during the breeding season. Inactive nests are not protected by the MBTA, and removal would be conducted prior to the next breeding season. Should nesting activity become a long-term issue, alternate measures to discourage nesting activities should be implemented. Prior to removing or relocating any nests, facility personnel would consult with USFWS and when necessary, proper permissions via USFWS would be obtained. Nests would be removed for the life of the Project.

7. **Active raven nest buffer.** If the nesting prevention measures are inadequate and a raven nest becomes active during construction activities, an avoidance buffer of 150 feet would be delineated around the nest and the nest would be monitored to ensure construction activities are not disrupting the nest occupants. The 150-foot buffer is recommended in BLM's Nesting Bird Management Plan, Table 4-1 (Buffer Distances for Nesting Birds) (BLM 2019).

#### 2.4 Discourage Roosting

Power poles associated with utility line structures or substations can provide roosting opportunities in areas where roosting opportunities are otherwise limited. Elevated roost locations offer ravens a view of their surroundings and prey below. If ravens are strongly attracted to the Project site by available food and/or water sources, it will be difficult to eliminate or control perching on Project structures or other nearby structures, such as existing transmission line towers. Ravens can be very persistent, and even if Project design features effectively discourage perching on the Project sites, ravens attracted to the area will likely find other perching opportunities immediately adjacent to the Project site. Anti-perching activities, therefore, are more focused on preventing activities that will attract ravens to the vicinity of the Project (Boarman 2002), which include:

- **Roost prevention as a contingency.** To avoid the introduction of new roost and nest locations for ravens (and consequently non-target avian species), the Applicant will ensure perch enhancements are not installed. The Project will be monitored to identify frequently used locations. Contingency measures will be implemented on a case-by-case basis, in consultation with BIA, when it becomes apparent that a particular location is favorable for daytime perches or nighttime roosting. This could include installation of triangles, plastic owls, and/or spikes to discourage nesting, per the APLIC Guidelines (APLIC 2006).
- **Structure removal following decommissioning.** All Project-related elevated structures will be removed when the Project is decommissioned.
- **Limit speed limits to under 25 miles per hour (mph).** This would reduce the potential for roadkill, which attracts birds and increases roosting.

### **3.0 RAVEN MONITORING AND REPORTING**

#### **3.1 Monitoring**

Raven monitoring surveys will take place by onsite biologists and monitors during construction and following the construction of the Project. The objective of the surveys will be to characterize raven presence in the vicinity of the Project and to monitor abundance and behavior in those areas over time. The purpose of the surveys will be to identify the local sources of human-created resources and raven activity relative to the Project. The investigations will consist of driving surveys.

During these surveys, roads will be driven slowly (10 mph) allowing for observers to readily scan habitats for the presence of ravens. Binoculars and spotting scopes will be used to observe raven activity within two kilometers of the site. All raven observations will be documented, including date, time, location, habitat, number of individuals, and behavior, as well as locations of occupied and potential nests. Survey efforts will occur once monthly during the nesting season (February to August) the year following completion of construction for a total of 3 years and once annually thereafter for the duration of facility operations. Each survey visit will last two days. Each day the survey route will be driven once in the early morning (starting 30 minutes prior to sunrise), a second time in the midday (starting between noon and 2 p.m.), and a third time in the evening (completed within one hour following sunset).

If a raven or other avian scavenger nest is located, it will be monitored for signs of desert tortoise predation, if accessible. The desert tortoise mortality monitoring will cover a 30-meter radius from the nest location. This area will be walked with 10-meter belt-transects. The location of all desert tortoise carcasses or other signs of predation will be mapped and photographed and reported to the USFWS within 48 hours if dead tortoises are found during monitoring activities. Transects will be walked twice per month for as long as the nest remains active.

Incidental reporting of raven or nest sightings will also occur by biologists on the Project site conducting clearance surveys, monitoring construction activity, monitoring environmental compliance, translocating desert tortoise, and monitoring translocated desert tortoise. Biologists will be instructed to document raven observations during those surveys. Incidental raven or desert tortoise observations will be included in the monitoring reports.

#### **3.2 Reporting**

The Applicant will submit monitoring summary reports to the BLM, BIA and USFWS on an annual basis. The report will include:

- The number and behavior of observed ravens
- Raven nest and perch locations
- Results of the management techniques
- The observed effectiveness of the techniques in minimizing raven presence
- Suggestions for improving raven management
- Wildlife mortality attributed to predators

Observations of raven predation of desert tortoise (including sign) and occupied raven nests will be reported to the designated contacts at the BLM, BIA and USFWS by an electronic mail message within two days of the observation.



### **3.3 Adaptive Management**

The agencies will review the results of raven control efforts and, in cooperation with the owner of the Project, will determine if changes in the plan are warranted following the first year of commercial operation of the Project. If the agencies determine that the raven management program is effective, and the potential for ravens to adversely affect the local wildlife population is less than significant, then the raven surveying and reporting requirement may be discontinued. Components of the Raven Control Plan, such as preventing access to anthropogenic food and water resources, preventing nesting, and discouraging roosting will remain effective throughout the lifetime of the Project.

**4.0 REFERENCES**

- Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, California.
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- Boarman, W. I. 2002. *Reducing Predation by Common Ravens on Desert Tortoises in the Mojave and Colorado Deserts*. Prepared for the United States Bureau of Land Management. United States Geological Survey Western Ecological Research Center. San Diego, California.
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- Bureau of Land Management (BLM). 2019. Southern Nevada Nesting Bird Management Plan 2019. U.S. DOI, BLM Southern Nevada District, Las Vegas, Nevada. 21 pages.
- Engel, K. A. and L. S. Young. 1992. Movements and habitat use by Common Ravens from roost sites in southwestern Idaho. *Journal of Wildlife Management* 56: 596-602.

## **Appendix J**

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### Gila Monster Guidance



# NEVADA DEPARTMENT OF WILDLIFE SOUTHERN REGION

3373 Pepper Lane, Las Vegas, Nevada 89120  
Phone: 702-668-3839 or 702-486-5127; Fax: 702-486-5133



5 February 2020

## GILA MONSTER STATUS, IDENTIFICATION AND REPORTING PROTOCOL FOR OBSERVATIONS

### Status

- The **Gila monster** (*Heloderma suspectum*) is secretive, difficult to detect, and seemingly rare relative to other species. These attributes led the **State of Nevada** decades ago to classify the species as **Protected** (Nevada Administrative Code 503.080). Their populations are also vulnerable to poaching, the cumulative effects of habitat loss, fragmentation and degradation, and climate changes (Wildlife Action Plan Team 2012).
- Therefore, a person shall not hunt or take any protected wildlife, or possess any part thereof, without first obtaining the appropriate license, permit or written authorization from the Nevada Department of Wildlife (Nevada Administrative Codes 503.090 and 503.093).
- The USDI Bureau of Land Management has recognized this lizard as a sensitive species since 1978 and is to manage public lands in a manner to avoid the necessity of higher federal protections (BLM Manual 6840 – Special Status Species).
- In Clark County's Multiple Species Habitat Conservation Plan (MSHCP), the Gila monster is an *Evaluation Species*, meaning inadequate information exists to determine if mitigation from MSHCP implementation would demonstrably cover conservation actions necessary to ensure its persistence without additional protective intervention as provided under the federal Endangered Species Act.
- While the Gila monster is the only venomous lizard endemic to the United States, its behavioral disposition is somewhat docile and avoids confrontation. But it will readily defend itself if threatened. Most bites are considered *illegitimate*, not caused by Gila monster aggression, but resulting from human harassment or careless handling. Gila monsters are not dangerous unless molested or inappropriately handled and should never be harmed or killed.
- The Nevada Department of Wildlife (NDOW) has ongoing management studies for greatly improving our understanding specific to Nevada's banded Gila monster populations; hence, **additional sightings and descriptions for this species distribution, habitat, and biological information is of utmost interest.**
- In assistance to gathering additional information about Nevada's Gila monsters, **NDOW will be notified whenever a Gila monster is encountered or observed,** and under what circumstances (see Reporting Protocol below).

## Identification

The banded Gila monster (*H. s. cinctum*) is the only wild subspecies occurring in Nevada, and is restricted to Clark, Lincoln, and Nye counties. Found mainly below 5,000 feet elevation, its geographic range approximates that of the desert tortoise (*Gopherus agassizii*) in Nevada. Gila monster habitat requirements center on complex rocky landscapes of upland desert scrub overlapping desert wash, spring, and riparian habitats, often characteristic of alluvial fans (bajadas) and adjacent rocky fields. Gila monster habitat overlaps that of both the desert tortoise and chuckwalla (*Sauromalus ater*).



Gila monsters are recognizable by a striking black and orange-pink coloration and bumpy, or beaded, skin. In keeping with its name, the banded Gila monster (shown left) retains a black chain-link, banded pattern into adulthood. Sometimes other non-venomous lizards are mistaken for the Gila monster. Of these, the western banded gecko (*Coleonyx variegatus*) and the chuckwalla are the most frequent. All three share similar habitats.

To untrained eyes, the color pattern and finely granular skin of the western banded gecko (right) may have the looks of a baby or juvenile Gila monster. But gecko heads are more pointed at the snout and the relatively large eyes have *vertical* pupils befitting their nighttime habits. Gila monsters may be both nocturnal and diurnal; the smallish eyes have *round* pupils. Snouts are bluntly rounded. Newly hatched Gila monsters vary in length at 5-7 inches with a vivid orange and black, banded pattern. Western banded geckos are generally smaller than 4 inches with cream to yellow background colors and brown to purple banded patterns.



Chuckwalla adults (left) and juveniles have a body shape somewhat suggestive of the Gila monster, but they lack the coarsely beaded skin and showy black and orange-pink body pattern. While juvenile chuckwallas can have orange and black banded tails, this colorful banding fades as chuckwallas mature. From nose to tail tip, adult chuckwallas may reach 17 inches long, rivaling that of the Gila monster. Chuckwallas are herbivorous. When alarmed, they are fast movers seeking cracks and crevices into which they can wedge themselves by inflating their bodies with air. Chuckwallas are diurnal and rock dwellers.

## Reporting Protocol

Field workers (e.g. construction foremen, bio-monitors) must at least know how to: (1) identify a Gila monster by distinguishing it from other lizards like the chuckwalla and western banded gecko (see **Identification** above); (2) Report any Gila monster observation to the NDOW; (3) Be aware of the consequences of a Gila monster bite resulting from carelessness or unnecessary harassment; and, (4) Be advised of protective measures provided under state law and federal management policies.

- 1) Live Gila monsters found in harm's way in the construction site will be captured and then detained by the project biologist or equivalent personnel in a cool ( $\leq 85^{\circ}\text{F}$ ), shaded environment (air-conditioned vehicle or trailer is okay) until a NDOW biologist can arrive for biological documentation prior to its release. Although a Gila monster is venomous and can inflict a serious bite, its relatively slow gait allows for it to be easily coaxed or carefully lifted into an open bucket or box using a long handled instrument like a snake hook, tongs, or shovel (*Note: it is not the intent to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points*). For safe detainment, an unused or sterile 5-gallon plastic bucket with a secure, vented lid; an 18"x18"x4" plastic sweater box having a secure, vented lid; or, a tape-sealed cardboard box of similar dimension may be used. And, written information identifying the mapped capture location, Global Positioning System (GPS) coordinates in Universal Transverse Mercator (UTM) using North American Datum (NAD) 83 Zone 11 along with date, time, and circumstances (e.g. biological survey, construction monitoring) and habitat description (e.g. vegetation, slope, aspect, substrate) will also be provided to NDOW.
- 2) Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Therapy or euthanasia expenses will not be covered by NDOW. However, NDOW will be immediately notified of any injury to a Gila monster and which veterinarian is providing care for the animal. If an animal is killed or found dead, the carcass will be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, date, time, habitat, and mapped location (GPS coordinates in UTM using NAD 83 Z 11).
- 3) Should NDOW's assistance be delayed, biological or equivalent acting personnel on site should detain the Gila monster out of harms way until NDOW personnel can respond. **The Gila monster should be detained until NDOW biologists have responded.** Should NDOW not be immediately available to respond for photo-documentation, a digital camera ( $\geq 5$  mega-pixels) will be used to take good quality images of the Gila monster *in situ* at the location of live encounter or dead salvage. The pictures will be provided to NDOW at the address above or the email address below along with specific location information including GPS coordinates in UTM using NAD 83 Z 11, date, time and habitat description. Pictures will show the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); and, (3) a clear, overhead close-up of the head (head should fill camera's field of view and in sharp focus).

**Please Remember:** Gila monsters are considered sensitive species and sharing of observation information to sources outside of NDOW or other permitting agencies may result in adverse conservation or administrative consequences.

**Contact NDOW Biologist Jason L. Jones at 702.668.3938 (office), 208-240-0194 (cell; leave message or text), 702.486.5127 (front desk) or by e-mail at [jljones@ndow.org](mailto:jljones@ndow.org) for additional information regarding these protocols.**

## **Appendix K**

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### BLM Sensitive Species

# Yahthumb Solar Project

## BLM SENSITIVE SPECIES AND NEVADA STATE-LISTED SPECIES

The following table was compiled using species lists from the six previous environmental impact statements (EISs) for solar projects on the Reservation (Southern Paiute Solar Project [Bureau of Indian Affairs (BIA) 2012: pages 3-47 through 3-51]; Moapa Solar Energy Center [BIA 2014: pages 3-33 through 3-36 and 3-43 through 3-46]; Aiya Solar Project [BIA 2016: pages 3-28 through 3-43], Eagle Shadow Mountain Solar Project [BIA 2019: pages 3-24 through 3-35]; Southern Bighorn Solar Projects [BIA 2021: pages 3-27 through 3-34]; and Chuckwalla Solar Projects [In progress]), the Nevada Natural Heritage Program (NNHP) Species List tool (<http://heritage.nv.gov/species/lists.php>), the NNHP Plant and Animal Watch List (NNHP 2022a), and the NNHP At-Risk Plant and Animal Tracking List (NNHP 2022b). Only species with the potential to occur within the Project area for the Yahthumb Solar Project are included in **Table K-1**.

**Table K-1. Nevada State-listed and BLM Sensitive Plants and Wildlife**

Scientific Name	Common Name	Status	Potential to Occur in Project Area	Habitat
<b>Birds</b>				
<i>Aquila chrysaetos</i>	Golden eagle	NNHP, BLM Sensitive, BGEPA, MSHCP	Low potential to occur. Foraging habitat within the Project areas. No breeding habitat present, with nearest 5 miles to the west and northwest of the Project.	Prefers open country, especially around mountains, hills, and cliffs; use a variety of habitats ranging from arctic to desert, including tundra, shrublands, grasslands, farmland, and area along rivers and streams. Nests in cliff habitat or tall trees.
<i>Coccyzus americanus occidentalis</i>	Yellow-billed cuckoo	NNHP, BLM Sensitive, ESA	Low potential to occur. No suitable riparian woodland habitat present, but may occur flying over the Project area during migration periods.	Open woodland, parks, deciduous riparian woodland; nests in tall cottonwood and willow riparian woodland.
<i>Empidonax traillii extimus</i>	Southwestern willow flycatcher	NNHP, BLM Sensitive, ESA	Low potential to occur. No suitable riparian habitat is present for breeding and foraging, but may occur flying over the Project area between water sources during migration.	Thickets, scrubby and brushy areas, open second growth, swamps, and open woodland near running water.
<i>Rallus obsoletus yumanensis</i>	Yuma Ridgway's rail	NNHP, ESA	Low potential to occur. No suitable freshwater marsh breeding habitat or foraging habitat is present, but may occur flying over the Project area between water sources and/or	Freshwater marshes dominated by emergent plant species such as cattails and bulrushes.



Scientific Name	Common Name	Status	Potential to Occur in Project Area	Habitat
			during migration.	
<i>Athene cunicularia hypugaea</i>	Western burrowing owl	NNHP, BLM Sensitive, MSHCP	High potential to be present within or near Project area. Nesting and foraging habitat present.	Open habitats, sparse vegetation such as prairie, pastures, desert or shrub-steppe, and airports. Associated with prairie dogs and ground squirrels, whose burrows they use for nests.
<i>Auriparus flaviceps</i>	Verdin	NNHP	High potential foraging and nesting habitat within and near the Project area. Potential nesting habitat along ephemeral washes.	Inhabits desert regions of the U.S. and northern Mexico. Found wherever thornscrub vegetation is present and prefer to nest in acacias ( <i>Acacia</i> spp.), paloverde ( <i>Cercidium</i> spp.), smoke tree ( <i>Dalea spinosa</i> ), mesquite ( <i>Prosopis</i> spp.), or desert lavender ( <i>Hyptis emoryi</i> ).
<i>Buteo regalis</i>	Ferruginous hawk	NNHP, BLM Sensitive, MSHCP	Low potential, little suitable habitat present.	Open grasslands, sagebrush flats, low foothills, and fingers of pinyon-juniper habitat. Rock outcrops and isolated trees are used for nesting.
<i>Buteo swainsoni</i>	Swainson's hawk	NNHP, BLM Sensitive	Low potential. No suitable habitat.	Agricultural valleys with cotton, elm, or other suitable nest trees. Nests in scattered trees.
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	NNHP, BLM Sensitive	Low potential. No suitable habitat.	Beaches, dry mud or salt flats, sandy shores of rivers, lakes, and ponds. Nests on the ground within these habitats.
<i>Falco peregrinus</i>	Peregrine falcon	NNHP, BLM Sensitive, MSHCP	Low potential. Little suitable foraging habitat and no breeding habitat.	Mountains, open forested regions, and human population centers. Nests primarily on cliffs but also on tall buildings.
<i>Gymnorhinus cyanocephalus</i>	Pinyon jay	BLM Sensitive	Low potential. No suitable habitat.	Pinyon-juniper woodland, less frequently pine, also occurs in scrub oak and sagebrush.
<i>Haliaeetus leucocephalus</i>	Bald eagle	BLM Sensitive, BGEPA	Low potential. No suitable habitat.	Large bodies of water for feeding. Mature trees for roosting/nesting.
<i>Ixobrychus exilis</i>	Least bittern	NNHP, BLM Sensitive	Low potential. No suitable habitat.	Fresh marshes, reedy ponds. Mostly freshwater but also brackish, in areas with tall, dense vegetation standing in water.
<i>Lanius ludovicianus</i>	Loggerhead shrike	NNHP, BLM Sensitive, MSHCP	High potential. Foraging and nesting habitat within and near the Project area.	Open country with short vegetation and well-spaced shrubs or low trees, with spines or thorns; frequents agricultural fields, pastures, old orchards, riparian areas, desert scrub, savannas, prairies, golf courses,

Scientific Name	Common Name	Status	Potential to Occur in Project Area	Habitat
				and cemeteries. Prefers open habitat with perches for hunting and dense shrubs for nesting.
<i>Melanerpes lewis</i>	Lewis' woodpecker	NNHP, BLM Sensitive	Low potential. No suitable habitat.	Open forest and woodland, often logged or burned, including oak, coniferous forest.
<i>Phainopepla nitens</i>	Phainopepla	NNHP, BLM Sensitive, MSHCP	Moderate potential to occur within or near the Project area. Could nest in the desert wash and mesquite bosque habitats in the vicinity of the Project.	Desert, riparian woodlands, and chaparral. Depend on fruiting desert mistletoe ( <i>Phoradendron californicum</i> ), which parasitizes the same trees used for nesting, and produces a stable, long-lasting supply of berries.
<i>Psiloscops flammeolus</i>	Flammulated owl	BLM Sensitive	Low potential. No suitable habitat.	Open pine forests in mountains. Nests typically in ponderosa pine in cool, fairly dry zones. In some areas favors aspen groves. Can be found in dense thickets at lower elevations.
<i>Spizella breweri</i>	Brewer's sparrow	NNHP, BLM Sensitive	Low potential. Little suitable habitat present.	Strongly associated with sagebrush in areas with scattered shrubs and shortgrass. Nests in tall, dense shrubs.
<i>Toxostoma bendirei</i>	Bendire's thrasher	NNHP, BLM Sensitive, MSHCP	High potential to occur within or near the Project area, nesting habitat occurs within Project area.	Found in desert habitats, especially areas of tall vegetation, cholla cactus ( <i>Cylindropuntia</i> spp.), creosotebush ( <i>Larrea tridentata</i> ), and yucca ( <i>Yucca</i> spp.), and in juniper woodland, where they nest in shrubs, yucca, and trees.
<i>Toxostoma crissale</i>	Crissal thrasher	BLM Sensitive	Moderate potential to occur and nest within or near the Project area. Suitable habitat occurs in Project area.	Dense brush along desert streams, mesquite thickets. Habitat varies from dense mesquite along washes to sparse brush in open areas. Also in chaparral, manzanita, and other scrub. Nests in dense shrubs.
<i>Toxostoma lecontei</i>	LeConte's thrasher	NNHP, BLM Sensitive, MSHCP	Moderate potential to occur and nest within or near the Project area. Suitable habitat occurs in Project area.	Found in desert scrub, mesquite, tall riparian brush, and chaparral. Rarely occurs in habitats consisting of predominantly creosotebush. Nests in thick, dense, thorny shrubs and cacti.
<b>Mammals</b>				
<i>Antrozous pallidus</i>	Pallid bat	NNHP, BLM Sensitive	Low potential to occur. Reliance on tree roosts.	Arid deserts and grasslands. Shallow caves and crevices, rock outcrops buildings, and tree cavities are used for roosting.

Scientific Name	Common Name	Status	Potential to Occur in Project Area	Habitat
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	NNHP, BLM Sensitive	Low potential to occur. Mine and cave obligates. No suitable habitat.	Salt desert scrub, sagebrush and pinyon juniper, mahogany. Will not live in extreme desert environments. Roosts in caves and mines.
<i>Euderma maculatum</i>	Spotted bat	NNHP, BLM Sensitive	Low potential to occur, prefers riparian areas for foraging.	Desert scrub to forest habitats. Roosts in caves and crevices.
<i>Eumops perotis</i>	Western mastiff bat	NNHP, BLM Sensitive	Low potential to occur, reliance on significant rock features for roosting which are not present in the Project area.	Roosts in deep rock crevices or crevices in man-made structures high above the ground. Found in open areas in a variety of habitats with abundant roost locations.
<i>Idionycteris phyllotis</i>	Allen's big-eared bat	NNHP, BLM Sensitive	Low potential to occur. Prefers high coniferous forest.	Uses a variety of habitats including Mojave desert scrub, coniferous forests, and riparian woodlands, but prefers mountainous desert regions.
<i>Lasiurus blossevillii</i>	Western red bat	NNHP, BLM Sensitive	Low potential to occur. No suitable habitat.	Woodland habitats, Muddy River area. Roosts in tree foliage.
<i>Mactrous californicus</i>	California leaf-nosed bat	NNHP, BLM Sensitive	Low potential to occur. Occurs at lower elevations.	Inhabits low deserts, caves, mines, buildings usually within Sonoran desert scrub.
<i>Myotis californicus</i>	California myotis	BLM Sensitive	Moderate potential to occur. Common, may forage within the Project area.	Semiarid deserts and grasslands, forests, coastal forests, and montane forests. Roost in tree bark and rock crevices.
<i>Myotis thysanodes</i>	Fringed myotis	NNHP, BLM Sensitive	Low potential to occur. Reliance on cave roosts.	Low desert scrub to high elevation coniferous forests. Roosts in caves, mines, and occasionally buildings.
<i>Myotis velifer</i>	Cave myotis	BLM Sensitive	Low potential to occur. Rare.	Cave dwelling; will roost in rock or wall crevices, old buildings, and under bridges.
<i>Nyctinomops macrotis</i>	Big free-tailed bat	BLM Sensitive	Low potential to occur. Rare.	Inhabits rocky terrain, roosts in rocky cliffs in weathered rock fissures and crevices. Also roost in buildings and plants including pines and desert shrubs.
<i>Parastrellus hesperus</i>	Western pipistrelle	BLM Sensitive	Moderate potential to occur. Common.	Desert habitats of blackbrush, creosotebush, salt desert shrub, and sagebrush. Nests in caves and under loose rocks.
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	NNHP, BLM Sensitive	Moderate potential to occur. Abundant species in southern Nevada.	Roosts in caves and manmade structures. Found from low desert to high mountains.
<i>Vulpes macrotis</i>	Desert kit fox	NNHP, BLM Sensitive	Moderate potential to occur. Suitable habitats	Widely distributed throughout the arid southwest and can be found in a variety of habitat types. Rely

Scientific Name	Common Name	Status	Potential to Occur in Project Area	Habitat
			present within the Project area.	on dens throughout the year for rest sites, shelter against harsh weather, as bearing and rearing locations for young, and as an escape from predators. They can dig their own dens but will often enlarge existing dens that were made by badgers or rodents. Also known to use exposed and/or protected pipes or smaller culverts which provide protection from predators, harsh conditions, and temporary and maternal dens.
<b>Reptiles</b>				
<i>Heloderma suspectum cinctum</i>	Gila monster	NNHP, BLM Sensitive, MSHCP	Moderate potential to occur. Suitable habitat is present within the Project area.	Occurs in Clark, Lincoln, and Nye counties in Nevada. Found mainly below 5,000 feet, its geographic range approximates that of the desert tortoise and is coincident to the Colorado River drainage. Occurs in desert wash, spring, and riparian habitats that interdigitate primarily with complex rocky landscapes of upland desert scrub. They will use and are occasionally encountered out in gentler terrain of alluvial fans (bajadas). Gila monsters are secretive and difficult to locate, spending greater than 95 percent of their lives underground.
<i>Gopherus agassizii</i>	Desert tortoise	NNHP, BLM Sensitive, MSHCP, ESA	Known to occur within the Project area. Observations during desert tortoise protocol surveys.	Inhabits desert scrub habitats. Requires sufficient suitable plants for forage and cover, suitable substrates for burrow and nest sites, and freedom from disturbance. Occurs primarily on flats and bajadas with soils ranging from sand to sandy-gravel characterized by scattered shrubs and abundant inter-shrub space for herbaceous plant growth. Can also be found on rocky terrain and slopes. May den in caliche caves in bajadas, washes, or caves in sandstone rock outcrops, but primarily burrows and dens in soil.
<i>Dipsosaurus dorsalis</i>	Desert iguana	NNHP, BLM	Moderate potential to occur. Suitable habitat is	Inhabits creosotebush scrub from below sea level to 3,300 feet. It

Scientific Name	Common Name	Status	Potential to Occur in Project Area	Habitat
		Sensitive	present within the Project area.	prefers hummocks of loose sand and patches of firm ground with scattered rocks, as well as desert washes.
Plants				
<i>Arctomecon merriamii</i>	White bear poppy	NNHP, BLM Sensitive	Low potential to occur based on habitat models (Hamilton and Kokos 2011).	An evergreen perennial herb that blooms from April through July. Found in Nevada from Clark, Nye, and Lincoln counties on a wide variety of dry to sometimes moist basic soils, including alkaline clay and sand, gypsum, calcareous alluvial gravels, and carbonate rock outcrops in chenopod scrub and rocky Mojave Desert communities from 1,600 to 6,280 feet. Suitable habitat for this species is limited to the badland soil types.
<i>Astragalus gevevar. triquetrus</i>	Three corner milkvetch	NNHP, BLM Sensitive	Low potential to occur based on habitat models (Hamilton and Kokos 2011). Deep sandy soil or dunes are not present.	Short, spindly, but upright annual forb with pinnately divided leaves. Requires open, deep sandy soil or dunes, generally stabilized by vegetation and/or a gravel veneer and is dependent on sand dunes or deep sand in Nevada.
<i>Astragalus nyensis</i>	Nye milkvetch	NNHP	Moderate potential to occur. Suitable habitat is present.	Found in the foothills of desert mountains, calcareous outwash fans and gravelly flats, and sometimes in sandy soil. Associated plants are creosotebush, white bursage, and cheesebush.
<i>Eriogonum corymbosum var. nilesii</i>	Las Vegas buckwheat	NNHP, BLM Sensitive	Low potential to occur. Nearest potentially suitable habitat based off Hamilton 2019 models is approximately 2.5 miles south of the Project.	Found in sandy substrates comprised mainly of gypsum. In 2008, the USFWS considered protecting the Las Vegas buckwheat under the ESA but determined it does not warrant protection. GIS models to understand distribution of plant and suitable habitat (gypsiferous soils) were developed (Hamilton and Kokos 2011; Hamilton 2019).

Scientific Name	Common Name	Status	Potential to Occur in Project Area	Habitat
<i>Eriogonum viscidulum</i>	Sticky buckwheat	NNHP, BLM Sensitive	Low potential to occur within the Project area. No suitable habitat.	A tall, erect, and spreading annual, 1.6 to 13.1 feet (0.5 to 4 meters) high and minutely viscid. Leaves are basal with leaf blades being elliptic to broadly ovate. This buckwheat is found in Clark and Lincoln counties, Nevada and northwestern Arizona (NNHP 2001). Populations occur along the Muddy River from Weiser Wash to its confluence with the Virgin River and within the Virgin River drainage. This species overlaps with three-corner milkvetch over much of its range. Requires sandy soil or dunes.
<i>Pediomelum castoreum</i>	Beaver Dam breadroot	NNHP, BLM Sensitive	Low potential to occur based on habitat models (Hamilton and Kokos 2011).	Beaver Dam breadroot has been recorded in Nevada at elevations from 1,280 to 5,000 feet and is found in sandor sandy gravel in open areas and along roadsides (NNHP 2001).
<i>Penstemon bicolor ssp. Roseus</i>	Rosy two-tone beardtongue	NNHP, BLM Sensitive	Moderate potential to occur. Suitable habitat is present within the Project area.	Perennial herb known in Nevada from Clark and Nye counties. Found on rocky, calcareous, granitic, or volcanic soils in washes, roadsides, scree at outcrop bases, rock crevices, or similar places receiving enhanced runoff in creosote-bursage, blackbrush, mixed-shrub, Joshua tree woodland, and Mojave Desert communities from 1,800 to 4,084 feet.
<i>Yucca schidigera</i>	Mojave yucca	NAC 527	High potential to occur within the Project area. Common in the area.	Common in creosote desert flats. Provides browse for several wildlife species during spring, summer, and fall. Flower stalks and foliage are palatable to rodents and some wild ungulates during much of the year (USDA 2020) and it provides shelter and shade for many mammals, birds, and reptiles. There is an obligate, mutualistic relationship between the Mojave yucca and the small white yucca moth ( <i>Tegeticula yuccasella</i> ).

*Abbreviations:* BCC = BGEPA = Bald and Golden Eagle Protection Act; BLM = Bureau of Land Management; ESA = Endangered Species Act; MSHCP = Multiple Species Habitat Conservation Plan; NAC 527 = Nevada Administrative Code 527, Protection and Preservation of Timbered Lands, Trees, and Flora; NNHP = Nevada Natural Heritage Program; USDA = U.S. Department of Agriculture Forest Service

## **Appendix L**

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### **Green-House Gas Calculations**



**Yahthumb Solar Project GHG Emissions  
MOVES Equipment Used to Simulate Project Fleet**

<b>Phase ID</b>	<b>Project Equipment</b>	<b>MOVES Equivalent</b>
1	Forklifts	Rough Terrain Forklifts
1	Generator Sets	Other Construction Equipment
1	Graders	Graders
1	Off-Highway Trucks	Off-highway Trucks
1	Carts/ATVs	Other Construction Equipment
1	Rollers	Rollers
1	Rubber Tired Dozers	Crawler Tractor/Dozers
1	Scrapers	Scrapers
1	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes
1	Trenchers	Trenchers
2	Graders	Graders
2	Off-Highway Trucks	Off-highway Trucks
2	Other Construction Equipment	Other Construction Equipment
2	Carts/ATVs	Other Construction Equipment
2	Rollers	Rollers
2	Rubber Tired Dozers	Crawler Tractor/Dozers
2	Scrapers	Scrapers
3	Aerial Lifts	Other Construction Equipment
3	Cranes	Cranes
3	Crawler Tractors	Crawler Tractor/Dozers
3	Forklifts	Rough Terrain Forklifts
3	Generator Sets	Other Construction Equipment
3	Off-Highway Trucks	Off-highway Trucks
3	Carts/ATVs	Other Construction Equipment
3	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes
4	Graders	Graders
4	Off-Highway Trucks	Off-highway Trucks
4	Carts/ATVs	Other Construction Equipment
4	Rollers	Rollers
4	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes
5	Air Compressors	Other Construction Equipment
5	Cranes	Cranes
5	Generator Sets	Other Construction Equipment
5	Graders	Graders
5	Other Equipment	Other Construction Equipment
5	Welders	Other Construction Equipment
6	Aerial Lifts	Other Construction Equipment
6	Cranes	Cranes
6	Forklifts	Rough Terrain Forklifts
6	Off-Highway Trucks	Off-highway Trucks
6	Carts/ATVs	Other Construction Equipment
6	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes
6	Trenchers	Trenchers
7	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes
8	Graders	Graders
8	Off-Highway Trucks	Off-highway Trucks
8	Other Construction Equipment	Other Construction Equipment
8	Carts/ATVs	Other Construction Equipment
8	Rollers	Rollers
8	Rubber Tired Dozers	Crawler Tractor/Dozers
8	Scrapers	Scrapers
8	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes
9	Forklifts	Rough Terrain Forklifts
9	Generator Sets	Other Construction Equipment
9	Off-Highway Trucks	Off-highway Trucks
9	Carts/ATVs	Other Construction Equipment
9	Rollers	Rollers
9	Skid Steers	Skid Steer Loaders
9	Post Drivers	Other Construction Equipment
9	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes
9	Trenchers	Trenchers

**Yathumb Solar Project  
Total Project Emissions**

Model Equipment Types	Phase ID	Horsepower (hp)	Number	Months	Hours per Day	2022 Construction Equipment Emission Factors (g/hp-hr)		Estimated Emissions (tons)		CO2e (metric tons)
						CO2	CH4	CO2	CH4	
Forklifts	1	89	4	1	6	595.655	0.014	42.075	0.001	38.189
Generator Sets	1	84	4	1	8	595.622	0.015	52.945	0.001	48.056
Graders	1	187	4	1	8	536.403	0.013	106.148	0.003	96.345
Off-Highway Trucks	1	402	7	1	4	536.408	0.013	199.667	0.005	181.226
Carts/ATVs	1	88	5	1	8	595.622	0.015	69.333	0.002	62.931
Rollers	1	80	2	1	8	595.692	0.014	25.215	0.001	22.886
Rubber Tired Dozers	1	247	2	1	8	536.402	0.013	70.103	0.002	63.629
Scrapers	1	367	2	1	8	536.386	0.013	104.158	0.003	94.539
Tractors/Loaders/Backhoes	1	97	4	1	8	694.480	0.027	71.287	0.003	64.724
Trenchers	1	78	2	1	6	595.613	0.015	18.436	0.000	16.734
Graders	2	187	3	3	8	536.403	0.013	238.833	0.006	216.775
Off-Highway Trucks	2	402	5	3	6	536.408	0.013	641.788	0.016	582.513
Other Construction Equipment	2	172	1	3	6	536.333	0.015	54.912	0.001	49.843
Carts/ATVs	2	88	2	3	8	595.622	0.015	83.200	0.002	75.517
Rollers	2	80	4	3	8	595.692	0.014	151.290	0.004	137.315
Rubber Tired Dozers	2	247	3	3	8	536.402	0.013	315.463	0.008	286.329
Scrapers	2	367	3	3	8	536.386	0.013	468.710	0.012	425.428
Aerial Lifts	3	63	1	1	8	595.618	0.015	9.927	0.000	9.010
Cranes	3	231	1	1	8	530.598	0.013	32.426	0.001	29.432
Crawler Tractors	3	212	1	1	8	536.402	0.013	30.085	0.001	27.306
Forklifts	3	89	1	1	8	595.655	0.014	14.025	0.000	12.730
Generator Sets	3	84	1	1	8	595.622	0.015	13.236	0.000	12.014
Off-Highway Trucks	3	402	2	1	4	536.408	0.013	57.048	0.001	51.779
Carts/ATVs	3	88	1	1	8	595.622	0.015	13.867	0.000	12.586
Tractors/Loaders/Backhoes	3	97	1	1	8	694.480	0.027	17.822	0.001	16.181
Graders	4	187	3	1	8	536.403	0.013	79.611	0.002	72.258
Off-Highway Trucks	4	402	5	1	6	536.408	0.013	213.929	0.005	194.171
Carts/ATVs	4	88	3	1	8	595.622	0.015	41.600	0.001	37.758
Rollers	4	80	3	1	8	595.692	0.014	37.823	0.001	34.329
Tractors/Loaders/Backhoes	4	97	3	1	8	694.480	0.027	53.465	0.002	48.543
Air Compressors	5	78	1	1	4	595.622	0.015	6.145	0.000	5.578
Cranes	5	231	1	1	8	530.598	0.013	32.426	0.001	29.432
Generator Sets	5	84	1	1	4	595.622	0.015	6.618	0.000	6.007
Graders	5	187	1	1	8	536.403	0.013	26.537	0.001	24.086
Other Equipment	5	172	1	1	8	536.333	0.015	24.405	0.001	22.152
Welders	5	46	1	1	2	595.719	0.013	1.812	0.000	1.645
Aerial Lifts	6	63	2	1	8	595.618	0.015	19.854	0.000	18.021
Cranes	6	231	1	1	8	530.598	0.013	32.426	0.001	29.432
Forklifts	6	89	1	1	6	595.655	0.014	10.519	0.000	9.547
Off-Highway Trucks	6	402	1	1	4	536.408	0.013	28.524	0.001	25.889
Carts/ATVs	6	88	1	1	8	595.622	0.015	13.867	0.000	12.586
Tractors/Loaders/Backhoes	6	97	3	1	6	694.480	0.027	40.099	0.002	36.407
Trenchers	6	78	3	1	6	595.613	0.015	27.654	0.001	25.100
Tractors/Loaders/Backhoes	7	97	2	2	8	694.480	0.027	71.287	0.003	64.724
Graders	8	187	4	1	8	536.403	0.013	106.148	0.003	96.345
Off-Highway Trucks	8	402	7	1	6	536.408	0.013	299.501	0.007	271.839
Other Construction Equipment	8	172	3	1	6	536.333	0.015	54.912	0.001	49.843
Carts/ATVs	8	88	7	1	8	595.622	0.015	97.067	0.002	88.103
Rollers	8	80	4	1	8	595.692	0.014	50.430	0.001	45.772
Rubber Tired Dozers	8	247	4	1	8	536.402	0.013	140.206	0.003	127.257
Scrapers	8	367	3	1	8	536.386	0.013	156.237	0.004	141.809
Tractors/Loaders/Backhoes	8	97	4	1	8	694.480	0.027	71.287	0.003	64.724
Forklifts	9	89	5	7	8	595.655	0.014	490.874	0.012	445.538
Generator Sets	9	84	11	7	8	595.622	0.015	1019.198	0.025	925.079
Off-Highway Trucks	9	402	7	7	6	536.408	0.013	2096.506	0.051	1902.876
Carts/ATVs	9	88	10	7	8	595.622	0.015	970.665	0.024	881.028
Rollers	9	80	2	7	6	595.692	0.014	132.379	0.003	120.150
Skid Steers	9	65	10	7	8	693.913	0.024	835.284	0.029	758.304
Post Drivers	9	65	12	7	8	595.618	0.015	860.356	0.022	780.909
Tractors/Loaders/Backhoes	9	97	2	7	6	694.480	0.027	187.128	0.007	169.900
Trenchers	9	78	5	7	8	595.613	0.015	430.174	0.011	390.450

**Project Total Emissions** **11668.947** **0.303** **10591.607**

- Notes:  
 (1) Construction equipment emission factors developed using EPA MOVES2014a-20151201 model for nonroad sources for 2022.  
 (2) Nitrous oxide (N2O) not calculated, assumed to be negligible.

**Yahthumb Solar Project  
Annual Project Emissions**

Model Equipment Types (3)	Phase ID	CO2e (metric tons)			
		Year 1 Factor	Year 2 Factor	Year 1	Year 2
Forklifts	1	1.000	0.000	38.189	0.000
Generator Sets	1	1.000	0.000	48.056	0.000
Graders	1	1.000	0.000	96.345	0.000
Off-Highway Trucks	1	1.000	0.000	181.226	0.000
Carts/ATVs	1	1.000	0.000	62.931	0.000
Rollers	1	1.000	0.000	22.886	0.000
Rubber Tired Dozers	1	1.000	0.000	63.629	0.000
Scrapers	1	1.000	0.000	94.539	0.000
Tractors/Loaders/Backhoes	1	1.000	0.000	64.724	0.000
Trenchers	1	1.000	0.000	16.734	0.000
Graders	2	1.000	0.000	216.775	0.000
Off-Highway Trucks	2	1.000	0.000	582.513	0.000
Other Construction Equipment	2	1.000	0.000	49.843	0.000
Carts/ATVs	2	1.000	0.000	75.517	0.000
Rollers	2	1.000	0.000	137.315	0.000
Rubber Tired Dozers	2	1.000	0.000	286.329	0.000
Scrapers	2	1.000	0.000	425.428	0.000
Aerial Lifts	3	1.000	0.000	9.010	0.000
Cranes	3	1.000	0.000	29.432	0.000
Crawler Tractors	3	1.000	0.000	27.306	0.000
Forklifts	3	1.000	0.000	12.730	0.000
Generator Sets	3	1.000	0.000	12.014	0.000
Off-Highway Trucks	3	1.000	0.000	51.779	0.000
Carts/ATVs	3	1.000	0.000	12.586	0.000
Tractors/Loaders/Backhoes	3	1.000	0.000	16.181	0.000
Graders	4	1.000	0.000	72.258	0.000
Off-Highway Trucks	4	1.000	0.000	194.171	0.000
Carts/ATVs	4	1.000	0.000	37.758	0.000
Rollers	4	1.000	0.000	34.329	0.000
Tractors/Loaders/Backhoes	4	1.000	0.000	48.543	0.000
Air Compressors	5	1.000	0.000	5.578	0.000
Cranes	5	1.000	0.000	29.432	0.000
Generator Sets	5	1.000	0.000	6.007	0.000
Graders	5	1.000	0.000	24.086	0.000
Other Equipment	5	1.000	0.000	22.152	0.000
Welders	5	1.000	0.000	1.645	0.000
Aerial Lifts	6	1.000	0.000	18.021	0.000
Cranes	6	1.000	0.000	29.432	0.000
Forklifts	6	1.000	0.000	9.547	0.000
Off-Highway Trucks	6	1.000	0.000	25.889	0.000
Carts/ATVs	6	1.000	0.000	12.586	0.000
Tractors/Loaders/Backhoes	6	1.000	0.000	36.407	0.000
Trenchers	6	1.000	0.000	25.100	0.000
Tractors/Loaders/Backhoes	7	1.000	0.000	64.724	0.000
Graders	8	1.000	0.000	96.345	0.000
Off-Highway Trucks	8	1.000	0.000	271.839	0.000
Other Construction Equipment	8	1.000	0.000	49.843	0.000
Carts/ATVs	8	1.000	0.000	88.103	0.000
Rollers	8	1.000	0.000	45.772	0.000
Rubber Tired Dozers	8	1.000	0.000	127.257	0.000
Scrapers	8	1.000	0.000	141.809	0.000
Tractors/Loaders/Backhoes	8	1.000	0.000	64.724	0.000
Forklifts	9	0.700	0.300	311.877	133.661
Generator Sets	9	0.700	0.300	647.555	277.524
Off-Highway Trucks	9	0.700	0.300	1332.014	570.863
Carts/ATVs	9	0.700	0.300	616.719	264.308
Rollers	9	0.700	0.300	84.105	36.045
Skid Steers	9	0.700	0.300	530.813	227.491
Post Drivers	9	0.700	0.300	546.636	234.273
Tractors/Loaders/Backhoes	9	0.700	0.300	118.930	50.970
Trenchers	9	0.700	0.300	273.315	117.135

**Annual Total Tons (MMCO2e)**

Year 1	Year 2
0.009	0.002

**Nevada 2017 Gross Tons (MMCO2e)**

43.813

**Nevada 2017 Net Tons (MMCO2e)**

38.066

**Project Percent of Nevada 2017 Net Emissions**

Year 1	Year 2
0.023%	0.005%



## **Appendix M**

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### Biological Assessment

# Biological Assessment

## Yahthumb Solar Project



Prepared for:



Bureau of Indian Affairs Western Regional Office

2600 N. Central Avenue

Phoenix, AZ 85004-3050

**July 2022**

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# 1 INTRODUCTION

The purpose of this Biological Assessment (BA) is to review the Yahthumb Solar Project (Yahthumb or Project) and to determine to what extent the Project would affect federally listed threatened or endangered species; species proposed for listing; and/or designated or proposed critical habitat. The Project would use land held in trust by the Bureau of Indian Affairs (BIA) for the benefit of the Moapa Band of Paiutes (Moapa Band), a designated utility corridor on Moapa River Indian Reservation (Reservation) lands that is managed by the Bureau of Land Management (BLM), BLM-managed land near the Reid Gardner Substation, and private land owned by NV Energy (NVE).

The proposed Project would be located approximately 35 miles northeast of Las Vegas in Clark County, Nevada (**Figure 1-1**). The lease study area for the Yahthumb Project would be located on up to 1,695 leased acres on the Reservation in Sections 29, 30, 31, and 32 of Township 15 South, Range 65 East; Section 1 of Township 16 South, Range 64 East; and Section 6 of Township 16 South, Range 65 East (**Figure 1-2**). The off-site Project components, including the generation interconnection (gen-tie) line, site access roads, and temporary water pipeline would be located in Sections 12, 13, 14, 22, 23, 27, 28, 31, 32, and 33 of Township 15 South, Range 65 East; Sections 5, 6, and 7 of Township 15 South Range 66 East; Sections 4, 5, 6, 7, 9, and 10 of Township 16 South, Range 65 East; and Sections 12, 13, 14, and 15 of Township 16 South, Range 64 East, Mount Diablo Base Meridian.

The gen-tie line would originate from the Project substation on tribal land and would be located within the designated BLM utility corridor where it would parallel the newly constructed Eagle Shadow Mountain (ESM) gen-tie for approximately 7.1 miles. It would then enter BLM-administered lands for approximately 0.8 mile, then cross private lands owned by NVE for approximately 1.1 miles, and then cross BLM-administered lands for another approximately 1.2 miles terminating at a Point of Change of Ownership (POCO) structure near NVE's Reid Gardner Substation. The gen-tie would be designed to accommodate transmission of energy generated by the Project and an approximate 75-foot-wide ROW would be required from BLM for the gen-tie line. Project components would include onsite facilities, offsite facilities, and temporary facilities needed to construct the Project.

Primary access to the Yahthumb Project site for construction and through operations and decommissioning would be provided via the existing Ute Road which is located on the Reservation and is accessed via an existing interchange on I-15. The existing Ute Road would provide access to the central and southern portions of the solar site. An existing road within the corridor would be upgraded from Ute Road for about 1.1 miles with a new spur road built for about 0.5 mile to provide access to the northern portion of the solar site. Secondary access would be provided via existing roads within the designated utility corridor. Access to these roads would be via I-15, US Highway 93, and North Las Vegas Boulevard to existing improved roads on the Reservation. These existing roads on the Reservation to be used for secondary site access include the road built to provide access to the nearby K Road Solar Facility and Eagle Shadow Mountain (ESM) Solar Project. From the K Road and ESM access points, the existing road within the utility corridor would be upgraded for about 2.5 miles to provide access to the Yahthumb Project. All site access roads (existing and proposed) would be 24 feet wide.

The majority of the Project is located on Reservation land. A majority of the gen-tie line and temporary water pipeline are located on Reservation land but are within a designated utility corridor that is managed by the BLM. Small portions of the gen-tie line are located on lands administered by the BLM and on private



land owned by NVE. As such, this BA has been prepared in coordination with both BIA and BLM for submittal to the U.S. Fish and Wildlife Service (USFWS).

## 1.1 Project Overview

Yahthumb Solar Project, LLC (“Applicant”), proposes to construct, operate, maintain, and decommission the Project, consisting of up to a 138-megawatt (MW) alternating current (AC) solar photovoltaic (PV) power generating facility on approximately 1,400 acres of land on the Moapa River Indian Reservation (Reservation) in Clark County, Nevada (**Figure 1-1**). The Project would include the following on-site key elements located within the up to 1,400-acre solar lease boundary, which are discussed further below:

- Solar fields
- Battery Energy Storage System (BESS)
- On-site electrical collection system and substation
- Site security and fencing
- Communications systems infrastructure
- Internal Project roads
- Lighting
- Waste and hazardous materials management
- Fire protection

The Project would include the following off-site permanent elements located outside of the solar lease boundary, which are discussed further below:

- 230-kilovolt (kV) transmission line (gen-tie line)
- Access roads (primary and secondary)

The Project would also include the following temporary key elements associated with construction that would be removed once construction is complete, which are also discussed further below:

- Equipment laydown areas on the solar field
- Construction areas and pulling sites along the gen-tie line
- Temporary water pipeline

A complete description of the Project is presented in Chapter 2 of this BA.

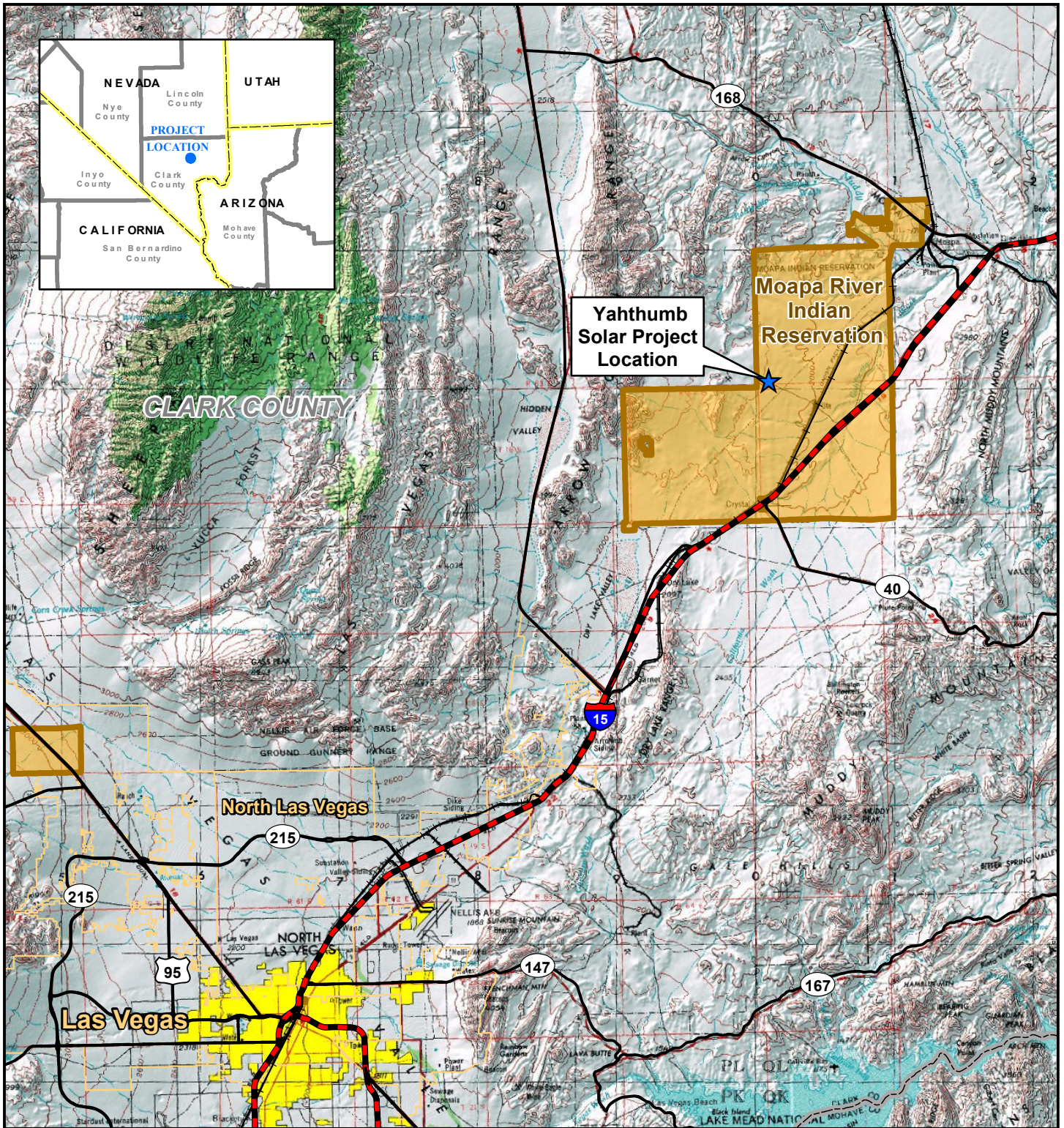
Power produced by the Project would be conveyed to the Reid-Gardner Substation.

## 1.2 Consultation History

On May 27, 2022, an official list of species that may occur within the Project area was obtained from the USFWS website Information for Planning and Consultation System (IPaC) (Project Code: 2022-0048363)(**Appendix A**); additional species were considered due to proximity to the Project area (USFWS 2022a). **Table 1-1** lists these species, their status, critical habitat (if any) and proximity of the same to the proposed Project area, and the recommended effects determination.

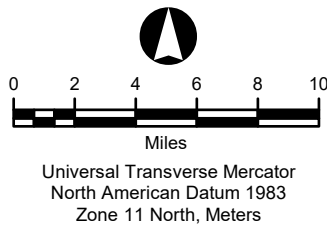
An interagency scoping meeting for the Yahthumb Project was held on July 21, 2021 via teleconference. This meeting was held to introduce the Project to the agencies and was attended by

Chip Lewis (BIA), Randy Schroeder (ENValue), Patricia McCabe (Logan Simpson), Lisa Young (Logan Simpson), Kelly Douglas (USFWS Las Vegas Field Office), Glen Knowles (USFWS Las Vegas Field Office), Matthew Klein (BLM Southern Nevada Field Office), Beth Ransel (BLM Southern Nevada Field Office), Vivian Browning (BLM Southern Nevada Field Office), Kelsey Bynum (BLM Southern Nevada Field Office), Jasmine Kleiber (Nevada Department of Wildlife [NDOW]), and Brad Hardenbrook (NDOW). The Section 7 process was discussed at this meeting.



**Legend**

- Solar Project Location
- Interstate
- US/ State Highway
- Railroad
- Jurisdictional Land Ownership**
- Indian Reservation

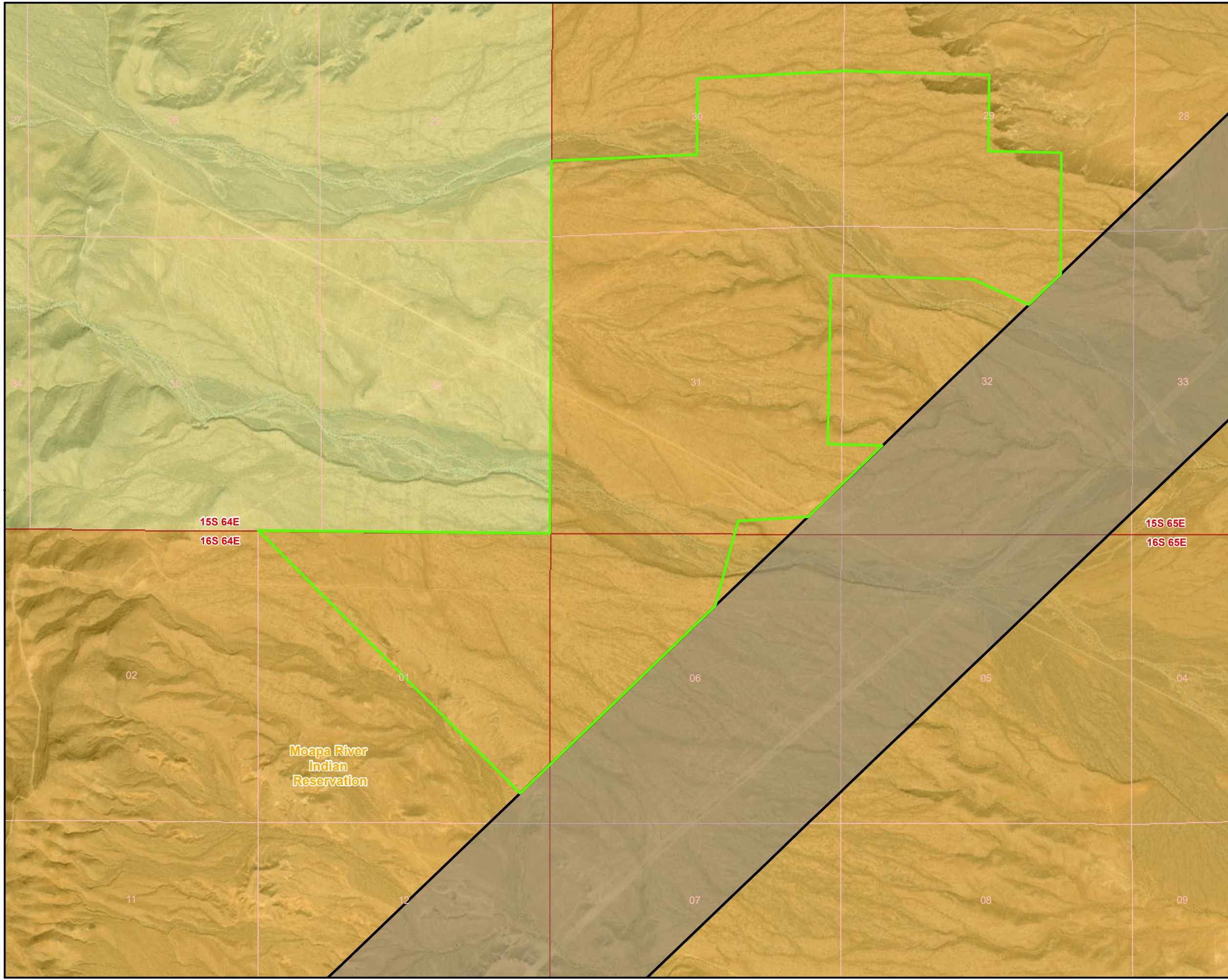


## Yahthumb Solar Project

**FIGURE 1-1**  
**General Location**

Map Extent: Clark County, Nevada

Date: 07-05-21		Author: mrc
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**Legend**

**Project Components**

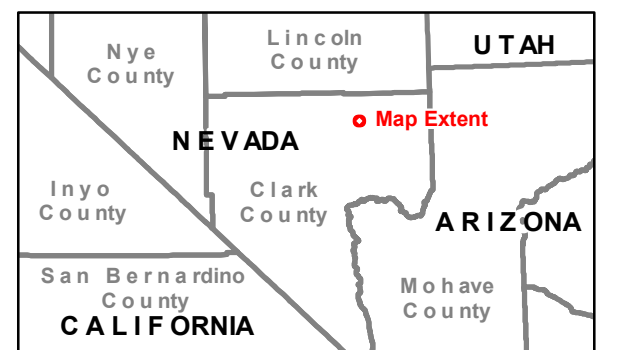
- Yahthumb Solar Site

**General Features**

- Designated Utility Corridor
- Township
- Section

**Land Jurisdiction**

- Bureau of Land Management Land
- Indian Land



Universal Transverse Mercator  
 North American Datum 1983  
 Zone 12 North, Meters

**Yahthumb Solar Project**

**Figure 1-2**  
**Project Lease Area Map**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
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F:\MXDs\Fig 1-2 Project Lease Area 101921.mxd

<b>Table 1-1 - LISTED SPECIES CONSIDERED</b>			
<b>Species</b>	<b>Status</b>	<b>Critical Habitat/Location</b>	<b>Recommended Determination of Effects</b>
<b>Birds</b>			
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> ) Population: Western U.S. Distinct Population Unit	Threatened	USFWS Designated Critical Habitat approximately 130 miles south-southeast of the Project area	<i>May affect, not likely to adversely affect</i> <i>No effect to Designated Critical Habitat</i>
Yuma Ridgway's (Clapper) rail ( <i>Rallus longirostris yumanensis</i> ) Population: U.S. only	Endangered	No USFWS Designated Critical Habitat	<i>May affect, not likely to adversely affect</i>
Southwestern willow flycatcher ( <i>Empidonax trailii extimus</i> )	Endangered	USFWS Designated Critical Habitat approximately 24 miles southeast of the Project area	<i>May affect, not likely to adversely affect</i> <i>No effect to Designated Critical Habitat</i>
<b>Reptiles</b>			
Mojave desert tortoise ( <i>Gopherus agassizii</i> )	Threatened	USFWS Designated Critical Habitat approximately 7 miles west of the Project area	<i>May affect, likely to adversely affect</i> <i>No effect to Designated Critical Habitat</i>
<b>Fish</b>			
Moapa dace ( <i>Moapa coriacea</i> )	Endangered	No USFWS Designated Critical Habitat	<i>May affect, likely to adversely affect</i>

## 2 DESCRIPTION OF THE PROPOSED ACTION

This chapter provides a detailed description of the proposed Project. It describes the various components of the Project and includes discussions of the proposed construction process, O&M procedures, and decommissioning.

The Project would include solar fields and off-site components including a gen-tie (including spur roads for access), site access roads (primary and secondary), and a temporary water pipeline. The solar field would be designed to avoid two larger drainages that cross the lease study area. This would create three primary solar fields – northern, central, and southern.

Major onsite facilities would include a 138MW AC solar field comprised of multiple blocks of PV solar panels mounted on single-axis tracking systems, associated inverter and transformer equipment, a battery energy storage system (BESS), and a project substation. The off-site facilities would include a gen-tie and associated facilities, site access roads, and a temporary water pipeline.

The gen-tie line would be a single-circuit 230 kilovolt (kV) line up to approximately 10.3 miles long and located on the Reservation, BLM-administered lands, and private lands. It would generally parallel the ESM gen-tie line (recently constructed) and most of it would be within a federally designated utility corridor on the Reservation managed by BLM. This line would generally require a right-of-way (ROW) width of 75 feet. The primary access for the site would be provided by the existing Ute Road from an interchange on I-15, and secondary access would be provided by the existing road network within the utility corridor. Temporary facilities that would be removed/reclaimed at the end of construction include a temporary water pipeline, laydown and construction areas, and temporary construction areas along the gen-tie line. **Table 2-1** summarizes the primary components of the Project and the associated agency actions.

In addition to the federal agency jurisdictions identified in **Table 2-1**, the approximately 5.3-mile portion of the gen-tie crossing BLM lands outside of the Reservation and private lands would be subject to Clark County jurisdiction and would require a Special Use Permit (SUP).

<b>Table 2-1</b>				
<b>SUMMARY OF AGENCY LANDS / JURISDICTION</b>				
<b>PROPOSED YAHTHUMB PROJECT</b>				
<b>Agency</b>	<b>Project Component</b>	<b>Location</b>	<b>Agency Action</b>	<b>Mileage / Acreage<sup>1</sup></b>
BIA	Solar Field and Ancillary Facilities	Reservation	Lease <sup>2</sup>	Up to 1,400 acres
	230 kV Gen-Tie Line	Reservation	ROW	Up to 0.1 miles / 0.9 acre
	Primary Site Access Road	Reservation	ROW	3.7 miles / 10.8 acres
	TOTAL BIA			3.8 miles / 1,411.7 acres
BLM	230 kV Gen-Tie Line	Designated Utility Corridor on Tribal Lands and managed by BLM	ROW <sup>3</sup>	7.1 miles / 102.0 acres
	230 kV Gen-Tie Line	Federal Lands managed by BLM	ROW <sup>3</sup>	4.2 miles / 26.6 acres
	Primary Site Access Road	Designated Utility Corridor on Tribal Lands and managed by BLM	ROW	1.7 miles / 5.0 acres
	Secondary Site Access	Designated Utility Corridor on Tribal Lands and managed by BLM	ROW	7.8 miles / 22.7 acres
	Secondary Site Access	Federal Lands managed by BLM	ROW	1.1 miles / 3.2 acres
	Temporary Water Pipeline	Designated Utility Corridor on Tribal Lands and managed by BLM	ROW	4.7 miles / 10.3 acres
	TOTAL BLM			26.6 miles / 169.8 acres
PRIVATE	230 kV Gen-Tie Line	Private Lands owned by NV Energy	N/A	1.1 miles / 10.0 acres
TOTAL PRIVATE			1.1 miles / 10.0 acres	

<sup>1</sup> Acreage and mileage are approximate. Gen-tie line acreage is based on a 75-foot ROW and the expected maximum length of the line (10.3 miles) – only a portion of the ROW would be disturbed. Primary access road and most of the secondary access road are existing (except a 2.5 mile section of secondary access road where existing roads would be upgraded). Only a portion of the 1,400-acre potential solar site and lease area would be disturbed by the final footprint of the solar project.

<sup>2</sup> Lease term would be 56.5 years

<sup>3</sup> BLM ROW term would be 50 years and would need to be extended if Project life extends beyond that period.

Permanent disturbance areas will be those areas where the surface of the ground is not restored to its existing condition after construction, such as foundations or new access roads. Temporary disturbance areas include those where construction activity will take place but where restoration of the surface will be possible, such as temporary work areas, pull sites, and laydown yards. In some places, areas of temporary disturbance will overlap with previously disturbed areas. The total acreage of temporary and permanent disturbance associated with the Project is summarized in **Table 2-2**.

**Table 2-2  
TEMPORARY AND PERMANENT DISTURBANCE BY PROJECT COMPONENT**

Project Component	Jurisdiction	Temporary Disturbance (acres)	Permanent Disturbance (acres)
Solar Field and Ancillary Facilities	Reservation	1,129 <sup>1</sup>	297 <sup>2</sup>
230-kV Gen-Tie Line	Reservation	0	0
	BLM (Corridor)	30.8	5.2
	BLM	10.8	2.1
	Private	2.6	2.1
Site Access Road (Primary)	Reservation	0	0.03
	BLM (Corridor)	0	1.74
Temporary Water Pipeline	BLM (Corridor)	1.03	0
<b>Total</b>		<b>1,174</b>	<b>308</b>

<sup>1</sup> The solar field includes all facilities within its boundary including solar arrays, internal site roads, substation, and all associated components.

<sup>2</sup> These acres would be graded and kept free of vegetation for the duration of operations while the remainder would not be graded with vegetation left in place.

Development of the Project would include implementation of best management practices (BMPs) designed to guide project planning, construction activities, and operation of facilities to minimize environmental impacts. The BMPs and other design features incorporated into the Project are summarized in **Appendix C** of the Draft Environmental Impact Statement (DEIS).

## 2.1 Onsite Facilities

The solar field includes the following onsite facilities discussed in detail below: solar fields, BESS, electrical collection system and substation, site security and fencing, communication systems infrastructure, internal Project roads, lighting, water supply, wastewater treatment, waste and hazardous materials management, and fire protection. **Figure 2-1** shows the Project lease area and **Figure 2-2** shows the onsite facilities.

### 2.1.1 Solar Fields

The solar field would be developed to avoid two larger drainages that cross the lease study area as shown on **Figure 2-1**. This would create three primary solar field areas – northern, central, and southern. Components within the solar fields include mounted PV modules inverters, and transformers that would be combined to form array blocks approximately 3.15 MWac (megawatts of alternating electrical current) and 3.6 MWac in size (block size may change based on final design). The blocks would be repeated to create up to 138 MW of AC electrical capacity. Inverter stations are generally located centrally within the blocks. Blocks would produce direct electrical current (DC), which is converted to AC at the inverter stations. **Figure 2-2** shows the conceptual site plan for the Yahthumb Project solar field.

The Project would be constructed using PV panels or modules that convert sunlight directly into electricity. Panels would be installed on single-axis tracker mount systems oriented in north-south rows that would rotate to follow the sun over the course of the day. The foundations for the mounting structures would be embedded driven steel posts or other embedded foundation design based on the structure, soil



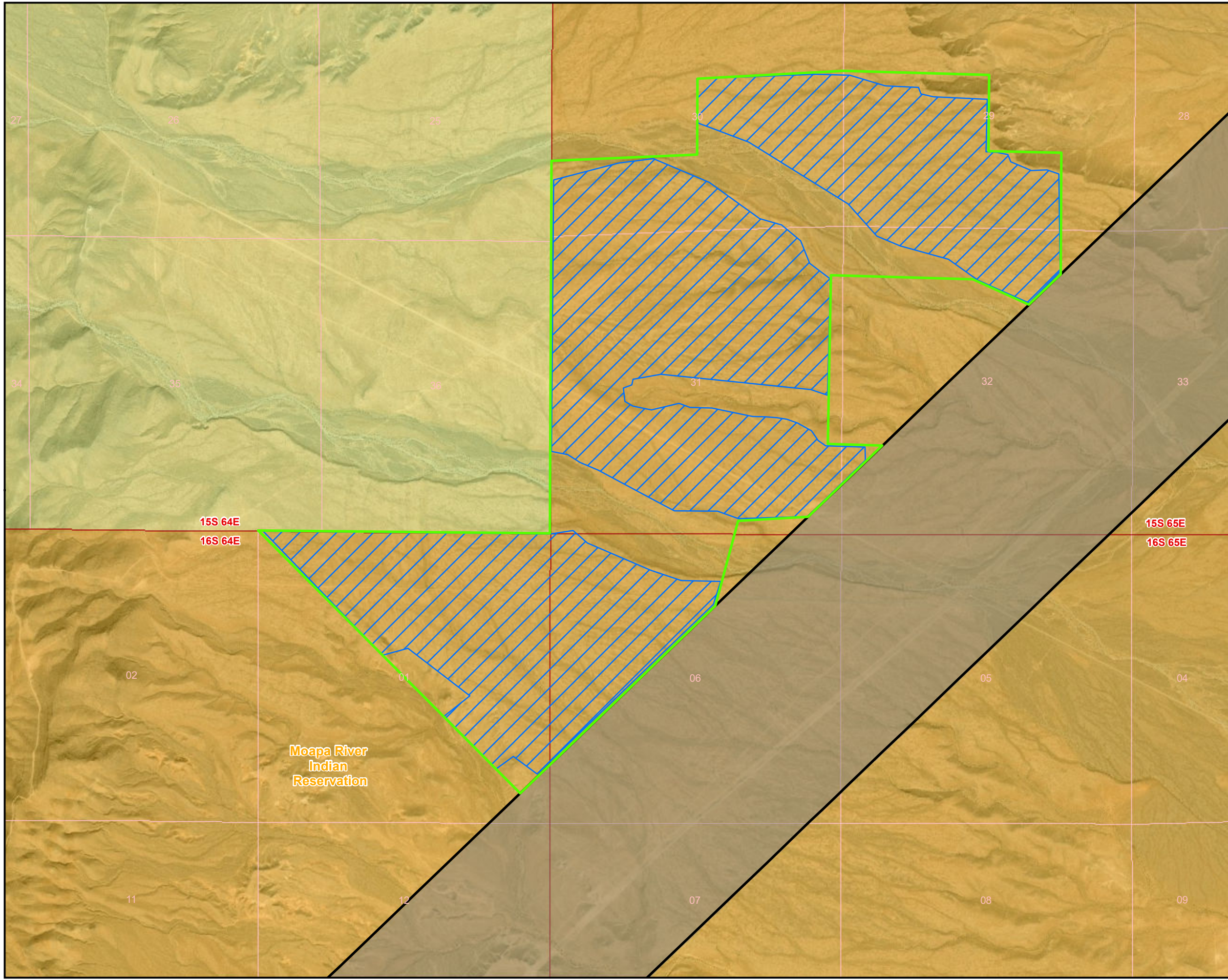
conditions, and wind loads. Final solar panel layout and spacing would be optimized for site characteristics and the needed energy production.

A typical panel array layout using single-axis trackers is shown on **Figure 2-3**. The highest point for a tracker would be achieved during the morning and evening hours when the trackers are tilted at their maximum angle and would be up to 15 feet above the ground surface depending on the grade where the posts are installed (**Figure 2-4**).

In the tracking system, each tracker panel array would be powered by a low-voltage electric drive motor. The motors would normally be operated for a few seconds every five to 10 minutes during daylight conditions to move the panels in approximately one-degree increments.

Meteorological monitoring stations located at multiple locations (up to five) within the solar array would monitor wind speed and communicate with the tracker units. This would allow for the trackers to rotate to a flat position during high winds. Meteorological stations would be mounted on or around the inverter units and would not exceed 16 feet in height.

A helipad would be developed near the substation and BESS area to provide first-responder access in case of emergency. The dimensions of the helipad would be about 100 feet by 100 feet and the area would be compacted and covered with gravel and would provide sufficient clearance from all structures and any potential obstructions. Helicopters would use this pad infrequently and only in the case of emergencies during construction and operation.



**Legend**  
**Project Components**

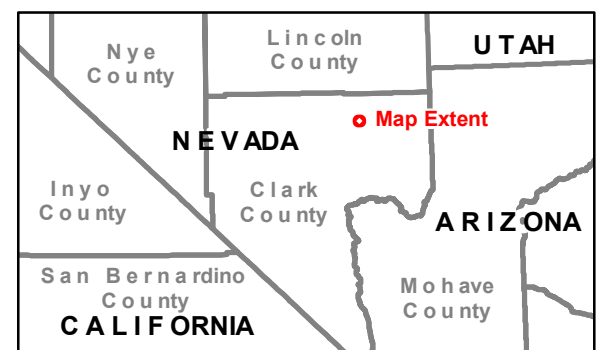
- Yahthumb Solar Site
- Solar Field Development Areas

**General Features**

- Designated Utility Corridor
- Township
- Section

**Land Jurisdiction**

- Bureau of Land Management Land
- Indian Land



Universal Transverse Mercator  
North American Datum 1983  
Zone 12 North, Meters

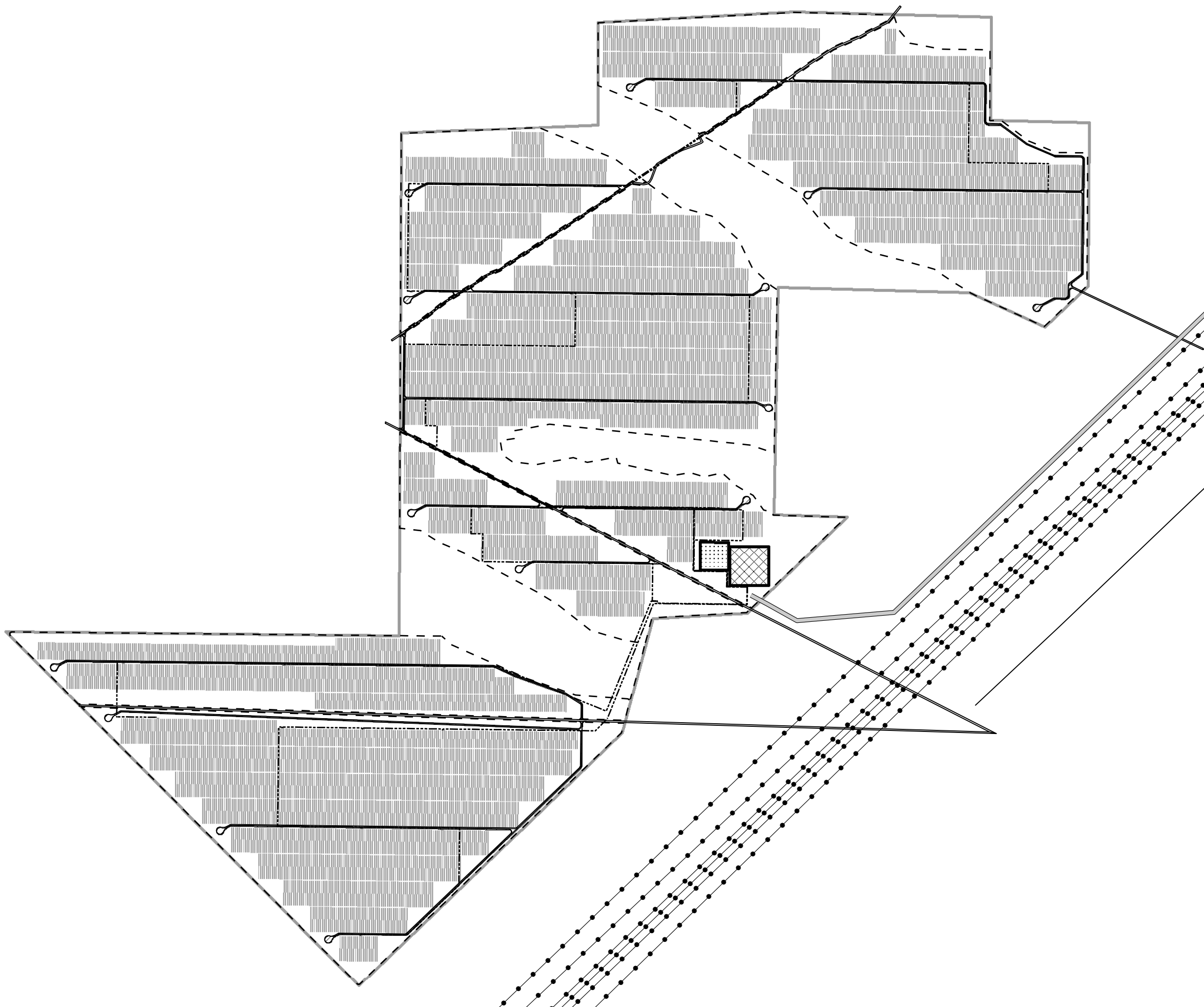
**Yahthumb Solar Project**

**Figure 2-1**  
**Proposed Solar Field Development Areas**

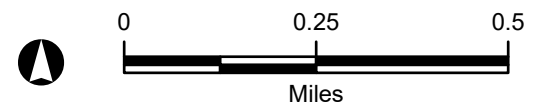
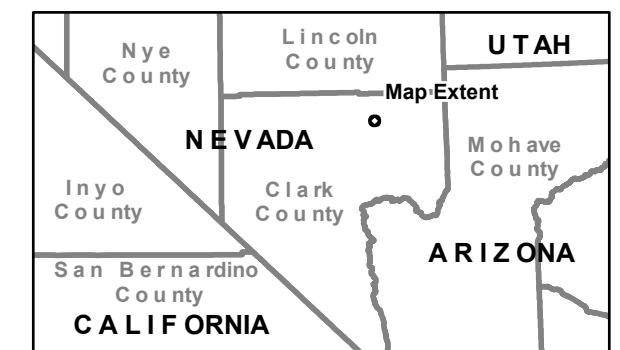
Map Extent: Clark County, Nevada

Date: 10-19-21 | Author: sjw

F:\MXDs\Fig 2-2 Proposed Solar Field Development Areas 101921



- Legend**
- Project Components**
- Gen-Tie
  - - - - MV Circuit
  - ▨ Access
  - ▭ Yahthumb Project Boundary
  - - - - Site Fence
  - ▣ BESS
  - ▣ Substation
  - ▭ Piles
- General Features**
- Transmission Lines



Universal Transverse Mercator  
 North American Datum 1983  
 Zone 12 North, Meters

**Yahthumb Solar Project**

**Figure 2-2**  
**Site Layout**

Map Extent: Clark County, Nevada

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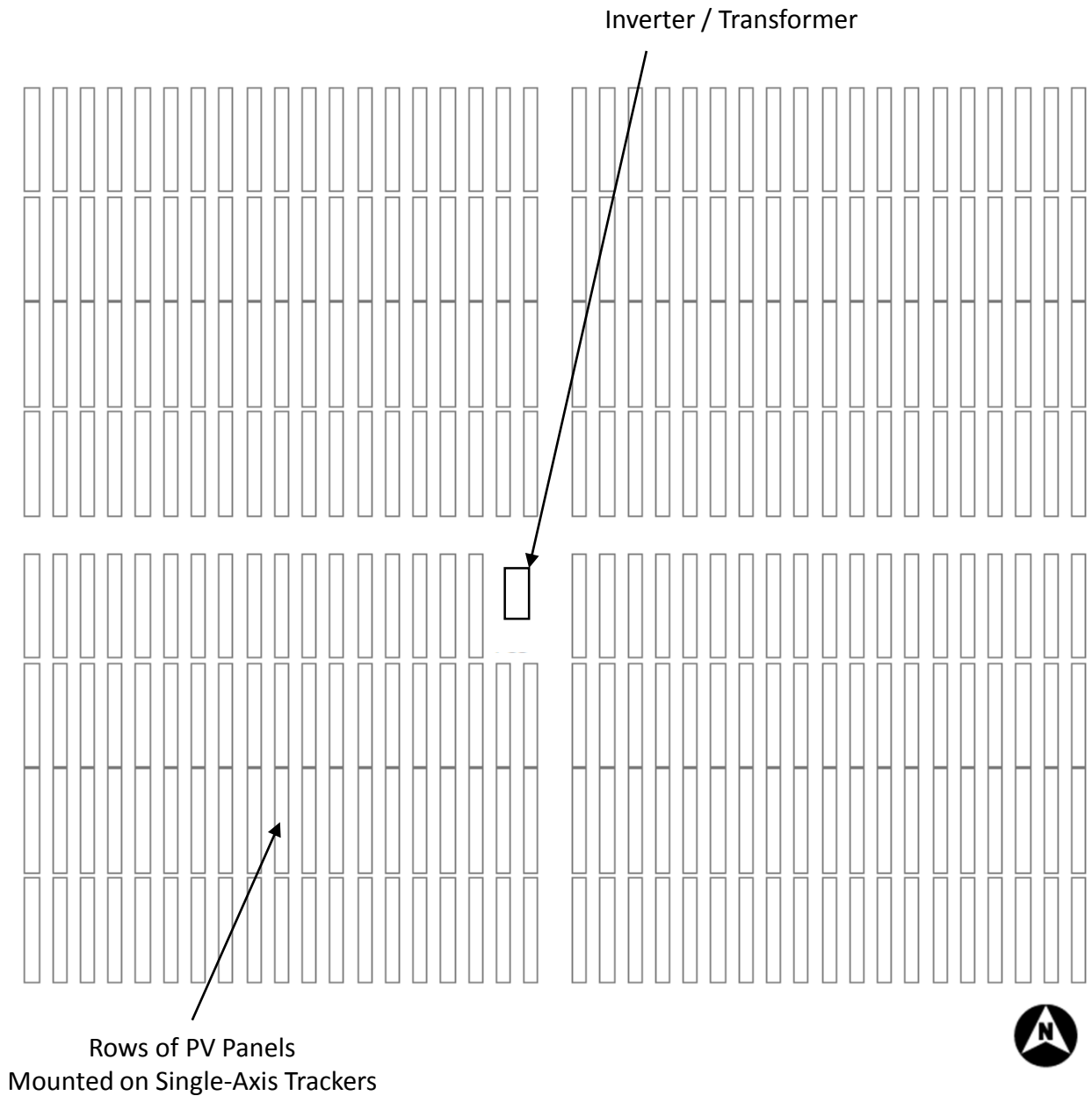


Figure 2-3  
Typical Single-Axis Tracker Array Layout

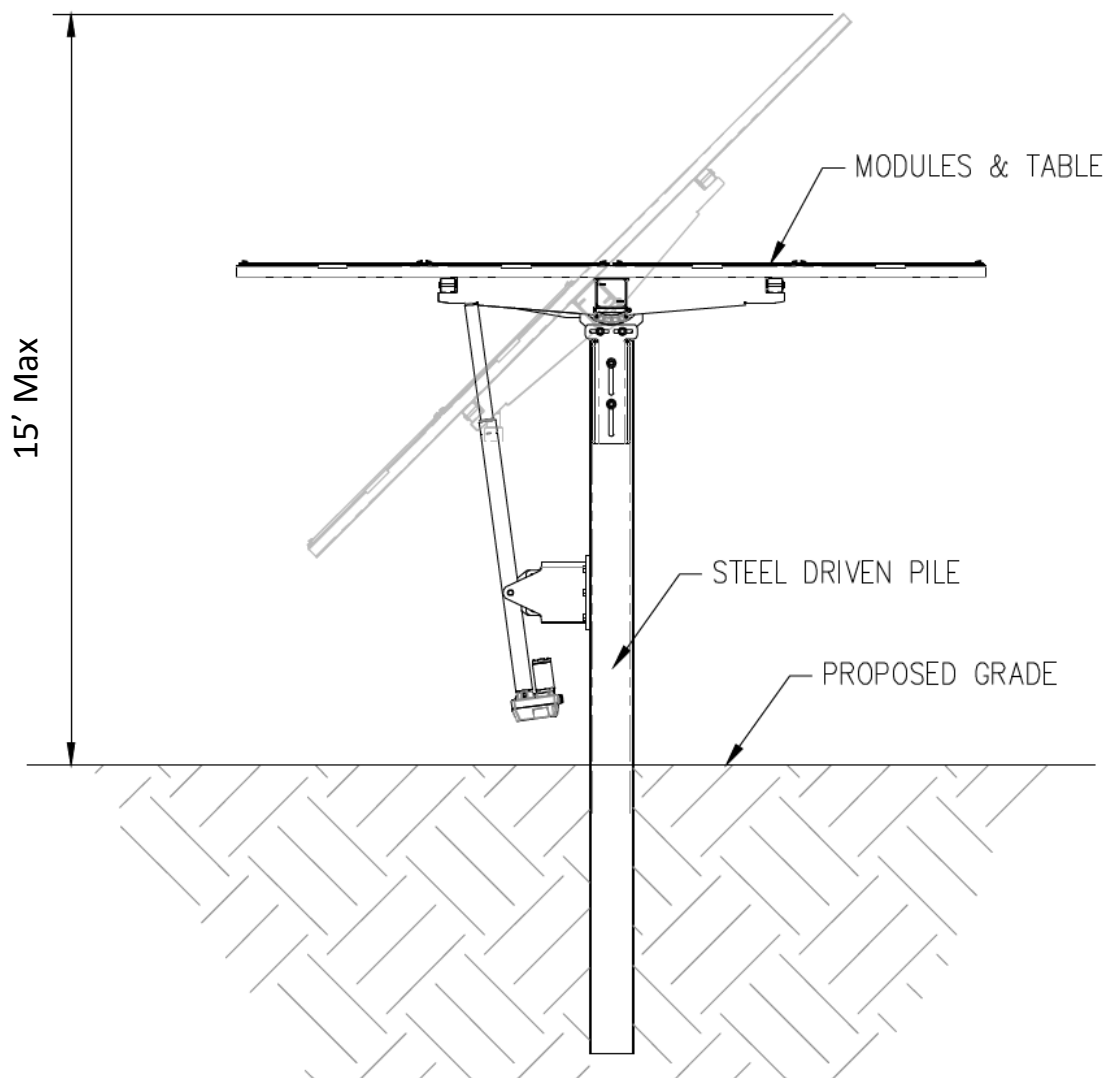


Figure 2-4  
Typical Single-Axis Tracker Cross Sectional View

### **2.1.2 Battery Energy Storage System**

The Yahthumb Project may include one or more BESSs, located at or near the Project substation and/or at the inverter stations, but possibly elsewhere on site. The BESSs would consist of modular and scalable battery packs and battery control systems that conform to national safety standards. The BESS modules, which may include commercially available flow batteries, would consist of industry-standard containers (approximately 40 feet by 8 feet by 8 feet) in pad- or post-mounted, stackable metal structures.

The total acreage of the BESS is not expected to exceed 12 acres. The actual dimensions and number of energy storage modules and structures would vary depending on the application, supplier, chosen configuration, and applicable building standards.

### **2.1.3 Electrical Collection System and Substation**

PV modules convert sunlight into DC electricity which would be collected and delivered through underground or aboveground cables to an inverter near the center of the array where it converts the DC electricity to AC electricity and a medium-voltage transformer steps up the voltage to 34.5 kV. This converted AC electricity then would be delivered to the on-site substation via the 34.5 kV AC collection system. At the substation, the electricity again would be stepped up to 230 kV for delivery to NV Energy's transmission grid at the Reid-Gardner Substation.

The inverter units would have a rated power of up to 3.6 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear would be housed in steel enclosures, while the inverter unit(s) would be housed in cabinets. The inverter station could also be within an enclosed or canopied metal structure on a skid or concrete mounted pad.

The 34.5 kV collector system would be installed either as overhead single- or double-circuit lines and fiber optic communication lines on wooden poles with post insulators or underground in trenches depending on soil characteristics. If overhead, pole height would be up to 75 feet above grade with approximately 150-foot spacing between poles. Wood poles typically would be directly embedded to 10 percent of the pole height plus two feet. If the collector system is buried, the trenches would be as deep as four feet and as wide as 10 feet depending on the number of circuits being collected. Collector lines would run through and between the solar fields.

The on-site Project substation would include auxiliary power transformers, distribution cabinets, revenue metering systems, a microwave transmission tower, voltage switch gear, a small control building, and a mechanical electrical equipment room. The substation would occupy an area of up to 10 acres and would be secured separately by an additional chain-link fence. The proposed location of the Project substation would be near the main site entrance.

### **2.1.4 Site Security and Fencing**

Each solar array would be enclosed within a chain-link fence, potentially with barbed wire on top, measuring up to eight feet in height (from finished grade). The fence would have controlled access points, and possibly security alarms, security camera systems with remote monitoring, and security guard patrols to deter trespassing and/or unauthorized activities. Additional fencing also would be installed around the on-site substation.

Temporary desert tortoise exclusion fencing would be installed outside of the chain-link perimeter fence during construction and kept in place during construction. The permanent perimeter fence would be

installed to leave a six- to eight-inch opening at the bottom of the fence to allow for the movement of desert tortoises and other wildlife across and through the site when the temporary tortoise fence is removed following construction. The specifications for the perimeter fencing would be determined through consultation with the USFWS. Substation fencing would include approved desert tortoise exclusion fencing to prevent tortoises from entering the substation.

#### **2.1.5 Communication Systems Infrastructure**

Telecommunications systems would be installed at the Project substation consisting of a remote terminal unit (RTU) and equipment necessary for the solar facility. This equipment would include a communications line (i.e., T-1 line), and/or a microwave receiver mounted on the control building or on a lattice tower up to 100 feet tall, and miscellaneous communication cables and link equipment, as required. Fiber optics would be installed in one of the shield wires of the gen-tie line to link the Project substation to the Reid Gardner Substation. In addition, an up to 100-foot-tall structure may be erected near the substation/control building to facilitate wireless communications to provide site telecommunications.

The Project would have a Supervisory Control and Data Acquisition (SCADA) system that would allow for the remote monitoring and control of inverters and other Project components. The SCADA system would be able to monitor Project output and availability and to run diagnostics on the equipment. This equipment would be located in the site substation and would connect to the communications system.

#### **2.1.6 Internal Project Roads**

Existing roads / primary access roads would provide access between the three solar field areas. Within the solar fields access ways would be built to provide vehicle access to the solar equipment (e.g., PV modules, inverters, BESS, transformers) for O&M activities. Turnarounds would be constructed at the terminus of interior access roads to facilitate vehicle and equipment turn-around. The existing soil surface of all interior access ways would be bladed. In addition to grading, interior access ways that lead to inverter stations would be compacted using onsite materials.

#### **2.1.7 Lighting**

Minimal lighting would be used on-site and would be directed inward and downward. Site lighting could include motion sensor lights for security purposes. Lighting used on-site would be of the lowest intensity foot candle level and in compliance with any applicable requirements from the Moapa Band as measured at the property line after dark.

#### **2.1.8 Water Supply**

The Project's construction water requirements would be met from existing water rights owned by the Moapa Band. The Applicant would have access to this water supply through an agreement with the Moapa Band. This water would be provided either from an existing tribal well located off-site approximately 4.7 miles south of the solar Project or a new well drilled on-site. If the selected water supply is the off-site well, water would be delivered to the site during construction by a temporary water pipeline or trucks.

Up to 500 acre-feet (AF) of water would be required over the approximately 12 to 14 months for construction-related activities, including dust control. During operations, water demand for panel washing and O&M domestic use is not expected to exceed 10 acre-feet per year (AFY). A small water treatment system could be installed to provide deionized water for panel washing. One or more aboveground water storage tanks could be located on-site near the site entrance.

### **2.1.9 Wastewater Treatment**

Wastewater generated during construction and operation would include sanitary waste. Portable toilets would be used during construction and operation.

### **2.1.10 Waste and Hazardous Materials Management**

The primary wastes generated at the Project during construction and O&M would be nonhazardous solid and liquid wastes. Limited quantities of hazardous materials would be used and stored on the solar site. The BESS would contain lithium-ion batteries that would need replacement periodically, and the used batteries would need to be disposed of according to appropriate protocols. The primary hazardous materials on site during construction would be the fuels, lubricating oils and solvents associated with construction equipment. The nonhazardous wastes produced by construction and O&M activities would include defective or broken electrical materials and batteries, empty containers, the typical refuse generated by workers, and other miscellaneous solid wastes.

The Applicant would prepare an Emergency Response Plan and a Spill Response Plan to address waste and hazardous materials management including BMPs related to storage, spill response, transportation, and handling of materials and wastes. Waste management would emphasize the recycling of wastes where possible and would identify the specific landfills that would receive wastes that cannot be recycled.

### **2.1.11 Fire Protection**

The Project's fire protection water system may be supplied from the water storage tank(s) which would have the appropriate fire department connections to facilitate use for fire suppression purposes and be consistent with Clark County requirements. During construction, one temporary firewater pump would deliver water to the fire protection water-piping network. Fire protection pump flow rates would be in accordance with applicable fire safety standards.

The electrical equipment enclosures that house the inverters, transformers, and BESS would be metal structures. Any fire that could occur would be contained within the structures which would be designed to meet National Electric Manufacturers Association (NEMA) 1 or NEMA 3R IP44 standards for electrical enclosures (heavy duty sealed design to withstand harsh outdoor environmental conditions).

The construction contractor would develop and implement a Fire Management Plan for construction and the Applicant would prepare and implement a Fire Management Plan for operations.

## **2.2 Off-site ROWs**

As discussed previously, the primary off-site ancillary facilities needed to support the Project includes a gen-tie line, access roads, and a temporary water pipeline. The approximate length and acreage of each of these ROWs broken down by land jurisdiction is provided in **Table 2-2** and a description of each of these facilities follows.

### **2.2.1 Gen-tie Transmission Line**

The Project would require the construction of an up to approximately 10.3-mile single-circuit 230 kV gen-tie for interconnection to the regional transmission grid system. The proposed gen-tie route would originate from the Project substation on tribal land and would be located within the designated BLM utility corridor where it would parallel the newly constructed ESM gen-tie line for approximately 7.1 miles. It would then enter BLM-administered lands for approximately 0.8 mile, then cross private lands owned by



NVE for approximately 1.1 miles, and then cross BLM-administered lands for another approximately 1.2 miles terminating at a Point of Change of Ownership (POCO) structure near NVE’s Reid Gardner Substation. The gen-tie would be designed to accommodate transmission of energy generated by the Project and an approximate 75-foot-wide ROW would be required from BLM for the gen-tie line. **Figure 2-5** shows the location of the proposed gen-tie route and **Table 2-3** below provides the Township, Range, and Section(s) that would be crossed by the proposed gen-tie line broken down by land managing agency with jurisdiction.

<b>Table 2-3</b>		
<b>General Legal Description of Proposed Gen-Tie Line by Jurisdiction</b>		
<b>Reservation</b>		
Township 15 South	Range 65 East	
<b>BLM (within designated utility corridor)</b>		
Township 15 South	Range 65 East	Sections 12, 13, 14, 22, 23, 27, 28, 32, and 33
<b>BLM (on federal land)</b>		
Township 16 South	Range 66 East	Sections 5, 6, and 7
<b>Private</b>		
Township 16 South	Range 66 East	Sections 5 and 6

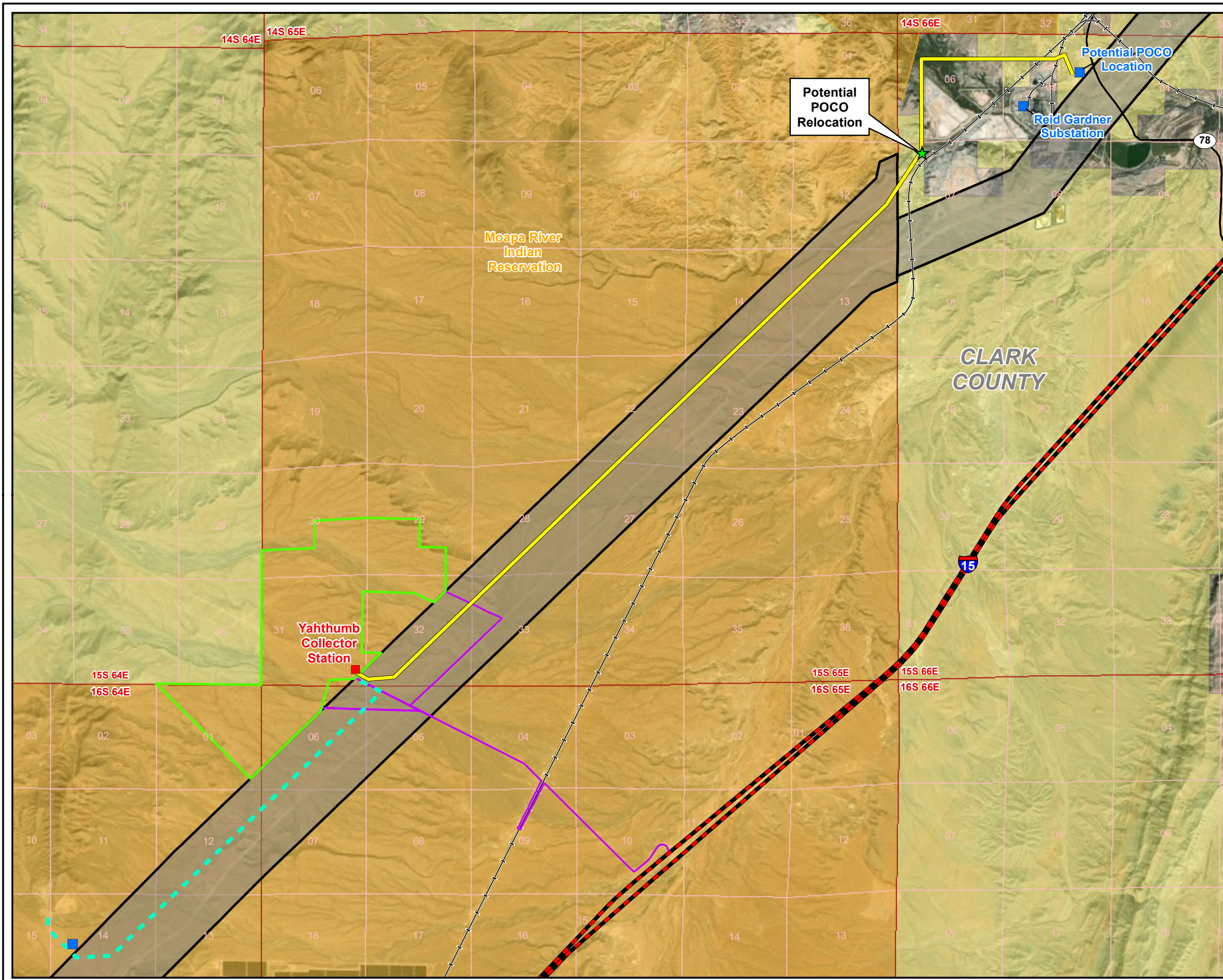
Information based on the Mount Diablo Base Meridian

It is possible that the POCO location could change from its originally proposed location as shown on **Figure 2-5**. In either case, the Applicant would construct the gen-tie from the Project substation to the POCO structure and the remaining portion of the gen-tie would be constructed by NVE to the Reid Gardner Substation.

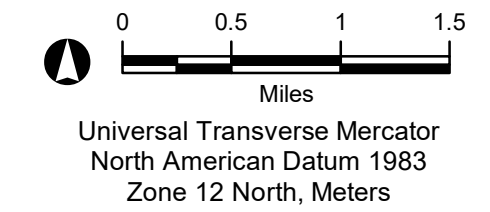
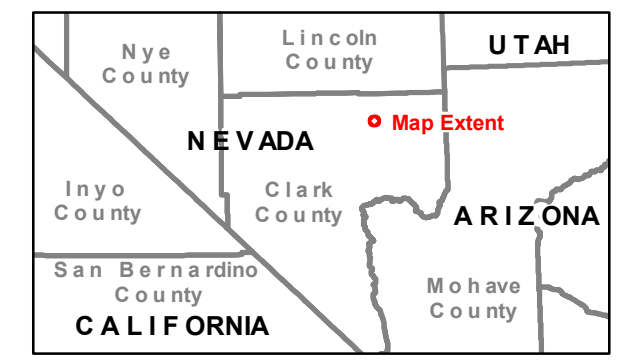
The portion of the overhead 230 kV line on federally administered lands would be installed on structures spaced approximately 700 to 900 feet apart depending on topographic, hydrologic, and geologic conditions of the underlying lands. The structures would be up to approximately 150 feet tall (above grade) with minimum ground clearance of 25 feet per local and national electrical code requirements. In addition, one of the shield wires on the gen-tie would include a fiber optic communications cable providing a communications link between the Project substation and the Reid Gardner Substation. **Figure 2-6** shows the dimensions of the typical steel pole transmission structure proposed for this Project.

Access along the entire length of the gen-tie ROW would be provided via the existing roads associated with the recently constructed ESM gen-tie line. Short spur roads would be built from this existing road where needed to access each new structure location along the proposed gen-tie. **Figure 2-7** shows an illustration of how the existing ESM gen-tie road would be utilized to provide the needed access for the proposed gen-tie.

All overhead electrical lines would be designed and installed in accordance with the Avian Power Line Interaction Committee's (APLIC) Suggested Practices for Avian Protection on Power Lines (APLIC 2006). The Applicant would also prepare a Bird and Bat Conservation Strategy (BBCS) to address potential impacts to birds and bats during construction, operations, and maintenance phases of the Project.



- ### Legend
- Project Components**
- Substation
  - Yahthumb Collector Station
  - ★ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Access Road
  - - - Temporary Water Pipeline
  - Yahthumb Solar Site
- General Features**
- - - Interstate
  - Major Highway
  - + + + Railroad
  - Stream / River
  - Designated Utility Corridor
  - Township
  - Section
- Land Jurisdiction**
- Bureau of Land Management Land
  - Indian Land



**Yahthumb Solar Project**

**Figure 2-5**  
**Project Off-site Facilities**

Map Extent: Clark County, Nevada

Date: 10-19-21	Author: sjw
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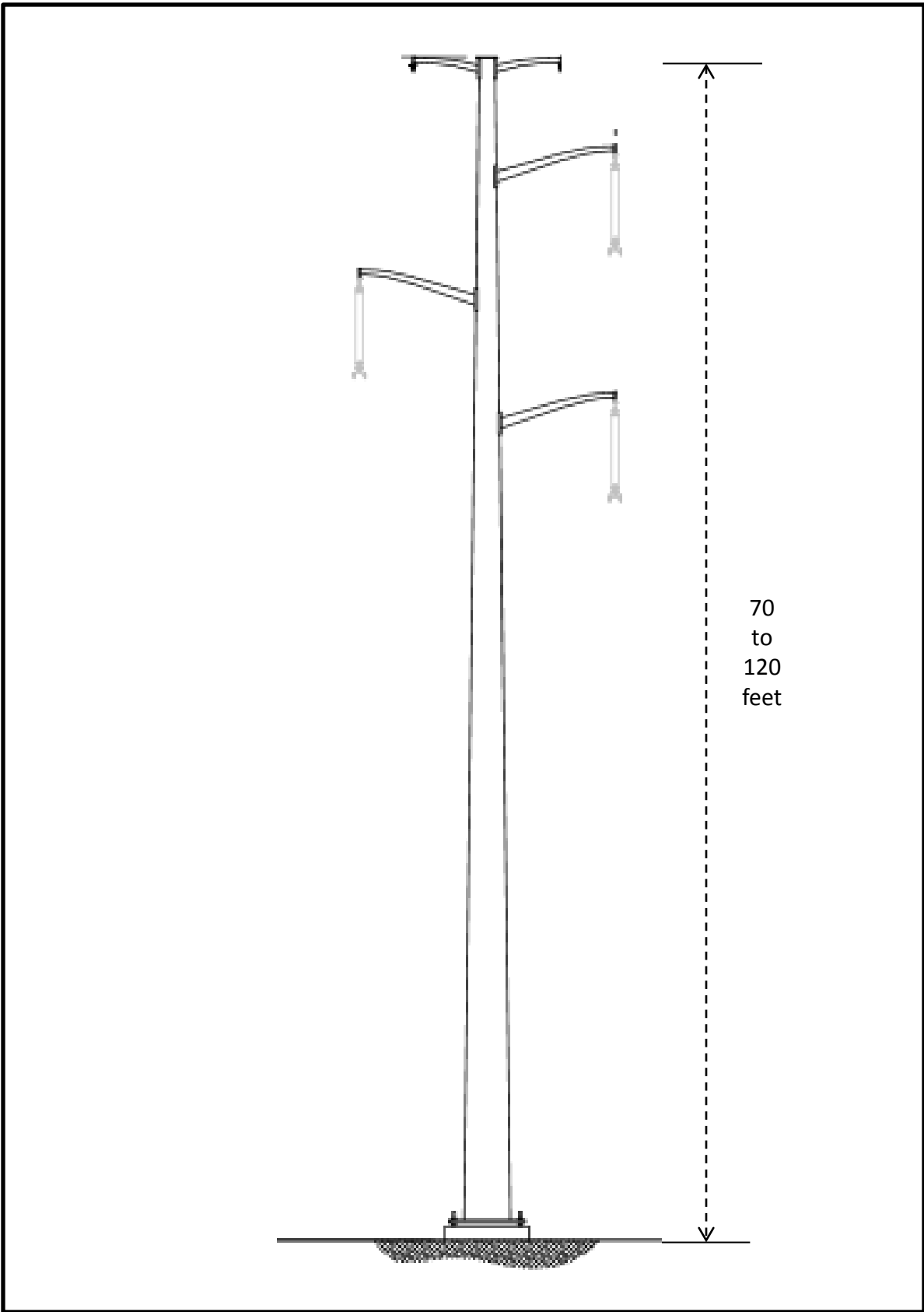
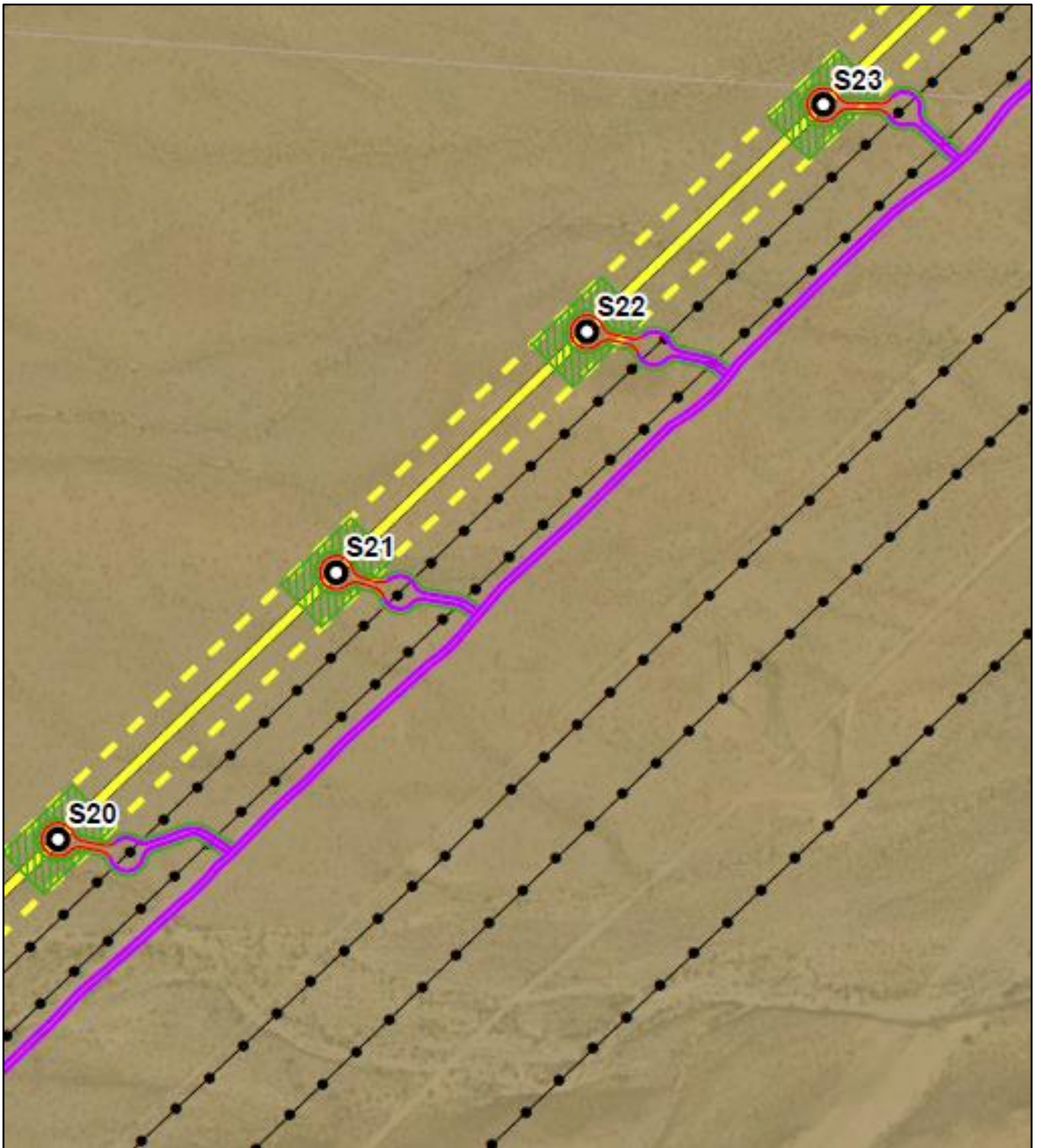


Figure 2-6

Typical 230 kV Single-Circuit Steel Pole Structure



- Existing ESM Gen-Tie Access
- Proposed YSP Gen-Tie Access

**Figure 2-7**

Illustration  
 Proposed Yahthumb Project Gen-Tie Access  
 Utilizing Existing ESM Gen-Tie Access

### 2.2.2 Site Access Roads

Primary access to the Yahthumb Project site for construction and through operations and decommissioning would be provided via the existing Ute Road which is located on the Reservation and is accessed via an existing interchange on I-15. The existing Ute Road would provide access to central and southern portions of the solar site. An existing road within the corridor would be upgraded from Ute Road for about 1.1 miles with a new spur road built for about 0.5 mile to provide access to the northern portion of the solar site.

Secondary access would be provided via existing roads within the designated utility corridor. Access to these roads would be via I-15, USA Highway 93, and North Las Vegas Boulevard to existing improved roads on the Reservation. These existing roads on the Reservation to be used for secondary site access include the road built to provide access to the nearby existing K Road Solar Facility and the ESM Project. From the K Road and ESM access points, the existing road within the utility corridor would be upgraded for about 2.5 miles to provide access to the Yahthumb Project.

**Figure 2-5** shows the location of the existing Ute Road and the secondary roads that would be used. All site access road ROWs (existing and proposed) would be 24 feet wide.

### 2.2.3 Temporary Water Pipeline

If the water needed for construction is provided from the Moapa Band's existing well located south of the solar Project site, a temporary water pipeline could be installed to transport that water to the site. This pipeline would be approximately 4.7 miles long, eight to 12 inches in diameter, and installed on the ground surface adjacent to the existing gen-tie service road for the ESM gen-tie. The temporary ROW for this pipeline would be 25 feet wide. Following the completion of construction, the pipeline would be removed. At periodic intervals, it could be elevated on blocks to allow the passage of desert tortoise and other small animals.

## 2.3 Proposed Project Construction

Prior to any activity on the site, required resource protection plans would be developed and regulatory and permit conditions would be integrated into the final construction compliance documents. Project construction would begin once all applicable approvals and permits have been obtained. Construction is expected to take approximately 12 to 14 months and would include mobilization, grading and site preparation, installation of drainage and erosion control measures, PV panel/tracker assembly, and solar field, BESS, substation, and gen-tie construction.

### 2.3.1 Solar Field Construction

Construction of the solar Project would incorporate the following steps:

**Surveying/Staking** - Prior to the initiation of construction, the limits of construction disturbance areas would be determined by surveying and staking. Where necessary, the construction areas and sensitive areas to be avoided would be flagged with appropriate buffers so all construction activities would be limited to prevent unnecessary impacts to the sensitive areas.

**Clearance Surveys/Temporary Fencing** - During the site clearance phase, the boundaries of the construction areas would be surveyed for sensitive species during appropriate timeframes. Approved temporary tortoise fencing would be installed around the perimeter of the construction areas to prevent

tortoise from moving onto the site from adjacent areas. Authorized biologists would be retained to survey for and relocate desert tortoise and perform other sensitive species surveys, removal, and mitigation.

**Vegetation Removal** - Vegetation would be permanently cleared from internal Project roadways and at inverter equipment, the BESSs, and the substation. Within the solar field, native vegetation would be left in place to the extent possible with some mowing and selective trimming as needed to create a safe work environment and avoid interference with the movement of the solar panels. Prior to construction, vegetation within the solar arrays would be mowed to a height of 18 inches leaving the roots intact to facilitate regrowth during operations. Construction equipment would drive over and crush the vegetation during installation of the arrays.

**Site Clearing/Grading/Excavation** - The cuts and fills associated with all earthwork required on the site are planned to be balanced on-site. Within the solar field, grading would be limited but some grading would be required for the Project substation, O&M area, BESS area(s), perimeter roads around the solar arrays, and electrical equipment pads. A small pad could also be graded within each solar array to accommodate the inverter and transformer, or they could be installed on driven piers.

**Gravel/Aggregate/Concrete** - Concrete would be trucked in and poured in place for equipment, gentle structures, and foundations (BESS, inverters). Aggregate material would be used for parking areas, substation area, and where needed for the perimeter road and access roads. Riprap material could be required for erosion control. This material would be sourced from the Moapa Band, as available.

**PV Solar Array Assembly and Construction** – The construction sequence for the solar field equipment would follow a generally specified order for each array. Construction work within each array would generally proceed as follows:

- Install foundations for inverter units
- Prepare trenches for underground cable within each array
- Install underground cable as required
- Backfill trenches
- Install inverter and transformer equipment
- Install steel posts and tracker assemblies
- Install PV modules
- Install concrete footings for transformers, and substation equipment
- Install foundations for batteries
- Install battery containers and supporting equipment
- Perform electrical terminations
- Inspect, test, and commission equipment

Cable trenches within the arrays would contain electrical conductors for low-voltage power collection and fiber optic cables for equipment communication. Trenches would vary between three to 10 feet wide and three to four feet deep. Trench excavation would be performed with conventional trenching equipment,

and excavated soil would be placed adjacent to the trench and used as backfill once installation is complete.

The assembled solar equipment would be installed on steel posts to which steel tracker assemblies would be attached. The structural steel posts may be galvanized to mitigate corrosive soils, as needed. Trucks would be used to transport the PV modules to the solar field. Final solar field assembly would require small cranes, tractors, and forklifts.

Standard transmission line construction techniques would be used to construct the 34.5 kV collector lines where constructed overhead - foundation installation, tower installation, and conductor stringing. Wooden poles used for the overhead 34.5 kV collector line would be directly embedded into the ground and would be installed by auguring holes and placing the poles into the holes using backhoes or heavy lifter vehicles.

**Substation Construction** - The Project substation would be constructed on the solar site in compliance with applicable electrical safety codes. The on-site substation would require a graded site to create a relatively flat surface with approximately one percent maximum slope in any direction. The substation area would be excavated to a depth of approximately 10 feet, a copper grounding grid designed to meet the applicable electrical requirements would be installed, and the foundations for transformers and metal structures would be prepared. Final ground grid design would be based on site-specific information such as available fault current and local soil resistivity. Typical ground grids consist of direct buried copper conductors with copper-clad ground rods arranged in a grid pattern covering the substation area plus a small buffer outside the fence. After installation of the grounding grid, the area would be backfilled, compacted, and leveled followed by the application of aggregate rock base. Installation of the transformers, breakers, buswork, and metal dead-end structures would follow. A containment area around the transformers would be sized to hold the full volume of oil within the transformers and lined with an impermeable membrane covered with gravel to capture any expected leaks. A prefabricated control house would be installed to house the electronic components required for the substation equipment.

### 2.3.2 Gen-Tie Construction

Prior to construction, geotechnical surveys involving drilling boreholes could be conducted along the line to provide information for the foundation design of the structures and access roads. Construction equipment access would be required at each transmission structure. The Project would use the existing access roads associated with the adjacent ESM gen-tie with spur roads developed to get drilling and construction equipment to each structure location for the Yahthumb Project gen-tie line.

Construction of the gen-tie would begin with development of spur roads where they are needed to each structure location. Spur roads would typically be 12 feet wide. Vegetation would be removed, the surface would be bladed, and compacted only where necessary to ensure work safety and stability if needed. Roads would be left in place for use during O&M but would not be maintained following construction.

To access the gen-tie service roads, construction vehicles would use the existing Hidden Valley Road near the Reid Gardner Substation on the northern end of the gen-tie route and the upgraded solar site access road for the southern end of the gen-tie route.

**Structure Sites** - An approximately 125-foot by 50-foot (6,250 square-foot or 0.15 acres) area would be needed around each of the structure sites for construction. These areas would be temporarily disturbed



during the construction period and would be cleared of vegetation only as required for safety and efficiency. Holes would be developed for each transmission structure using a truck-mounted drill rig or a standalone auger rig if required. The poles would be set within an augured hole (for tangent structures) or on a concrete pier foundation (dead-end structures).

**Foundation Installation** - The steel poles used for the gen-tie would be supported by steel-reinforced poured pier concrete foundations where needed for the conditions at each structure site. The primary equipment used in setting foundations would be concrete trucks, auger rigs, pickup trucks, crane, and front-end loaders. These foundations would be constructed by auguring a cylindrical hole using a truck-mounted drilling rig. Reinforcing steel and anchor bolt cages would be installed in the hole and then the hole would be backfilled with concrete. Foundations could range in size from approximately four to seven feet in diameter and from 12 to 30 feet in depth. Larger diameter and deeper foundations would be needed where the transmission line turns at an angle of 30 degrees or greater. Excavated spoil material would be spread around the temporary work areas.

**Structure Installation** - Structures would be staged in designated laydown/stringing areas or delivered and unloaded adjacent to their respective final locations. Poles would be delivered on a flat-bed trailer and lifted into place using a crane. For direct-imbedded (tangent) poles, the open space between the poles and walls of the auger holes would be backfilled with concrete or soil. The poles would be supported, as necessary, during installation to ensure correct pole seating in the hole or on the foundation.

**Conductor Stringing** - After the structures are erected, the conductors and static wires would be strung between them and attached. Pull and tensioning sites are the locations where equipment would be located to pull the conductors and wires into place. Multiple pulling and tensions sites would be required for installing the conductors on the transmission structures, and these sites would be approximately 75 feet wide by 400 feet long and located within the ROW except at angle structures where they would be at least partially outside the ROW. Stringing would likely be conducted one conductor at a time, with all equipment in the same location until all lines are in place.

Conductor stringing is typically accomplished with heavy-duty trucks and telescoping boom lift. If necessary, some sections of line could be strung either by helicopter or by walking a light pulling rope between structures that is used to pull in the heavier conductor. If helicopters are used to support the conductor stringing operations, in addition to installing the ropes and cables between stringing sites, they could also be used to transport line workers, clip ladders, and other tools between pole locations. It is anticipated that one of the lay-down yards on the solar site would be used for helicopter staging. Where used, helicopter duration for construction at any one structure location would be about 20 to 30 minutes per structure. More details regarding helicopter use would be included in a detailed project-specific Helicopter Flight and Safety Plan developed prior to construction.

Truck-mounted cable-pulling equipment would be placed at the first and last towers or poles in a segment - pulling equipment at the front end and braking or tensioning equipment at the back end. After the conductors are pulled through the segment, they would be attached to the insulators, and the conductor tension would be increased to achieve a ground clearance of at least 25 feet prior to moving to the next section.

**Equipment/Personnel** - Typical equipment expected to be used for transmission line construction include bulldozers, graders, compactors, drilling rigs, cranes, boom trucks, flat-bed trucks, crew trucks, concrete trucks, bucket lift trucks, and heavy-duty trucks (puller and tensioner).

### **2.3.3 Solar Site Access Road Construction**

The existing Ute Road on the Reservation would provide primary access to the Yahthumb Project site. It is expected that minimal improvement would be needed for this road but some improvements to the low water crossings are expected to be needed.

### **2.3.4 Site Stabilization, Protection, and Reclamation**

During and following construction of both on-site and off-site facilities, appropriate water erosion and dust-control measures would be implemented to prevent increased dust and erosion around the site. Dust generated by construction would be controlled and minimized by applying water (obtained from the Moapa Band). If needed to control dust during construction, agency-approved palliatives could be applied to newly constructed interior access roads after they are constructed at the beginning of the construction period.

Soil stabilization measures would be used to prevent soil being eroded by storm water runoff. The Applicant would employ BMPs to protect the soil surface from erosion. The construction contractor would develop and implement an erosion-control plan for the Project. Temporary laydown areas would be established in flat areas of the site and would not be bladed. The Applicant would prepare a final Site Restoration Plan that would outline all measures to be implemented immediately after construction.

### **2.3.5 Construction Workforce Schedule, Equipment, and Materials**

The construction workforce for the solar facility and gen-tie would consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The construction workforce is anticipated to be an average of 200 construction workers with a peak not expected to exceed 400 workers at any given time. Most construction staff and workers would commute daily to the jobsite from within Clark County, primarily from the Reservation and the Las Vegas area. The Applicant would prepare a Worker Environmental Awareness Plan (WEAP) for the Project that would address Project-specific safety, health, and environmental concerns, and all construction workers would be required to complete WEAP training.

Construction generally would occur between 5:00 a.m. and 7:00 p.m. and could occur seven days a week. Additional hours could be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier (e.g., at 3:00 a.m.) to avoid work during high ambient temperatures. Further, construction requirements would require some nighttime activity for installation, service or electrical connection, inspection, and testing activities. Nighttime activities would be performed with temporary lighting.

Initial grading work would include the use of primarily rubber-tired tractors, track-driven excavators, graders, dump trucks, and end loaders, in addition to the support pickups, water trucks, and cranes. Throughout the construction process, temporary aboveground fuel storage tanks would be located at the site for construction equipment fueling. For civil work, equipment would include road graders, trenching machines, pumps, excavators for foundations, tractors, and additional support vehicles. Construction materials such as concrete, pipe, PV modules, wire and cable, fuels, reinforcing steel, and small tools and consumables would be delivered to the site by truck.

### **2.3.6 Construction Traffic**

Typical construction traffic would consist of trucks transporting construction equipment and materials to and from the site and vehicles of management and construction employees during the construction

period. Most construction staff and workers would commute daily to the jobsite from within Clark County, primarily from the Reservation and Las Vegas area. Most construction traffic would use the site's primary access - I-15 to the existing Ute Road across the Reservation to the site. Some construction traffic would also occur on the secondary access road (water pipeline/delivery). The construction contractor would prepare a Transportation Management Plan to address Project-related traffic.

### **2.3.7 Health and Safety Program**

The Applicant would require that all employees and contractors adhere to appropriate health and safety plans and emergency response plans. All construction and operations contractors would be required to operate under a Health and Safety Program (HASP) that meets industry standards. All site personnel would be required to go through a new hire orientation and follow the worker's environmental awareness program (WEAP) outlining safety, health, and environmental requirements.

## **2.4 Temporary Construction Facilities (to be removed following construction)**

### **2.4.1 On-site Temporary Project Construction Facilities**

The Project construction contractor would establish a total of approximately 20-acres of temporary construction laydown areas near the main entrance to the solar field lease area and in various other locations within each individually fenced portion of the solar field. The selected areas would be cleared of vegetation but would not need to be bladed or compacted. Where practical, laydown areas used to facilitate construction of one portion of the solar facility would be developed with the solar arrays. Following construction, equipment would be removed from laydown areas not developed with solar arrays and allowed to revegetate using the guidance provided in the Project restoration and weed management plans.

An approximately 20-acre portion of the solar facility near the site entrance would be permanently used for development of the project substation and BESS. Although this entire area is included in the permanent disturbance acreage estimate, during construction, portions of this area would also be used for temporary construction trailers with administrative offices, temporary generators to provide power for the trailers and administrative offices during construction, construction vehicle parking, tool sheds, and equipment and construction materials delivery and storage. Following construction, these facilities would be removed from the site.

The portions of the site disturbed by construction and not covered by roads, BESS facilities, and the site substation would be allowed to revegetate following construction. Vegetation would be maintained to a height as needed for movement of the solar panels, site maintenance, and fire-risk management using mechanical and chemical controls.

### **2.4.2 Off-site Temporary Project Construction Facilities**

Temporary construction areas located off-site would be located at each gen-tie line structure location and at locations required for conductor stringing, splicing, and pulling operations to accommodate construction of the gen-tie. These areas would be required for staging equipment and materials for foundation construction and tower/conductor installation. In addition, a temporary water pipeline as described above could be located off-site to facilitate water delivery during construction. The acreages of these temporary disturbances are identified in **Table 2-2**.

## 2.5 Proposed Operation and Maintenance

### 2.5.1 On-site Project Facilities

The O&M requirements for a PV solar generation facility includes regular monitoring, periodic inspections, and conducting any needed maintenance. Operation of the Project is expected to require a workforce of up to four full-time-equivalent (FTE) positions. This workforce would include administrative and management personnel, operators, and security and maintenance personnel.

Routine maintenance would include periodic inspections and service. Panel washing could be conducted as needed to improve power generation efficiency. O&M would require the use of vehicles and equipment including crane trucks for minor equipment maintenance. Additional maintenance equipment would include forklifts, manlifts, and potential chemical application equipment for weed abatement. Pick-up trucks would be in daily use on the site. No heavy equipment would be used during normal plant operation.

Dust during O&M would be controlled and minimized by applying water and palliatives. Palliatives could be applied on areas that would not be disturbed during operation using a one-time application.

Safety precautions and emergency systems would be implemented as part of the design and construction of the Project to ensure safe and reliable operation. The Project would have an Emergency Response Plan (ERP) that would address potential emergencies including chemical releases, fires, and injuries. All employees would be provided with communication devices for an emergency.

The Applicant would prepare a weed management plan for the Project that follows an integrated approach as required by BIA and BLM. The weed plan would be implemented as needed during operations. Herbicides would be used to control noxious weeds, if required. Pest control may also be required on the solar site on tribal land, including control of rodents and insects inside of the buildings and electrical equipment enclosures.

### 2.5.2 Off-site Project Facilities

The gen-tie line would operate continuously throughout the life of the Project. Following construction, operational activities associated with the gen-tie would involve periodic inspection and occasional maintenance and repair. Bi-annual visual inspections would be conducted by ground crews to inspect insulators, overhead grounds, and transmission structure hardware. O&M activities could include insulator washing (as needed), repair or replacement of conductor (as needed), replacement of insulators (as needed), and response to emergency situations (outages) to restore power. Gen-tie access roads are not expected to require much regular maintenance but could be graded as needed to provide access to transmission structures for maintenance activities.

## 2.6 Proposed Project Decommissioning

The anticipated operational life of the Yahthumb Project would be up to 50 years after which, the Project would be decommissioned, and existing facilities and equipment would be removed. Some buried components (such as cabling) could potentially remain in place. Following decommissioning, the solar site would be reclaimed and restored according to applicable regulations at the time of decommissioning.

A draft Decommissioning Plan that provides its overall framework has been developed and is included as an appendix to the EIS. The final Decommissioning Plan would be developed near the time of

decommissioning in coordination with the Moapa Band and BIA and with input from other agencies as appropriate. The final plan would address future land use plans, removal of hazardous materials, impacts and mitigation associated with closure activities, schedule of closure activities, equipment to remain on the site, and conformance with the applicable regulatory requirements in force at that time.

Gen-tie components would also be decommissioned and removed from the ROW in accordance with local, state, and federal laws. Prior to dismantling or removal of equipment, staging areas would be delineated along the gen-tie as appropriate. All decommissioning activities would be conducted within designated areas anticipated to be within the boundaries of existing easements and ROWs.

Following decommissioning, the disturbed areas would be stabilized and revegetated according to BLM and BIA standards.

## 2.7 Management Plans, Best Management Practices, and Mitigation Measures

The following Management Plans would be prepared by the Applicants and would be submitted to the Moapa Band, BIA, BLM, and USFWS (as appropriate) for approval. Management plans not included as an appendix to the DEIS will be prepared and approved prior to implementation of the Project. In addition, the Proposed Action includes BMPs intended to avoid or reduce environmental impacts associated with the Project. These can be found in **Appendix C** of the DEIS. The plans are listed below:

- Site Restoration Plan
- Integrated Weed Management Plan
- Decommissioning Plan
- Traffic Management Plan
- Bird and Bat Conservation Strategy
- Raven Control Plan
- Gila Monster Reporting Protocol
- Desert Tortoise Translocation Plan
- Spill Prevention Control and Countermeasure Plan
- Emergency Response Plan
- Fire Management Plan
- Dust Abatement Plan
- Health and Safety Program
- Hazardous Materials and Waste Management Plan
- Stormwater Pollution Prevention Plan
- Site Drainage Plan
- Worker Environmental Awareness Program
- Unanticipated Discoveries Plan
- Blasting Plan (if needed)
- Helicopter Flight Safety Plan (if needed)

### 2.7.1 Minimization Measures

The following proposed minimization measures would be implemented as part of the Project proposed by the Applicant to avoid or reduce environmental impacts associated with the proposed action to federally protected species. Minimization will include the general conservation strategies (i.e., BMPs), as

well as adhere to the specific desert tortoise minimization measures and comply with the terms and conditions of the USFWS Biological Opinion (BO) issued for this Project.

### 2.7.2 Construction Minimization Measures

The following measures would be implemented to reduce effects on the desert tortoise and other terrestrial and avian wildlife species during construction, operation, and maintenance:

1. **Construction area flagging.** Work areas will be flagged prior to beginning construction activities and disturbance confined to the work areas. A biological monitor will escort all survey crews on site prior to construction. All survey crew vehicles will remain on existing roads and stay within the flagged areas to the maximum extent practicable. In cases where construction vehicles are required to go off existing roads, a biological monitor (on foot) will precede the vehicles.
2. **Desert tortoise fencing.** Temporary tortoise-proof fencing will be installed around the boundary of the solar facility. Biological monitors under supervision of an authorized biologist (approved by USFWS) will be present during fence installation to relocate all tortoises in harm's way to outside the work area. Additional clearance surveys and activities will be conducted after completion of the tortoise fence to ensure that no tortoises remain fenced inside the construction boundaries.

Fence specifications will be consistent with those approved by USFWS (USFWS 2009b). Installation of the temporary tortoise-proof fence would involve drive and crush construction techniques, where feasible, to minimize disturbance levels as much as possible. Tortoise guards will be placed at all road access points where desert tortoise-proof fencing is interrupted to exclude desert tortoises from the Project footprint. Gates or tortoise exclusion guards will be installed with minimal ground clearance and shall deter ingress by desert tortoises. The temporary tortoise-proof fencing will be removed once the Project is commissioned allowing tortoises to re-occupy the site during operations.

During the tortoise activity seasons (April – May, September - October), all new fences will be checked twice a day for the first two weeks after construction, or the first two weeks after tortoises become active if fence construction occurs in the winter, including once each day immediately before temperatures reach lethal thresholds. After the first two weeks, all tortoise exclusion fencing will be inspected monthly during construction, quarterly for the life of the Project, and immediately following all major rainfall events. Any damage to the fence will be repaired within two days of observing the damage.

3. **Field Contact Representative.** The BIA and Applicant will designate a Field Contact Representative (FCR) who will be responsible for overseeing compliance of the Terms and Conditions of the BO. The FCR will be onsite during all active construction activities that could result in the “take” of a desert tortoise. The FCR will have the authority to briefly halt activities that are in violation of the desert tortoise protective measures until the situation is remedied.

4. **Authorized desert tortoise biologist.** All authorized desert tortoise biologists (and monitors) are agents of BIA and USFWS and will report directly to BIA, USFWS, BLM, and the Applicant concurrently regarding all compliance issues and take of desert tortoises; this includes all draft and final reports of non-compliance or take. Authorized desert tortoise biologists, monitors, and the FCR will be responsible for ensuring compliance with all conservation measures for the Project as described in the BO. Prior to starting construction, authorized biologist(s) will submit documentation

of authorization from the USFWS and approval of NDOW. Potential authorized desert tortoise biologists will submit their statement of qualifications to USFWS.

An authorized desert tortoise biologist will record each observation of a desert tortoise handled in the tortoise monitoring reports. This information will be provided directly to BIA, USFWS, and BLM.

5. **Biological monitoring.** Under supervision of an authorized biologist, biological monitors will be present at all active construction locations (not including the solar field after it has been fenced with desert tortoise fencing and clearance surveys have been completed). Desert tortoise monitors will provide oversight to ensure proper implementation of protective measures; record and report desert tortoises and tortoise sign observations in accordance with approved protocol; and report incidents of noncompliance in accordance with the BO and other relevant permits. The biological monitor(s) will survey the construction area to ensure that no tortoises are in harm's way. If a tortoise is observed entering the construction zone, work in the immediate vicinity will cease until the tortoise moves out of the area. Tortoises found above ground during construction activities will be moved offsite by an authorized biologist following the protocols described in the Desert Tortoise Translocation Plan.

6. **Desert tortoise clearance surveys and translocation.** After installation of tortoise fencing around the perimeter of the solar facility and prior to surface-disturbing activities, biological monitors and the authorized desert tortoise biologists who supervise them will conduct a clearance survey to locate and remove all desert tortoises from harm's way including those areas to be disturbed, using techniques that provide full coverage of construction zones (USFWS 2009b).

No surface-disturbing activities shall begin until two consecutive surveys find no live tortoises. In sectors or zones where a live tortoise is found, surveys will be repeated until the two-pass standard is met.

An authorized biologist will excavate burrows potentially containing desert tortoises located in the area to be disturbed with the goal of locating and removing all desert tortoises and desert tortoise eggs. Typical tortoise burrows have a characteristic shape with a flat bottom and arched top similar to a capital letter 'D' with the flat side down. Clearance will include evaluation of caliche caves and dens will also be evaluated, as tortoises are known to shelter there. Caliche is a naturally occurring hardened cemented soil composed of calcium carbonate, gravel, sand, and silt. The practice of excavating every obvious tortoise burrow will not be done as it has shown to be ineffective and inefficient in locating tortoises; instead, all obvious tortoise burrows will be scoped for presence and possible extraction. During clearance surveys, all handling of desert tortoises and their eggs and excavation of burrows shall be conducted solely by an authorized desert tortoise biologist in accordance with the most current USFWS-approved guidance (USFWS 2009b). If any active tortoise nests are encountered, USFWS must be contacted immediately prior to removal of any tortoises or eggs from those burrows to determine the most appropriate course of action. Unoccupied burrows will remain in place to allow for tortoise use during operations. Outside construction work areas, all potential desert tortoise burrows and pallets within 50 feet of the edge of the construction work area will be flagged. If a desert tortoise occupies a burrow during the less-active season, the tortoise may be temporarily penned or will be translocated following USFWS approval, contingent upon weather conditions and health assessment results. No stakes or flagging will be placed on the berm or in the opening of a desert tortoise burrow. Desert tortoise burrows will not be marked in a manner that facilitates poaching. Avoidance flagging will be designed to be easily distinguished from access route or other flagging and will be designed in consultation with experienced construction personnel and authorized biologists. This flagging will be removed following construction completion.

An authorized desert tortoise biologist or biological monitor will inspect areas to be backfilled immediately prior to backfilling. Burrows with the potential to be occupied by tortoises within the construction area will be searched for presence. In some cases, a fiber optic scope will be used to determine presence or absence within a deep burrow.

A translocation plan following the 2019 guidance will be approved by the USFWS prior to the start of construction (USFWS 2019a). The plan identifies potentially suitable release areas, control site options, post-translocation densities, procedures for pre-disturbance clearance surveys and tortoise handling, as well as disease testing and post-translocation monitoring and reporting requirements. Tortoises found within 500 meters of the project boundary (fenceline) will be relocated outside of the nearest fence to a location that contains suitable habitat; tortoises found within the interior of the project site (>500 meters from a boundary fence) would be moved to temporary pens for the duration of construction and may be returned to the solar facility interior (as close to the original capture location as possible) as soon as construction activities are complete.

BIA and the Applicant will have an authorized biologist relocate tortoises following the USFWS- approved protocol (USFWS 2009b) and according to the approved translocation plan. If the USFWS releases a revised protocol for handling desert tortoises before initiation of Project activities, the revised protocol will be implemented. The relocation/translocation effort will adhere to the following procedures as well as those stipulated in the BO Terms and Conditions:

Tortoises found within the Project area will be relocated outside of the ROW to an area of suitable habitat as directed by the USFWS. Translocation will follow installation of exclusionary tortoise fence, as determined in coordination with the agencies. Translocation events will occur to specific locations outlined in the approved Project-specific translocation review package (TRP) and disposition plan, based on construction and translocation timing considerations for each tortoise. The Project will employ two strategies for translocating tortoises, depending on the initial capture location of each animal.

1. **Short-distance Relocations:** Tortoises found within 500 meters of the solar site fenceline or within the gen-tie construction area would be relocated to areas immediately outside of the Project's temporary exclusion fencing or outside of harm's way in the vicinity of the gen-tie ROW. Following the completion of construction, the exclusion fencing would be removed; the permanent site fencing would be permeable to desert tortoises and existing vegetation on the Project site is expected to be left relatively intact during construction and operation of the Project. Therefore, the short-distance translocation strategy is designed to allow tortoises to freely re-occupy the site following construction.
  2. **Indirect Translocation or return to project site:** Tortoises found in the interior of the solar site fenceline (>500 meters from the exclusion fence) would be moved to temporary pens for the duration of construction and may be returned to the solar facility interior (as close to the original capture location as possible) as soon as construction activities are complete. Pinned tortoises may be translocated to an alternate suitable location following construction, as determined on a case-by-case basis through consultation with the USFWS.
- An authorized biologist will perform health assessments and draw blood samples for each tortoise to be relocated. Blood testing will determine whether any desert tortoise suffer from upper respiratory tract disease (URTD).



- Tortoises will be temporarily tagged with combination global positioning system (GPS)/radio-transmitter tags so that the tortoise can be retrieved and handled as directed by the USFWS if the results of blood work indicate that a tortoise is infected with URTD.
- When determining a release location for an individual tortoise, release site preference will be to find a like-for-like shelter resource. Every attempt will be made to find similar cover sites and habitat to that at the location of each individual on the Project site, otherwise all translocatees shall be released at the most appropriate and available unoccupied shelter sites (e.g., soil burrows, caliche caves, rock caves, etc.). Because of the impermanent nature of soil burrows and cave availability, prior to submitting the final Disposition Plan and determining exact areas of release, potential release sites will be re-investigated for existing burrows and caliche or rock caves that can be used for shelter sites. Known active/inactive tortoise burrows discovered during the surveys would be re-investigated for this purpose. If insufficient shelter sites exist in an area to be used for translocation, the Applicant shall coordinate with the agencies to determine the most appropriate course of action, such as reviewing an alternate release site, modifying/improving existing burrows and partial burrows, or artificially creating burrows per USFWS protocols, prior to translocation. The number of artificial burrows per translocated tortoise will be included in the TRP/Disposition Plan, as feasible, and may include more than one burrow per tortoise to increase translocation success (i.e. tortoises remaining within their release locations). The disposition of relocated tortoises will be evaluated and reported on following the Terms and Conditions of the BO.
- If a tortoise voids its bladder while being handled, it will be given the opportunity to rehydrate before release. Tortoises will be offered fluids by soaking in a shallow bath, or an authorized desert tortoise biologist will administer nasal-oral fluid or injectable epicoelomic fluids. Any tortoise hydration support beyond offering water or shallow soaking would only be provided by an authorized biologist who has received advanced training in health assessments and been specifically approved by USFWS for these procedures.

7. **Biological Sample Archiving.** Any samples collected during desert tortoise health assessments that are not used for tests would be archived with UCLA, and appropriate fees would be paid by the Applicant. The fee would be assessed at the time of sample collection and adjusted for inflation using the Bureau of Labor Statistics' consumer price index. As of October 2020, the archiving fee amount was \$3,000.

8. **Integrated Weed Management Plan.** Prior to construction, an Integrated Weed Management Plan will be developed that includes measures designed to reduce the propagation and spread of designated noxious weeds, undesirable plants, and invasive plant species, or as determined by the cooperating or reviewing agencies (BIA, BLM, NDOW, etc.). Measures in the plan will include, but are not limited to the following:

- Areas with current weeds will be mapped. Topsoil with the presence of weeds will not be salvaged and reused elsewhere in the Project. The topsoil from such areas will be disposed of properly.
- Inspect heavy equipment for weed seeds before they enter the Project area. Require that such equipment be cleaned first to remove weed seeds before being allowed entry. Clean equipment that has been used in weed infested areas before moving it to another area.

- Any straw or hay wattles are used for erosion control must be certified weed free.

9. **WEAP.** A WEAP will be presented to all personnel onsite during construction. This program will contain information concerning the biology and distribution of the desert tortoise, desert tortoise activity patterns, and its legal status and occurrence in the proposed Project area. The program will also discuss the definition of "take" and its associated penalties, measures designed to minimize the effects of construction activities, the means by which employees limit impacts, and reporting requirements to be implemented when tortoises are encountered. Personnel will be instructed to check under vehicles before moving them as tortoises often seek shelter under parked vehicles. Personnel will also be instructed on the required procedures if a desert tortoise is encountered within the proposed Project area. WEAP training will be mandatory, as such, workers will be required to sign in and wear a sticker on their hardhat to signify that they have received the training and agree to comply.

10. **Internal Site Access roads.** Construction access will be limited to the Project area and established access roads. Vehicle travel off established internal site access roads will be minimized as practicable.

11. **Speed limits and signage.** Until the desert tortoise fence has been constructed, a speed limit of 15 miles per hour will be maintained during the periods of highest tortoise activity (March 1 through November 1) and a limit of 25 mph during periods of lower tortoise activity. This will reduce dust and allow for observation of tortoises in the road. Speed-limit and caution signs will be installed along access roads and service roads. After the tortoise proof fence is installed and the tortoise clearance surveys are complete, speed limits within the fenced and cleared areas will be established by the construction contractor and based on surface conditions and safety considerations and remain with limits established by USFWS in the BO.

12. **Trash and litter control.** Trash and food items will be disposed properly in predator proof containers with resealing lids. Trash will be emptied and removed from the Project site on a periodic basis as they become full. Trash removal reduces the attractiveness of the area to opportunistic predators such as ravens, coyotes, and foxes. Measures to reduce the subsidy of ravens and other avian predators/scavengers are discussed in greater detail in the Raven Control Plan (**Appendix I** of the DEIS).

13. **Raptor control.** The applicant will inspect structures annually for nesting ravens and other predatory birds and report observations of nests to the USFWS and BIA. Transmission line support structures and other facility structures will be designed to discourage their use by raptors for perching or nesting (e.g., by use of anti-perching devices) in accordance with the most current APLIC guidelines (APLIC 2006, 2012). In addition to increasing desert tortoise protection, following these guidelines during transmission line construction will reduce the possibility of avian electrocution and other hazards.

14. **Overnight hazards.** No overnight hazards to desert tortoises (e.g., auger holes, trenches, pits, or other steep-sided depressions) will be left unfenced or uncovered; such hazards will be eliminated each day prior to the work crew and monitoring biologists leaving the site. All excavations will be inspected for trapped desert tortoises at the beginning, middle, and end of the workday, at a minimum, but will also be continuously monitored by a biological monitor or authorized biologist. Should a tortoise become entrapped, the authorized biologist will remove it immediately.

When outside of the fenced areas of the Project site, Project personnel will not move construction pipes greater than 3 inches in diameter if they are stored less than 8 inches above the ground until they have inspected the pipes to determine the presence or absence of desert tortoises. As an alternative, the Applicant may cap all such structures before storing them outside of the fenced area.

15. **Blasting.** If blasting is required in desert tortoise habitat, detonation will only occur after the area has been surveyed and cleared by an authorized desert tortoise biologist no more than 24 hours prior. A 200-foot radius buffer area around the blasting site will be surveyed and all desert tortoises above ground within this 200-foot buffer of the blasting site will be moved 500 feet from the blasting site, placed in unoccupied burrow, and temporarily penned to prevent tortoises that have been temporarily relocated from returning to the site. Tortoises located outside of the immediate blast zone and that are within burrows will be left in their burrows. All burrows, regardless of occupied status, will be stuffed with newspapers, flagged, and location recorded using a global positioning system (GPS) unit. Immediately after blasting, newspaper and flagging will be removed. If a burrow or cover site has collapsed that could be occupied, it will be excavated to ensure that no tortoises have been buried and are in danger of suffocation. Tortoises removed from the blast zone will be returned to their burrow if it is intact or placed in a similar unoccupied or constructed burrow.

16. **Penning.** Tortoises may be held *in-* or *ex-situ* (e.g., if temperatures do not allow for translocation, or if tortoises do not pass the health assessment) for a maximum of 12 months. Previously constructed and approved enclosure pens are present adjacent to the Project site and would be used if any quarantine is necessary. Quarantine is not the preferred option for tortoises to be translocated and would only be used as necessary, in coordination with USFWS. This penning is not the same as the temporary penning described in the blasting measure.

17. **Stormwater Pollution Prevention Plan.** The applicant will oversee the establishment and functionality of sediment control devices as outlined in the stormwater pollution prevention plan.

18. **Tortoise Encounters During Construction.** If a tortoise is injured as a direct or indirect result of Project construction activities, it shall be immediately transported to a veterinarian or wildlife rehabilitation facility and reported within 24 hours or the next workday to the Service. Any Project construction-related activity that may endanger a desert tortoise shall cease in the area if a desert tortoise is encountered on the Project site. Project construction activities may resume after an Authorized Biologist removes the desert tortoise from danger or after the desert tortoise has moved to a safe area.

### 2.7.3 Operations and Maintenance Minimization Measures

The following minimization measures will be implemented during O&M of the Proposed Action to reduce effects on the desert tortoise and other species:

19. **WEAP Training.** WEAP training will be required for all O&M staff for the duration of the Project. In addition to an overview of minimization measures, the training will include specific BMPs designed to reduce effects to the desert tortoise. All Project personnel will check under vehicles or equipment before moving them. If Project personnel encounter a desert tortoise, they will avoid the tortoise. The desert tortoise will be allowed to move a safe distance away prior to moving the vehicle.

20. **Biological Monitoring.** A biological monitor(s) will be present during ground-disturbing and/or off-road O&M activities outside of the fenced solar facility to ensure that no tortoises are in

harm's way. Tortoises found above ground during O&M activities will be avoided or moved by an authorized biologist, if necessary. Pre-maintenance clearance surveys followed by temporary exclusionary fencing also will be required if the maintenance action requires ground or vegetation disturbance. A biological monitor will flag the boundaries of areas where activities would need to be restricted to protect tortoises and their habitat. Restricted areas will be monitored to ensure their protection during construction.

21. **Speed Limits.** Speed limits within the Project area, along gen-tie line routes, and access roads will be restricted to less than 25 mph during O&M. Speed limits in the solar facility will be restricted to 15 mph during O&M.

22. **Trash and Litter Control and Other Predator Deterrents.** Trash and food items will be disposed properly in predator proof containers with resealing lids. Trash will be emptied and removed from the Project site on a periodic basis as they become full. Trash removal reduces the attractiveness of the area to opportunistic predators such as ravens, coyotes, and foxes. To reduce attractants for birds, open containers that may collect rainwater will be removed or stored in a secure or covered location.

#### 2.7.4 Decommissioning Minimization Measures

The same minimization measures used for construction will be used for decommissioning.

#### 2.7.5 Compensatory Mitigation

The applicant will pay the following required compensatory mitigation requirement:

23. **Habitat Compensation.** Prior to surface disturbance activities within desert tortoise habitat, the Project proponent sets aside, at minimum, an amount equivalent to a one-time remuneration fee (per acre of proposed disturbance). The compensation for habitat loss under Section 7 of the Endangered Species Act (ESA) is an annually adjusted rate, currently \$1,002/acre (subject to change annually on March 1). Fees are based on the current \$1,002/acre fee for all permanently disturbed acres. For all project acres that will be temporarily disturbed and leave vegetation in place, fees are assessed at 50% of the current rate.

For this Project, in lieu of assessed fees, the Project proponent will fund a desert tortoise habitat use study, monitoring and other activities (during construction and continuing into operations) as specifically outlined in the proposed action and in the Translocation Plan.

24. **Habitat Use Study.** The Project proponent will work with the University of Nevada, Las Vegas (UNLV), U.S. Geological Survey (USGS), or other agency to design and implement a 2-3-year study to compare on-site and off-site desert vegetation and climate (e.g., annual and perennial plant growth and cover, ambient temperature) to address metrics of habitat change, including how desert tortoises use the vegetation on site for forage and cover. Perennial vegetation sampling along 50-meter line-intercept transects would occur on the project site prior to ground-disturbing activities in coordination with the USFWS. Results from tortoise monitoring as approved in the Project's Desert Tortoise Translocation Plan (in draft) would inform the tortoise use portion of this study.

## 3 ACTION AREA AND EXISTING CONDITIONS

### 3.1 Action Area

Section 7 (a)(2) of the ESA defines the “Action Area” as the areas to be affected directly or indirectly by the federal action. For this Project, the Action Area is defined as 1) the up to 1,400 acres of direct impacts within the lease study area, 2) the approximately 31 miles of ROWs (approximately 170 acres) for the gen-tie line and site access roads (primary and secondary), and temporary water pipeline, and 3) the area of indirect impacts for the recipient site, or release zones for short- and long-distance tortoise translocations. This includes the fenceline encompassing up to 1,400 acres, plus 500-meter release zone (approximately 2,045-acre release zone), plus a 1.5 km buffer (approximately 7,815-acre release zone buffer)(**Figure 3-1**).

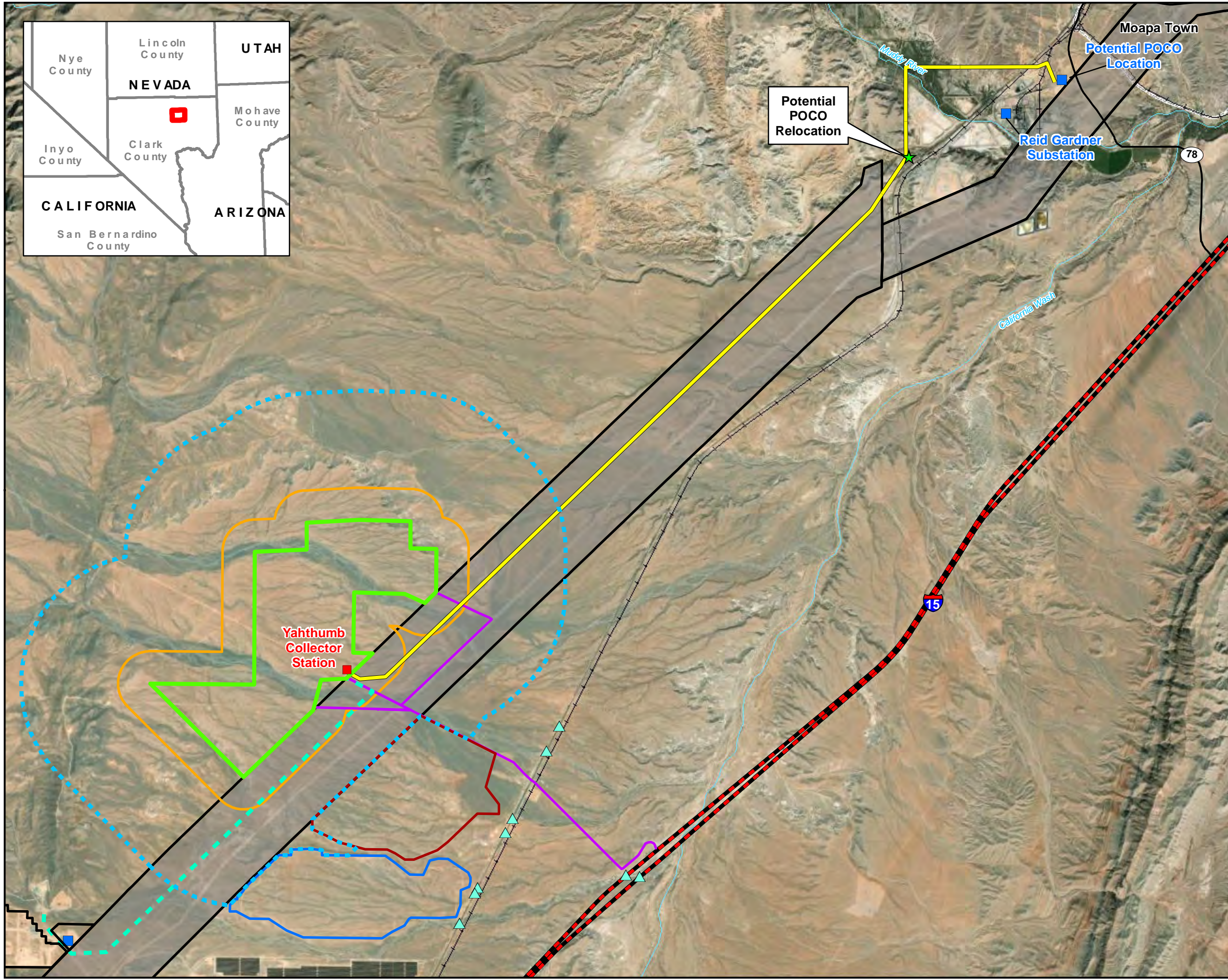
The Action Area is located within the Mojave Desert approximately 35 miles north-northeast of Las Vegas, Nevada, largely within the Moapa River Indian Reservation. The Mojave Desert is cooler and wetter than the Sonoran Desert to the south and warmer and drier than the high-elevation Great Basin Desert to the north (Brown 1994).

The Mojave Desert receives less than 13 inches (254 mm) of rain a year and is generally between 3,000 and 6,000 feet (910 and 1,800 m) in elevation. The Mojave Desert is an area with temperature extremes and four distinct seasons. Winter months bring temperatures dipping to below 20°F (-7°C) on valley floors, and below 0°F (-18°C) at higher elevations. Storms moving from the Pacific Northwest can bring rain and snow across the region — more often, the rain shadow created by the Sierra Nevada as well as mountain ranges within the desert such as the Spring Mountains result in storms that bring only clouds and wind. In longer periods between storm systems, winter temperatures in valleys can approach 80°F (27°C).

The Mojave Desert occupies portions of southeastern California, southern Nevada, southwestern Utah, and northwestern Arizona. The Mojave Desert region, and the area surrounding the Action Area specifically, displays typical basin and range topography.

### 3.2 Habitat and Vegetation

Land cover types in the study area were identified using the Southwest Regional GAP Analysis Project data (Lowry et al. 2005; USGS 2005), which uses satellite imagery to delineate land cover types (vegetation communities). Vegetation in the study area is primarily composed of Sonoran-Mojave Creosotebush-White Bursage Desert Scrub (creosotebush scrub), while North American Warm Desert Wash (desert wash) accounts for a majority of the remainder of the vegetation. Very small areas of Invasive Southwest Riparian Woodland and Shrubland are also present in the study area. Disturbed areas, both within and adjacent to the Action Area, are associated with existing gravel roads (the existing access roads), multiple dirt roads and less impacted offroad vehicle trails, railroad, multiple existing transmission lines and access roads in the gen-tie corridor, and the Reid Gardner Substation and associated disturbance in the northeastern portion of the gen-tie line. **Table 3-1** lists the acreages of the various vegetative cover types occurring within the Project area.



**Project Components**

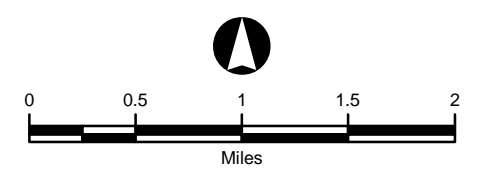
- Yahthumb Collector Station
- ★ Potential POCO Relocation
- Proposed 230 kV Transmission Line
- Access Road
- Temporary Water Pipeline
- Yahthumb Solar Site

**General Features**

- Existing Substation
- ▲ Culvert
- Interstate
- Major Road
- Railroad
- Stream or River
- Designated Utility Corridor
- Recipient Site - Release Area
- Recipient Site - Buffer

**Nearby Solar Projects**

- Eagle Shadow Mountain Solar Project
- Southern Bighorn I Solar Project
- Southern Bighorn II Solar Project



Universal Transverse Mercator  
North American Datum 1983  
Zone 11 North, Meters

**Yahthumb Solar Project**

**Figure 3-1  
Action Area**

Map Extent: Clark County, Nevada

Date: 06-01-22 Author: mc

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**Table 3-1 - Major Vegetation Communities in the Project Area**

<b>Project Component</b>	<b>Creosote Scrub (acres)</b>	<b>Desert Wash (acres)</b>	<b>Invasive Riparian Woodland (acres)</b>	<b>Total (acres)</b>
<b>On-site Solar Project Components</b>				
<b>YahThumb Solar Field and Ancillary Facilities</b>	1282 (90%)	118 (8%)	26 (2%)	<b>1426</b>
<b>Off-site Components</b>				
<b>230-kV Gen-tie Line</b>	45 (85%)	6 (11%)	2 (4%)	<b>53</b>
<b>Site Access Road – Primary</b>	2 (100%)	0	0	<b>2</b>
<b>Temporary Water Pipeline</b>	10 (91%)	1 (9%)	0	<b>11</b>
<b>Off-site Components Total</b>	<b>57 (86%)</b>	<b>7 (11%)</b>	<b>2 (3%)</b>	<b>66</b>
<b>On- and Off-site Components Total</b>	<b>1339 (90%)</b>	<b>125 (8%)</b>	<b>28 (2%)</b>	<b>1493</b>

Sources: USGS 2005, Lowry et al. 2005

### 3.2.1 Sonoran-Mojave Creosotebush-White Bursage Desert Scrub

Creosotebush scrub is typical of the Mojave Desert and is the most abundant vegetation community in the region and within the Project area. Creosotebush scrub occurs on well-drained sandy flats and bajadas from 150 to 1500 meters elevation in Nevada. Its range extends from the Colorado River on the south to Pahranaagat Valley on the north (Wildlife Action Plan Team 2012). This community is typically dominated by creosotebush and white bursage, which can be sparse to moderately dense (2-50 percent cover). Many other shrubs, dwarf-shrubs, and cacti may be present, often as a sparse understory. In southern Nevada, common species include saltbush (*Atriplex spp.*), Mormon tea (*Ephedra nevadensis*), desert wolfberry (*Lycium andersonii*), brittlebush (*Encelia farinosa*), and beavertail cactus (*Opuntia basilaris*). The herbaceous layer is typically sparse but can be abundant with ephemerals after spring rains. Herbaceous species common in the region include phacelia (*Phacelia spp.*), desert trumpet (*Erigonium inflatum*), cryptantha (*Cryptantha spp.*), and low woollygrass (*Dasyochloa pulchella*) (USGS 2005).

Creosotebush is used by many desert animals for shelter and forage. Creosotebush roots help to stabilize the soil and support burrows for a variety of reptiles and amphibians, including the desert tortoise and mammals such as the kit fox (*Vulpes macrotis*). Other animals bed in or under the bushes, and birds use them for perching and nesting (Wildlife Action Plan Team 2012).

### 3.2.2 North American Warm Desert Wash

This community is generally restricted to the ephemeral washes on the western side of the Project area and several washes along the gen-tie route. The vegetation in desert washes is highly variable, ranging from sparse and patchy to moderately dense. It typically occurs along the banks of washes but may occur within the channel. The woody layer is typically intermittent and relatively open and is usually dominated by shrubs and small trees such as catclaw (*Senegalia greggii*) and desert willow (*Chilopsis linearis*) (USGS 2005). In southern Nevada, washes tend to support a higher diversity and density of cacti and yucca than the surrounding landscape. Vegetation surveys conducted for previously approved solar projects on the Reservation (BIA 2012, 2014, 2016, 2020a, 2020b, 2021) identified numerous cacti and yucca species including cholla (*Cylindropuntia spp.*), barrel cactus (*Ferocactus cylindraceus*), hedgehog cactus (*Echinocereus engelmannii var. chrysocentrus*) and Mojave yucca (*Yucca schidigera*). Higher densities of big galleta grass (*Pleuraphis rigida*) are also commonly reported in washes in this region.

### 3.2.3 North American Invasive Southwest Riparian Woodland and Shrubland

This community represents areas that are dominated by introduced woody species such as saltcedar and Russian olive (*Elaeagnus angustifolia*). Due to the lack of perennial water in the lease area, this vegetation is limited to a few patches of saltcedar along the larger drainages within the Project area and in a few small areas along the Muddy River on the gen-tie line.

## 3.3 Wildlife

Species observed in the Action Area during biological surveys for nearby projects on the Reservation included birds, mammals and a variety of reptiles. Commonly observed avian species include: black-throated sparrow (*Amphispiza bilineata*), ash-throated flycatcher (*Myiarchus cinerascens*), black-tailed gnatcatcher (*Polioptila melanura*), loggerhead shrike (*Lanius ludovicianus*), common raven (*Corvus corax*), burrowing owl (*Athene cunicularia*), red tailed-hawk (*Buteo jamaicensis*) and lesser nighthawk (*Chordeiles sp.*). Small mammal residents include kangaroo rats (*Dipodomys spp.*), pack rats (*Neotoma cinerea*) and white-tailed antelope squirrels (*Ammospermophilus leucurus*). Common larger mammals may include coyotes (*Canis latrans*), kit foxes (*Vulpes macrotis*), and black-tailed jackrabbits (*Lepus californicus*).



Reptiles include western whiptail lizards (*Aspidoscelis tigris*), side-blotched lizards (*Uta stansburiana*), horned lizard (*Phrynosoma* sp.), desert iguana (*Dipsosaurus dorsalis*), bull snake (*Pituophis catenifer sayi*), coachwhip (*Masticophis flagellum*) and desert tortoise.

### 3.4 Ground Water Resources

The Proposed Action is in the Colorado River Basin Region of Nevada's Hydrographic Regions. The Colorado River Basin is one of the larger hydrographic regions in Nevada, covering 5,612 square miles and includes 27 hydrographic areas. The Action Area is located in and around the area called Arrow Canyon Range Cell. The hydrogeology of the Arrow Canyon Range Cell is recognized as unique yet poorly understood (Mifflin and Associates 2001). Seven groundwater management basins are superimposed on the Arrow Canyon Range cell. The Arrow Canyon Range Cell is composed of a series of north-south trending structural blocks related to extensional faulting that are almost entirely composed of Paleozoic carbonate rock (BIA 2012). The Action Area is located within the California Wash hydrographic basin, which is an unconsolidated sand and gravel aquifer.

The basin is a westward-thickening section of Paleozoic carbonate rocks, in part unconformably overlain by generally fine-grained sediments of the Muddy Creek Formation (Longwell et al. 1965). The carbonate-rock terrain that constitutes the Arrow Canyon Range Cell incorporates both recharge areas and one major spring discharged area and is bounded by generally less permeable basin or bedrock lithologies. The California Wash Basin around the Action Area is around 5,000 feet thick (BIA 2012). Regional patterns of precipitation combined with terrain elevation results in the highest mountain ranges receiving the majority of precipitation that becomes recharge. The carbonate terrain is efficient in retaining a relatively high percentage of precipitation as recharge.

Groundwater data from several Reservation monitoring and test wells in the vicinity of the Action Area indicate the static water level ranges in depth from 354 to 526 feet below the surface and the wells yielding over 1,000 gallons per minute (gpm; BIA 2012). Pump and step-drawdown testing of the carbonate aquifer yielded a range of transmissivity of 50,000 to 100,000 ft./day, hydraulic conductivity of 20 ft./day and specific yield (Sy) of 0.03 to 0.008 (BIA 2012).

## 4 DESCRIPTION OF SPECIES

Only one federally listed species under the ESA was documented within or near the Projects: the Mojave desert tortoise. **Section 4.3** lists details of the desert tortoise survey protocol and the results. Other species considered for analysis are described in **Section 4.1**.

No Designated Critical Habitat for any listed plant or animal species occurs within the Action Area, though critical habitat units for the desert tortoise occur approximately 7 miles west of the Action Area on the west side of the Arrow Canyon Range.

### 4.1 Federally Listed Bird Species

#### 4.1.1 Yellow-billed Cuckoo

On October 3, 2014, the yellow-billed cuckoo (*Coccyzus americanus*) was listed as threatened under the ESA (79 FR 59992; USFWS 2014). Critical habitat was designated for the yellow-billed cuckoo on April 21, 2021; the nearest Designated Critical Habitat for this species is located approximately 130 miles south-southeast of the Project. The yellow-billed cuckoo has always been rare in Nevada. There are still small areas of suitable habitat within the state, with documented breeding occurring very rarely in Southern Nevada. Yellow-billed cuckoos may still utilize remnant habitats present within the state during migration.

Based on historic accounts, the species was widespread and locally common in California and Arizona, locally common in a few river reaches in New Mexico, locally common in Oregon and Washington, and locally uncommon in scattered drainages of the arid and semiarid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah. The scattered cottonwoods on the Colorado River tributaries (Virgin, Muddy, and Pahranaagat) are the last places in Nevada where the yellow-billed cuckoo can potentially occur. The only known nesting sites in Nevada for the yellow-billed cuckoo are at Warm Springs Ranch Natural Area along the Muddy River in the Moapa Valley (SNWA 2019), approximately 8 miles north of the Project and 4.5 miles northwest of the gen-tie crossing of the Muddy River. While two individual cuckoos were detected during 2019 surveys at Warm Springs Natural Area, there is no suitable habitat for the species along the Muddy River where the proposed gen-tie would cross the River.

#### 4.1.2 Yuma Ridgway's (Clapper) Rail

The Yuma Ridgway's rail (*Rallus longirostris yumanensis*) was listed as an endangered species on March 11, 1967 (32 FR 4001). The Recovery Plan was finalized in 1983 and portions of the recovery action plan were initiated over the ensuing years. The Yuma Ridgway's rail is one of the smaller subspecies of clapper rail, with adult males standing eight inches tall and weighing 266.8 grams on average (Todd 1986). Females are slightly smaller. Adult Yuma Ridgway's rails of both sexes are similar in plumage; they possess a long, slender bill and long legs and toes compared to body size (Todd 1986).

The present range of the Yuma Ridgway's rail in the U.S. includes portions of Arizona, California, and Nevada. The Yuma Ridgway's rail lives in freshwater marshes dominated by cattail (*Typha* sp.) and bulrush (*Scirpus* ssp.) with a mix of riparian tree and shrub species (*Salix exigua*, *S. gooddingii*, *Tamarix* sp., *Tessaria serica*, and *Baccharis* sp.) along the shoreline of the marsh (Eddleman 1989). This species is known to occur along the Muddy River within the Overton Wildlife Management Area approximately 18 miles southeast of the Action Area. There is no suitable habitat for the species along the Muddy River where the proposed gen-tie would cross the River.

### 4.1.3 Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) was listed by the USFWS as an endangered species within its entire range on February 27, 1995 (FR 60: 10693-10715). Critical habitat for the species was originally established in 1997 (FR 62: 39129-39147) but subsequently vacated and incidental protection provided along the Virgin River and its 100-year floodplain from the Arizona/Nevada border to Halfway Wash in Nevada (FR 65: 4140-4156).

Critical habitat was again proposed on October 12, 2004 (FR 69: 60706-60736), redefined and re-instituted in 2005 (FR 70: 60886-61009; USFWS 1997), and designated in 2013 (USFWS 2013). Critical habitat for the southwestern willow flycatcher in Nevada is currently limited to portions of the Virgin River above its confluence with the Muddy River approximately 24 miles southeast of the Action Area (FR 70: 60886-61009).

For nesting, southwestern willow flycatchers require dense riparian habitats with microclimatic conditions dictated by the local surroundings. Saturated soils, standing water, or nearby streams, pools, or cienegas are a component of nesting habitat that also influences the microclimate and density of the vegetation component. No suitable riparian or microhabitat conditions exist within the Action Area. The closest known breeding habitat for this species is located along the Muddy River, at Warm Springs Ranch, approximately 4.5 miles northwest of the proposed gen-tie crossing of the Muddy River. During 2019 surveys along the Muddy River at the Warm Springs Natural Area that were not project-specific (i.e., not conducted for the Yahthumb Project), eight southwestern willow flycatcher territories were identified, including two confirmed pairs, three unpaired residents and one non-resident (SNWA 2019), though there is no suitable habitat for the species along the Muddy River where the proposed gen-tie would cross the River.

## 4.2 Moapa Dace

The Moapa dace was listed as an endangered species under the ESA on March 11, 1967 (32 Federal Register [FR] 4001; USFWS 1967). Since the Moapa dace represents a monotypic genus, this species was assigned a recovery priority of 1 (highest ranking) by the USFWS in 1995. The original recovery plan for this species was prepared in 1983 (USFWS 1983) and subsequently revised in 1995 (USFWS 1996a).

### 4.2.1 Distribution and Life History

The Moapa dace is endemic to and occurs in the Muddy (Moapa) River system (and associated thermal spring systems). Specifically, it occurs in the Warm Springs area which encompasses 10 thermal spring provinces that form the Muddy River (roughly 8 miles north of the proposed Project area and approximately 4.5 miles northwest of the gen-tie crossing of the Muddy River). Moapa dace likely inhabited 25 springs and approximately 16 kilometers of the upper Muddy River (Ono et al. 1983). Historically, the Muddy River was 48.4 kilometers long; however, in 1935, with the completion of the Hoover Dam, Lake Mead flooded the lower 8 kilometers of the river, rendering it unsuitable for Moapa dace. Previous surveys found adult Moapa dace occurring in low numbers in restricted portions of 3 springs and less than 2 miles of spring outflow and river in the Warm Springs area (USFWS 1983).

The Moapa dace inhabits a variety of habitats throughout its several life stages. As individuals age, they occupy habitats with increasing flow velocities such that larval dace are apparently limited to slackwater portions of the upper reaches of tributaries of the Muddy River, whereas adults can be found in the river's mainstem. The species prefers warmer temperatures (67-89.6°F); thus, cooler temperatures in the middle

portion of the Muddy River mainstem may function as a barrier to downstream movements (USFWS 1996b).

The species is omnivorous; stomach contents have included beetles, moths, butterflies, true flies, leaf hoppers, true bugs, caddisflies, mayflies, damselflies, dragonflies, worms, scuds, crustaceans, snails, filamentous algae, vascular plants, detritus and sand. The dace primarily forages on drift items but will also forage on the stream or spring substrate. The species often forages from drift stations in large groups (up to 30 individuals). These sites are often characterized by overhanging vegetation or particularly deep areas (USFWS 1996b).

#### **4.2.2 Threats to the Species**

Threats to the Moapa dace include habitat loss and alteration, introduction of non-native species, and parasites. Habitat loss and alteration has been ongoing in the Warm Springs areas for the purposes of recreational, industrial and municipal projects. Several headwater springs were completely channelized or diverted for use as swimming pools. Irrigation for agricultural purposes historically had impacts on headwater springs in the Warm Springs area, though agricultural activity in the area has declined.

Moapa dace persist within several warm springs and associated springbrooks that have been altered greatly by humans. Downstream habitats, where adult dace from different spring systems mixed historically, are now infested with exotic predatory fish. In many cases infested habitats are intentionally blocked from upstream areas by fish barriers built to prevent the spread of exotic fish. Specifically, a fish barrier (known as the refuge barrier) and a water diversion exist along the Muddy River south of the Warm Springs area. The resulting fragmented population structure threatens the dace's genetic and demographic health, although barriers must be maintained until the threats of exotic fish are eliminated (USFWS 2009a).

The gen-tie crossing is located almost 2 miles downstream of the area selected for USFWS snorkel surveys for Moapa dace from 2005-2013, and was not surveyed because the Action Area is not considered suitable dace habitat.

#### **4.2.3 Critical Habitat**

There is no Designated Critical Habitat for the Moapa dace.

### **4.3 Desert Tortoise**

Desert tortoise was listed as threatened under the ESA on April 2, 1990 (USFWS 1990). A total of 6.4 million acres of Critical Habitat was designated in 1994 (USFWS 1994). The 1994 Recovery Plan described a strategy for recovering the desert tortoise, which included the identification of six recovery units, recommendations for a system of Desert Wildlife Management Areas within the recovery units, and development and implementation of specific recovery actions. Within those six recovery units, Desert Wildlife Management Areas (DWMAs) were identified, where populations of tortoises facing similar threats would be managed with the same strategies.

The Action Area is within the Northeastern Mojave Recovery Unit, which encompasses almost 5 million acres extending from southwestern Utah/northwestern Arizona (northern boundary) to Las Vegas/Las Vegas Wash (southern boundary). This unit includes the Beaver Dam Slope, Gold Butte-Pakoon, and Mormon Mesa Critical Habitat Units.

Characteristically, tortoises in this unit are active in late summer and early autumn in addition to spring, reflecting the fact that this region receives up to about 40 percent of its annual rainfall in summer and supports two distinct annual floras on which tortoises can forage (USFWS 2019c). Desert tortoise also feed on cacti, perennial grasses, and herbaceous perennials. Desert tortoises may den together in caliche caves in bajadas, washes, or caves in sandstone rock outcrops (USFWS 2011, USFWS 2019c).

If basic habitat requirements are met, the desert tortoise can survive and reproduce within the varied vegetation communities of the Mojave region (USFWS 1994). These requirements include sufficient suitable plants for forage and cover, suitable substrates for burrow and nest sites, and freedom from disturbance. Throughout most of the Mojave region, the desert tortoise occurs primarily on flats and bajadas with soils ranging from sand to sandy-gravel characterized by scattered shrubs and abundant inter-shrub space for herbaceous plant growth. Desert tortoises are also found on rocky terrain and slopes.

#### **4.3.1 Distribution and Abundance in the Action Area**

#### **4.3.2 Field Surveys**

To assess the status of the desert tortoise in the Action Area, two separate field surveys for two different portions of the Project Area were conducted in fall 2020 and spring 2021; combined they covered the entire 1,695-acre lease study area. The first survey was conducted in October 2020 and covered approximately 984 acres within the center of the solar field portion of the Action Area. The second survey took place in May 2021 and covered the additional approximately 711 acres within the southwestern and northern areas of the solar field portion of the Action Area that were not surveyed in the fall of 2020 (Allied Pacific Partners 2021). Additionally, a survey was conducted in September and October 2018 for the Eagle Shadow Mountain (ESM) Solar Project's gen-tie, which completed construction in 2021 and is located adjacent to the proposed Yahthumb gen-tie line (Newfields 2018). The desert tortoise data from this 2018 survey was included for the proposed Yahthumb gen-tie line (**Figure 4-1**). Team members included qualified biologists and more than one biologist who had been previously approved by USFWS as an Authorized Biologist on multiple prior projects. To be granted authorized status, USFWS requires that the biologist has thorough knowledge of desert tortoise behavior, natural history, and ecology, and demonstrates substantial field experience and training to successfully:

- Handle desert tortoises
- Excavate burrows to locate desert tortoise or eggs
- Relocate desert tortoises
- Reconstruct desert tortoise burrows
- Unearth and relocate desert tortoise eggs
- Locate, identify, and record all forms of desert tortoise sign; and
- Follow USFWS-approved protocols.

The lease study area was surveyed in accordance with current USFWS protocols (USFWS 2019a). Biologists walked 10-meter (33-foot) wide parallel pedestrian transects. USFWS refers to this methodology as "100 percent coverage." The lease study area was approximately 1,695 acres in size. The objective of the field survey is to determine presence or absence of desert tortoises, estimate the number of tortoises (abundance) and assess the distribution of tortoises within the Action Area (USFWS 2019a).

Observations of tortoise sign (live tortoises, carcasses, shell, bones, scutes, scat, burrows, pellets, tracks, egg shell fragments, etc.) were recorded in the field.

### 4.3.3 Field Survey Results

Data collected within the survey area were analyzed using the USFWS 2019 Protocol equation to determine the estimated number of tortoises within the Action Area. This method uses the number of tortoises observed above ground, the probability that a tortoise is above ground, the probability of detecting a tortoise if above ground, and the size of the area surveyed. Calculations of desert tortoise populations are based only on the number of adult tortoises ( $\geq 180$  mm MCL) observed during surveys. This equation is not used for linear features, so the gen-tie study area is excluded from the relative abundance calculations. The equation is illustrated below.

$$\left( \begin{array}{c} \text{Estimated number of tortoises} \\ \text{within action area} \end{array} \right) = \frac{\left( \begin{array}{c} \text{Number of tortoises} \\ \text{observed above ground} \end{array} \right)}{\left( \begin{array}{c} \text{Probability that} \\ \text{a tortoise is} \\ \text{above ground (P}_a\text{)} \end{array} \right) \left( \begin{array}{c} \text{Probability of} \\ \text{detecting a tortoise,} \\ \text{if above ground (P}_d\text{)} \end{array} \right)} \left( \begin{array}{c} \text{Size of action area} \\ \text{Size of area surveyed} \end{array} \right)$$

A total of 287 east-west transects of differing lengths were walked during the fall 2020 surveys to achieve 100% coverage of the central 984 acres of the solar facility area, totaling approximately 408 kilometers of transect length. A total of 3 adult tortoises ( $\geq 180$  mm MCL) and 1 juvenile were observed over the course of the 2020 surveys (**Table 4-1** and **Figure 4-1**). Desert tortoise sign (scat, carcasses/shell fragments, tracks and burrows) were observed throughout the survey area. Sign is included in **Table 4-2**, summarized for both surveys. The estimated number of adult tortoises within the entire Action Area during 2020 surveys was calculated to be 5.5, with a 95% confidence interval of approximately 2.22 to 13.50 adult tortoises. This information is included in **Table 4-1** below.

A total of 493 east-west transects of differing lengths were walked during the spring 2021 surveys to achieve 100% coverage of the northern and southwestern 711 acres of the solar facility area, totaling approximately 621 kilometers of transect length. A total of 11 adult tortoises ( $\geq 180$  mm MCL) and 1 juvenile were observed over the course of the 2021 surveys (**Table 4-1** and **Figure 4-1**). Desert tortoise sign (scat, carcasses/shell fragments, tracks and burrows) were observed throughout the survey area. Sign is included in **Table 4-2**, summarized for both surveys. The estimated number of adult tortoises within the entire Action Area during 2020 surveys was calculated to be 11.1, with a 95% confidence interval of approximately 5.11 to 24.01 adult tortoises. This information is included in **Table 4-1** below.

Gen-tie line surveys that were conducted for the ESM Project in 2018 followed the proposed ESM gen-tie lines as well as all areas within the ROW surrounding the lines. These areas included the entire proposed Yahthumb gen-tie line and a 250-foot buffer surrounding the line. A total of 2 adult tortoises were observed within 250 feet of the proposed Yahthumb gen-tie line during the 2018 surveys. These tortoises were observed approximately 30 feet and 170 feet from the proposed Yahthumb gen-tie line. Following the USFWS protocol (2019), data from the gen-tie line survey was not included in the relative abundance calculation. This information is included in **Table 4-1** below.

Desert tortoise health assessments will be conducted within the Project Area during 2022. It is likely that more tortoises will be found during health assessments resulting from different survey methods and more time spent surveying.

These results are generally consistent with USFWS recent findings presented in the Revised Recovery Plan for the Mojave Population of the Desert Tortoise (2011). The NE Mojave Recovery Unit was found to be the only unit that increased in abundance from 2004 through 2014 (Allison and McLuckie 2018).

**Table 4-1 – Desert Tortoise Observations and Density Estimates (2018, 2020, and 2021 Surveys)**

<b>Project</b>	<b>Number of Adults Observed</b>	<b>Number of Juveniles Observed</b>	<b>Estimated Number of Tortoises within Each Survey Area</b>	<b>95% Confidence Interval (Lower – Upper)</b>
<b>Yahthumb Solar Central Lease Area – 2020 Surveys</b>	3	1	5.5	2.22 – 13.50
<b>Yahthumb Solar Northern and Southwestern Lease Area – 2021 Surveys</b>	11	1	11.1	5.11 – 24.01
<b>Off-site Components – 2018 Surveys<sup>1</sup></b>	2	0	n/a	n/a
<b>Totals</b>	<b>16</b>	<b>2</b>		

Source: Allied Pacific Partners 2021, Newfields 2018

<sup>1</sup> All desert tortoise observations from the Newfields 2018 survey that were within 250 feet of the proposed Yahthumb gen-tie line were included.

Table 4-2 – Desert Tortoise Sign – All Surveys

<u>Sign Type</u>	<u>Total – Gen-tie Survey Area<sup>1</sup></u>	<u>Total – Solar Project Survey Area</u>	<u>Total – Both Survey Areas</u>
<b>Burrows<sup>2</sup></b>			
Class 5	4	46	50
Class 4	1	28	29
Class 3	2	37	39
Class 2	5	75	80
Class 1	2	35	37
<b>Total</b>	<b>14</b>	<b>221</b>	<b>235</b>
<b>Pallets</b>			
Class 5	0	9	9
Class 4	0	2	2
Class 3	1	7	8
Class 2	0	8	8
Class 1	0	2	2
<b>Total</b>	<b>1</b>	<b>28</b>	<b>29</b>
<b>Carcasses<sup>3</sup></b>			
Class 5	2	14	16
Class 4	0	2	2
Class 3	0	1	1
Class 2	0	2	2
Class 1	0	4	4
<b>Total</b>	<b>2</b>	<b>23</b>	<b>25</b>
<b>Scat<sup>4</sup></b>			
Class 5	0	3	3
Class 4	0	2	2
Class 3	0	4	4
Class 2	0	9	9
Class 1	0	4	4
<b>Total</b>	<b>0</b>	<b>22</b>	<b>22</b>
<b>Eggshells</b>	0	2	2
<b>Total</b>	<b>0</b>	<b>2</b>	<b>2</b>

Sources: Solar Project: Allied Pacific Partners 2021, Gen-tie: Newfields 2018

<sup>1</sup> All desert tortoise sign data points from the Newfields 2018 survey that were within 250 feet of the proposed Yahthumb gen-tie line were included.

<sup>2</sup> Burrow Class Definitions: 1. currently active, with tortoise or recent tortoise sign. 2. good condition, definitely tortoise; no evidence of recent use. 3. deteriorated condition; definitely tortoise. 4. good condition; possibly tortoise. 5. deteriorated condition; possibly tortoise.

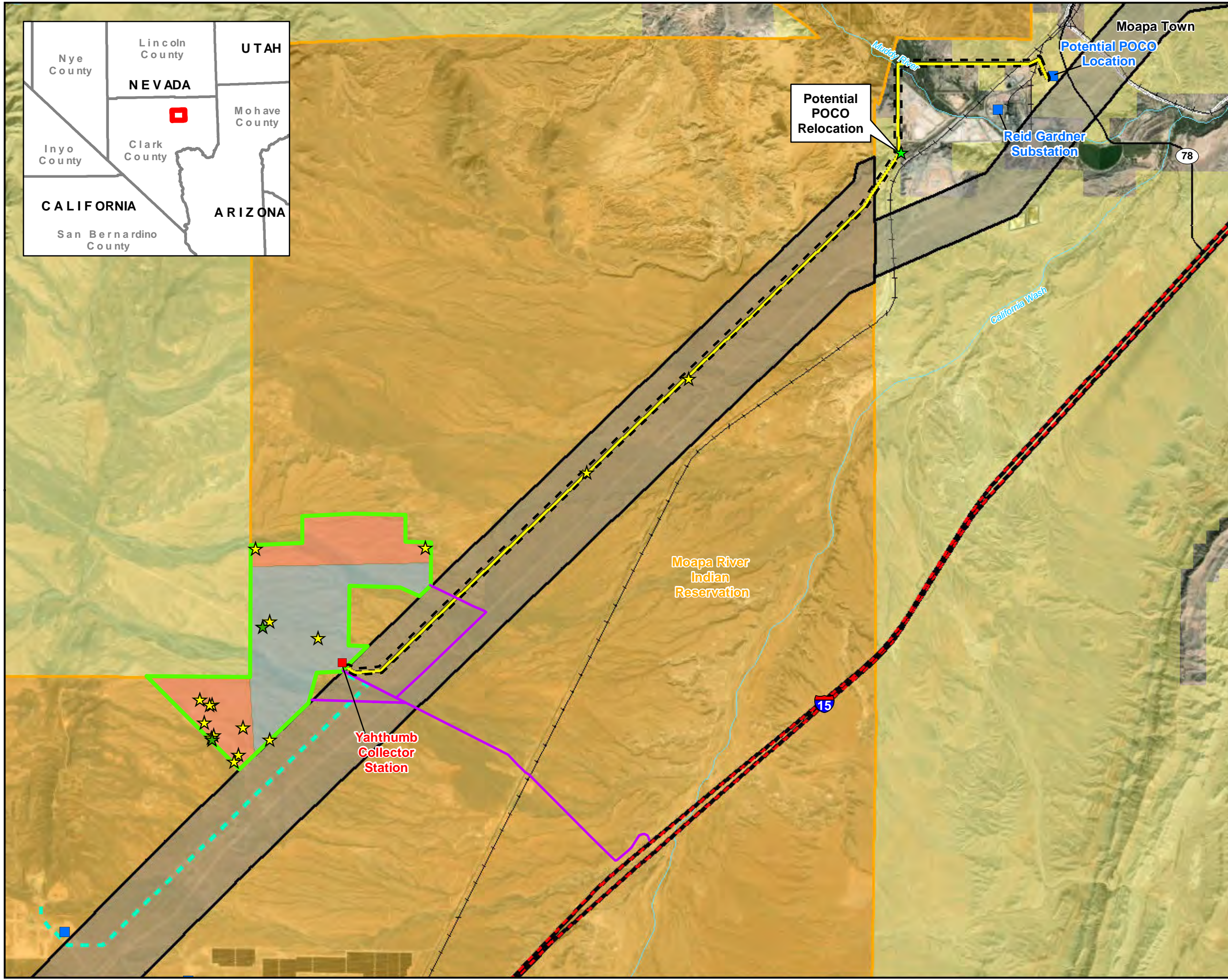


#### *4.0 Description of Species*

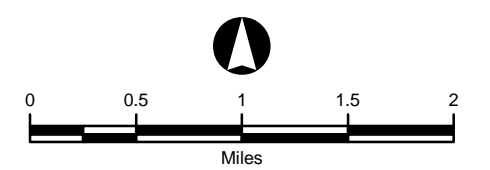
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<sup>3</sup> Shell Remains: 1. fresh or putrid. 2. normal color; scutes adhere to bone. 3. scutes peeling off bone. 4. shell bone is falling apart; growth rings on scutes are peeling. 5. disarticulated and scattered.

<sup>4</sup> Scat: 1. wet (not from rain or dew) or freshly dried; obvious odor. 2. dried with glaze; some odor; dark brown. 3. dried; no glaze or odor; signs of bleaching (light brown), tightly packed material. 4. dried; light brown to pale yellow, loose material; scaly appearance. 5. bleached, or consisting only of plant fiber.



- ### Project Components
- Yahthumb Collector Station
  - ★ Potential POCO Relocation
  - Proposed 230 kV Transmission Line
  - Access Road
  - ▭ Yahthumb Solar Site
  - - - Fall 2018 Gen-Tie Survey Area
  - ▭ Fall 2020 Survey Area
  - ▭ Spring 2021 Survey Area
- ### General Features
- Existing Substation
  - Interstate
  - Major Road
  - Railroad
  - Stream or River
  - ▭ Designated Utility Corridor
- ### Jurisdictional Land Ownership
- ▭ Bureau of Land Management Land
  - ▭ Indian Land
- ### Survey Results
- ★ Live Desert Tortoise - Adult
  - ★ Live Desert Tortoise - Juvenile



Universal Transverse Mercator  
North American Datum 1983  
Zone 11 North, Meters

**Yahthumb Solar Project**

**Figure 4-1**  
**Desert Tortoise Observations**

Map Extent: Clark County, Nevada

Date: 05-27-22	Author: mc
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#### **4.3.4 Factors That May Affect the Desert Tortoise in the Action Area**

##### **4.3.5 Upper Respiratory Tract Disease**

Upper respiratory track disease (URTD) was discovered in 1990 and is currently a major cause of mortality in the western Mojave Desert population. Habitat degradation, poor nutrition, and drought have increased the desert tortoises' susceptibility to this disease (USFWS 1994). It is thought that URTD is transmitted between desert tortoise populations when desert tortoises are captured as pets, then subsequently released.

##### **4.3.6 General Anthropogenic Factors**

The factors causing the decline of the desert tortoise are primarily human related. These factors include collection of desert tortoises for pets, food, and commercial trade; collision with vehicles on roads and highways; mortality from gunshots; predation; and off-road vehicle (ORV) travel cross-country or on trails. Predation by the common raven is severe on younger age classes of desert tortoise. The Breeding Bird Survey (BBS) data from 1968 to 2004 indicated increases in the raven populations of more than 700 percent in the west Mojave Desert and more than 70 percent in the East Mojave Desert (Boarman and Kristan 2006). Increased food supplies from road kills, landfills, trash, garbage dumps, agricultural development and new perch and nest sites all contribute to the increased population of ravens. Berry (1990) speculated that raven predation has resulted in such high juvenile desert tortoise loss in some portions of the Mojave that recruitment of juveniles into the adult population has been halted. Within or near the Project area, previous disturbance from ORV travel, weeds and ground disturbance from multiple linear facilities such as pipelines, roads, and transmission lines, and disturbance from several existing facilities such as substations and solar fields were observed.

##### **4.3.7 Connectivity**

Habitat connectivity is important to maintain desert tortoise access to required resources (e.g., water or burrow sites), minimize energetic expenditures to access resources, limit risk of travel-related injury or death by minimizing the need to move through risky or uninhabitable areas, maintain social behaviors and gene flow, and enable movement with a change in environmental conditions, such as climate shift (Webster et al. 2002; Lowe and Allendorf 2010). In a review of numerous definitions of habitat connectivity published in the scientific literature, Kindlmann and Burel (2008) defined habitat connectivity simply as “the ease with which individuals can move about within a landscape.” This definition encompasses both structural (based entirely on landscape configuration independent of the animal) and functional connectivity (including animal responses to landscape features). It is important to note that natural barriers—such as rivers or mountains—often can limit habitat connectivity. In addition to natural barriers, human structures including housing developments, roads, farmland, and fences have increasingly reduced habitat connectivity (Fahrig 2003). This reduced connectivity has resulted from both habitat destruction and fragmentation, the division of habitat into smaller, discontinuous units.

Factors in assessing the potential effects of the Project on desert tortoise habitat connectivity include:

- Natural barriers to tortoise movement
- Anthropogenic barriers to tortoise movement
- Habitat fragmentation

Genetic connectivity can be defined as the degree to which gene flow is maintained between populations. For gene flow to occur across an area, populations of desert tortoises need to be connected by areas of suitable habitat that support sustainable numbers of reproductive individuals. Natural barriers, such as mountain ranges and rivers, reduce genetic connectivity and are thought to have partly resulted in some

broad-scale genetic differentiation among tortoise populations within the Mojave Desert (Averill-Murray et al. 2013). The Action Area is located in an area that currently has few natural barriers that would affect genetic connectivity. Tortoise movement to the east may be hindered by the railroad and Interstate 15, which run approximately 2 – 3.5 miles east and southeast of the Action Area, however there are a number of passable culverts under the railroad and highway that could facilitate tortoise movement in these areas (shown on **Figure 3-1**). To the south, movement may be limited by the existing K-Road Solar Project, which is located approximately 2 miles to the south of the Action Area. Genetic connectivity is currently maintained as tortoises can exchange genetic material with populations in suitable habitat areas surrounding the Project area.

#### **4.3.8 Habitat Fragmentation**

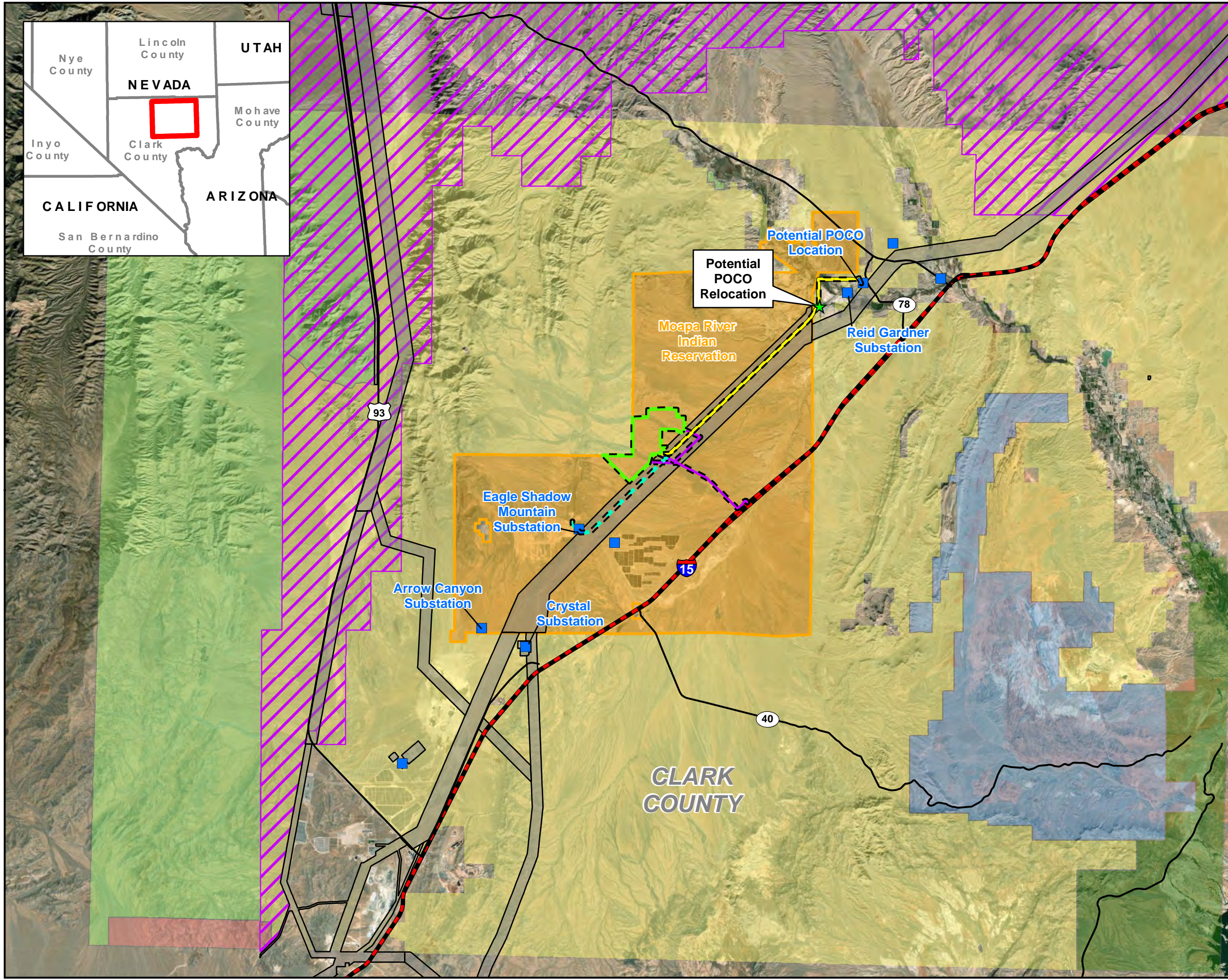
The Proposed Project is not expected to substantively contribute to habitat fragmentation because it would be built with a raised fence that would allow tortoises to re-inhabit and pass through the solar site during operations.

#### **4.3.9 Desert Tortoise Designated Critical Habitat**

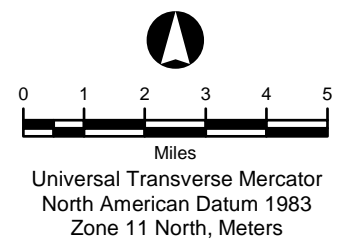
In 1990, USFWS listed the desert tortoise as threatened over 30 percent of its geographic range. In response to this listing, the *Desert Tortoise (Mojave Population) Recovery Plan* was created to aid in the preservation of the species. In this plan, six population units termed “recovery units,” were identified using available data on genetic variability, morphology, ecosystem types, and population behavior.

Within these recovery units, 14 desert wildlife management areas (DWMA) were identified as areas where tortoise populations could be managed for recovery. The guidelines used to delineate the 14 DWMA were used by USFWS to designate federally protected desert tortoise “Critical Habitat” in 1994. Of the original 22,616 to 27,407 square kilometers recommended for protection in the 14 DWMA, 26,087 square kilometers became Designated Critical Habitat. Primary constituent elements of Designated Critical Habitat for the desert tortoise are those physical and biological attributes that are necessary for the long- term survival of the species. These elements were identified as: 1) sufficient space to support viable populations within each of the five Recovery Units and to provide for movement, dispersal, and gene flow; 2) sufficient quantity and quality of forage species and the proper soil conditions to provide for the growth of such species; 3) suitable substrates for burrowing, nesting, and overwintering; 4) burrows, caliche caves, and other shelter sites; 5) sufficient vegetation for shelter from temperature extremes and predators; and, 6) habitat protected from disturbance and human-caused mortality (USFWS 2011).

The Project area is not located within USFWS desert tortoise Designated Critical Habitat (USFWS 2019b). **Figure 4-2** depicts the nearest Designated Critical Habitat, which is approximately 7 miles west of the proposed Project.



- ### Legend
- Project Components**
    - ★ Potential POCO Relocation
    - Proposed 230 kV Transmission Line
    - Access Road
    - - - Temporary Water Pipeline
    - ▭ Yahthumb Solar Site
    - - - Study Area
  - General Features**
    - Existing Substation
    - Interstate
    - Major Highway
    - Railroad
    - ▭ Designated Utility Corridor
    - ▭ Municipal Boundary
    - ▭ Existing Substation
  - Jurisdictional Land Ownership**
    - ▭ Bureau of Land Management
    - ▭ Indian Land
    - ▭ Fish and Wildlife Service
    - ▭ Department of Defence
    - ▭ State Lands
    - ▭ National Park Service
  - Critical Habitat**
    - ▨ Desert tortoise



**Yahthumb Solar Project**

**Figure 4-2 - Desert Tortoise Designated Critical Habitat**

Map Extent: Clark County, Nevada

Date: 04-22-22 | Author: mc

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## 5 EFFECTS OF THE PROPOSED ACTION AND DETERMINATION OF EFFECTS

This section presents the potential direct, indirect, and cumulative effects of the Proposed Action on listed species. Impacts resulting from the implementation of the Proposed Action include:

- Injury of mortality of desert tortoises from construction activities;
- Temporary stress on desert tortoises from handling during relocation efforts;
- Temporary constriction of movement corridors for desert tortoises during construction;
- Disturbance from vibrations during construction that could affect tortoises near the boundary of the construction area;
- Temporary and permanent loss of desert tortoise habitat and burrows;
- Disturbance and displacement of desert tortoises during construction of the associated site access roads and proposed gen-tie lines;
- Potential noise and lighting effects on tortoise behavior and movement;
- Introduction of weeds and invasive species within the construction area during construction and operation;
- Exposure to chemicals (herbicides, palliatives and spills from equipment);
- Potential increased raven and other predator populations resulting from perches provided by the solar structures, gen-tie lines and transmission towers, and perimeter fencing, and human introduction of trash within or near the Action Area boundary;
- Groundwater use from the same hydrographic basin that supports the yellow-billed cuckoo, Yuma Ridgway's rail, southwestern willow flycatcher, and Moapa dace.

### 5.1 Federally Listed Bird Species

#### 5.1.1 Yellow-billed Cuckoo

There is no suitable habitat for yellow-billed cuckoos along the Muddy River at the proposed gen-tie line crossing and no habitat would be removed or affected by the Proposed Action. Suitable habitat occurs approximately 4.5 miles upstream of the gen-tie line crossing of the Muddy River near the Warm Springs Ranch, and individuals were observed there in 2019 (SNWA 2019). Suitable habitat also occurs approximately 18 miles east of the Action Area along the Virgin River. While few yellow-billed cuckoos are known to occur in these areas, they may use the Muddy River for migration to and from breeding habitat and for dispersal, and those individuals may be at risk of colliding with the proposed gen-tie line. While groundwater withdrawals may result in insignificant reductions in flow in the Muddy River, the magnitude of effects would be too small to affect yellow-billed cuckoo or cuckoo habitat (e.g., riparian vegetation)(see analysis in **Section 5.3**).

#### Determination

Due to the low number of yellow-billed cuckoos that occur near the Action Area and the lack of habitat in the Project area, the potential for direct mortality to this species is low. Potential risk would be insignificant and discountable and potential indirect effects would be negligible. The Proposed Action may

affect, but is not likely adversely affect, the yellow-billed cuckoo. No Designated Critical Habitat is within the Project vicinity; therefore, the Project would have no effect to critical habitat.

### 5.1.2 Yuma Ridgway's (Clapper) Rail

There is no suitable Yuma Ridgway's rail habitat along the Muddy River at the proposed gen-tie crossing and no habitat would be removed or affected by the Proposed Action. This species is known to occur along the Muddy River within the Overton Wildlife Management Area approximately 14 miles east of the Project. Critical habitat has not been designated for this species. While the nearest suitable habitat is approximately 14 miles from the Project area, rails may use the Muddy River for migration to and from breeding habitat and for dispersal, and those individuals may be at risk of colliding with the proposed gen-tie line. All overhead electrical lines would be designed and installed in accordance with the APLIC Suggested Practices for Avian Protection on Power Lines (APLIC 2006). While groundwater withdrawals may result in insignificant reductions in flow in the Muddy River, the magnitude of effects would be too small to affect Yuma Ridgway's rail habitat (e.g., hydrophytic vegetation) (see analysis in **Section 5.3**).

There have been two isolated incidents involving Yuma Ridgway's rail near solar projects. One mortality was discovered near the solar field at a PV solar project in Riverside County, California. Field data collected in connection with that incident failed to provide evidence of any direct impact or collision with a PV module. Another Yuma Ridgway's rail mortality was discovered at a PV solar project in Imperial County, California. In this instance too, there was no evidence of a collision with a PV module.

In response to these incidents, USFWS addressed the potential for solar projects to result in injury or mortality to Yuma Ridgway's rail in an incidental take statement for a project in Imperial County, California. The USFWS recognized that interactions between Yuma Ridgway's rail and PV facilities are improbable when such projects are distant from this species' habitat. The USFWS concurred with the BLM's finding that the project, located near the Colorado River in Riverside County, California, was "not likely to adversely affect" Yuma Ridgway's rail. Similar to the Yahthumb Project, that project area did not include aquatic habitat for Yuma Ridgway's rail and was not located in a flight path that would connect aquatic features. A portion of U.S. breeding populations is known to migrate annually to wintering grounds in northwest Mexico (Harrity and Conway 2020). However, we do not have information about and cannot predict the paths migrating (or dispersing) individuals may take and there is no evidence to indicate that dispersal of these species would occur in the Action Area.

### **Determination**

Due to the low number of Yuma Ridgway's rail mortalities at PV solar facilities and the lack of habitat in or near the Action Area, the potential for direct mortality to this species is low. Potential risk would be insignificant and discountable and potential indirect effects would be negligible. The Proposed Action may affect, but is not likely adversely affect, the Yuma Ridgway's rail. Critical habitat has not been designated for this species.

### 5.1.3 Southwestern Willow Flycatcher

There is no suitable habitat for southwestern willow flycatchers along the Muddy River at the proposed gen-tie crossing and no habitat would be removed or affected by the Proposed Action. There is no Designated Critical Habitat in the Action Area. Suitable habitat occurs approximately 4.5 miles upstream of the gen-tie line crossing of the Muddy River near the Warm Springs Ranch and potential breeding was observed there in 2019 (SNWA 2019). While few southwestern willow flycatchers are known to occur near the Warm Springs area, they may use the Muddy River for migration to and from breeding habitat and for

dispersal, and those individuals may be at risk of colliding with the proposed gen-tie. All overhead electrical lines would be designed and installed in accordance with the APLIC Suggested Practices for Avian Protection on Power Lines (APLIC 2006). While groundwater withdrawals may result in insignificant reductions in flow in the Muddy River, the magnitude of effects would be too small to affect southwestern willow flycatcher or its habitat (e.g., riparian vegetation; see analysis in **Section 5.3**).

### **Determination**

Due to the low number of southwestern willow flycatchers that occur near the Action Area and the lack of habitat in the Project area, the potential for direct mortality to this species is low. Potential risk would be insignificant and discountable and potential indirect effects would be negligible. The Proposed Action may affect, but is not likely adversely affect, the southwestern willow flycatcher. No Designated Critical Habitat is within the Action Area; therefore, the Project would have no effect to Designated Critical Habitat.

## **5.2 Desert Tortoise**

### **5.2.1 Injury and Mortality**

An estimated 29.1 adult desert tortoises are expected to occupy the entire Action Area (95% CI: 15.06 – 56.08 based on 2019 USFWS protocol calculations [USFWS 2019a]). Therefore, construction of the Proposed Action may result in impacts to up to 57 adult desert tortoises through injury or direct mortality of desert tortoise. Such injury or mortality could occur from vehicle strikes or other adverse interactions with Project-related equipment. However, translocation of tortoises and the implementation of avoidance and minimization measures are expected to avoid all or most of these potential injuries or mortalities.

Beside the initial construction, O&M activities inside and outside the solar site could represent a source of ongoing mortality. As such, direct take of desert tortoises resulting from these activities is expected to be very low.

### **5.2.2 Relocation, Translocation and Handling**

Temporary desert tortoise exclusion fencing would be installed prior to construction and desert tortoises would be relocated via clearance surveys before the construction phase of the Project. Tortoises would be relocated to Tribal lands and/or BLM lands within the Action Area as described in the Project's translocation plan. Relocation of desert tortoises can potentially represent take via harassment and/or mortality, as there is a possibility for tortoises to be killed or injured as a result of this process. It is expected that all tortoises would be captured and safely released outside the exclusion fence adjacent to the Project site. Tortoises encountered along the gen-tie line would be relocated out of harm's way in the immediate vicinity of where they were found.

### **5.2.3 Loss of Occupied Habitat**

The Proposed Action includes the installation of temporary desert tortoise exclusion fencing around the solar facility and utilizing gates and cattle guards (with ramps) at ingress/egress locations. The permanent perimeter fence for the Project would be constructed inside of the exclusion fencing and would remain permeable to tortoise movements. Exclusion fencing would be removed after construction, allowing tortoises to move onto and through the site during operations, except around the substation and BESSs, where exclusion or impermeable fencing would remain intact.



Vegetation would be cleared along site access roads, at the Project substation, at inverters, and along cable trenches. However, most native vegetation within the solar arrays would be left in place during construction. Equipment would drive and crush vegetation as needed, preserving the integrity of root balls and up to 18 inches of photosynthetic material, allowing it to regrow after construction. Tall shrubs would be trimmed to allow for installation of panels. Native vegetation would remain in the solar arrays during operations and would provide suitable habitat for tortoises during operations.

A total of approximately 308 acres of occupied desert tortoise habitat would be permanently disturbed and up to approximately 1,174 acres would be temporarily disturbed as a result of Project implementation (**Table 2-2**).

Construction equipment would not operate beyond the fenced boundary with the exception of the access road and gen-tie ROWs. Roads outside of the Project area that are not designated as open by the Applicant and Tribe are not to be used by Project personnel unless accompanied by a biological monitor.

The Proposed Project is not expected to substantively contribute to habitat fragmentation because the preservation of native vegetation on site and a permeable fence would allow tortoises to re-occupy the site after construction.

The Project activities would not have direct or indirect effects on the physical characteristics of Designated Critical Habitat that are required to support the recovery of the species because there is no Designated Critical Habitat within the Action Area.

#### **5.2.4 Constriction of Movement**

The Proposed Action is currently located in an area where desert tortoise movement is generally unrestricted. Topography in the area is gently sloping to rolling with no major barriers to movement in the immediate vicinity of the Project (**Figure 3-1**). Temporary exclusionary fencing would be installed around the perimeter of the site in order to exclude tortoises during construction. The exclusionary fencing would restrict desert tortoise movement on the site during construction (approximately 12 to 14 months) but would not preclude north-south movement or east-west movement around the exclusionary fencing due to large quantities of similar habitat surrounding the Project. The exclusionary fencing surrounding the Project would be removed after construction is complete. During operations, tortoises would be allowed to re-inhabit and move freely through the solar arrays.

Given the existing natural and anthropogenic barriers, because most vegetation would be maintained on the Project site, and the perimeter fence would remain permeable during operations to allow tortoises to occupy and move through the solar arrays, Project activities would be unlikely to further reduce genetic connectivity in the area.

#### **5.2.5 Vibration and Noise**

Equipment that would cause surface disturbance and otherwise operate during construction would be limited to what would be needed to grade dirt access roads, equipment to install solar arrays, trenching equipment for installation of cable and wiring and equipment to install the proposed electric substation. Areas outside of the exclusion fence may experience short-term vibrations and increased noise that could potentially disturb desert tortoises. Noise and vibration would be temporary and sporadic. Construction taking place near the perimeter edge of the exclusion fence is limited. Ground-disturbing activities during O&M would be substantially less than during construction of the Proposed Action, such that no adverse effects on desert tortoise from ground vibration or noise are expected to occur during O&M.

### 5.2.6 Dust

Construction activities and O&M vehicle traffic on the roads within the Action Area could generate dust that could affect vegetation adjacent to the Action Area in the short-term; long-term adverse effects on vegetation are not expected to occur. The buildup of dust on plant leaves could affect photosynthetic productivity and nutrient and water uptake resulting in loss of potential foraging plants for desert tortoises. It is assumed that this low-level dusting effect during construction would be minimal and most likely washed away during rainstorms. Construction BMPs would be in place to monitor and decrease dust pollution, if required, by use of polymeric stabilizers in the soil or with frequent watering with water trucks or other means.

### 5.2.7 Lighting

Temporary lighting would be used during construction for nighttime activities. There may also be mobile lighting located at entrances during construction. Lighting would likely be used more during the wintertime to ensure safe working conditions for personnel. Minimal lighting would be used on-site and would be directed inward and downward. Site lighting would include motion sensor lights at the O&M area for security purposes. Lighting used on-site would be of the lowest intensity foot candle level, in compliance with any applicable requirements from the Moapa Band, measured at the property line after dark. The Project's lighting system would provide operation and maintenance personnel with illumination for both normal and emergency conditions near the main entrance, the Project substation, and at the BESS facilities. Lighting would be designed to provide the minimum illumination needed to achieve safety and security objectives and would be downward facing and shielded to focus illumination on the desired areas only. There would be no lighting in the solar field except for emergency lighting at the BESS facilities. Therefore, light trespass on surrounding properties would be minimal. If lighting at individual solar panels or other equipment is needed for night maintenance, portable lighting would be used. Project lighting is not expected to have a more than negligible effect on desert tortoises near and adjacent to the Proposed Action.

### 5.2.8 Edge Effects

The edge effect is the effect of the juxtaposition or placing side by side of contrasting environments on an ecosystem. This term is commonly used in conjunction with the boundary between natural habitats and disturbed or developed land. The Proposed Action includes placement of a temporary exclusionary perimeter fence during construction. Other than impacted burrows or desert tortoises that need to be relocated during fence construction we assume that there would be no permanent or long-term edge effects as a result of the Proposed Action. The fence may create roosting sites for ravens or birds of prey; these effects would be mitigated through the preparation and implementation of a Raven Control Plan (**Appendix I** of the DEIS). Measures that are included in the Raven Control Plan to manage ravens include: preventing access to anthropogenic food and water sources; garbage management; prohibitions on intentionally feeding ravens; limiting availability of water; raptor-friendly designs or retrofits on utility poles that will discourage or eliminate the potential for raptor nests that could also be used by ravens; inactive raven nest removal; limiting raven attractants; raven hazing; utility structure removal following decommissioning; perch deterrents; annual inspections of potential nesting sites; and active raven nest buffers.

### 5.2.9 Introduction of Weeds and Invasive Species

Introduction of weeds and invasive species would be controlled using an Integrated Weed Management Plan and would prevent or minimize the spread/colonization of weeds onsite and off-site. Invasive species could be introduced to the area via transport by construction vehicles and equipment. The ground would

be disturbed during construction providing increased opportunity for weed establishment, though much less than if the site were to be fully graded. The Integrated Weed Management Plan (**Appendix F** of the DEIS) would identify management and operational practice to avoid the introduction or spread of existing invasive species within the Action Area. The goal of this plan would be to minimize potential effects from weeds and invasive species within the Action Area and adjacent lands, as well as to avoid adverse effects on desert tortoise foraging habitat off-site. Implementation of this plan would result in no adverse effects on desert tortoises from weeds or invasive species within the Action Area or on adjacent lands.

#### 5.2.10 Exposure to Chemicals

The primary wastes generated at the Project during construction, operation, and maintenance would be nonhazardous solid and liquid wastes. Limited quantities of hazardous materials would be used and stored on the solar sites. The BESS could include lithium-ion batteries that would need replacement periodically and the used batteries would need to be disposed of according to appropriate protocols. The primary hazardous materials on site during construction would be the fuels, lubricating oils and solvents associated with construction equipment. The nonhazardous wastes produced by construction and O&M activities would include defective or broken electrical materials and batteries, empty containers, the typical refuse generated by workers and small office operations, and other miscellaneous solid wastes. The types of wastes and their estimated quantities will be discussed in a hazardous materials plan that will be developed for the Project.

Prior to construction, the Applicant will prepare a Spill Prevention and Emergency Response Plan that addresses waste and hazardous materials management, including BMPs related to storage, spill response, transportation, and handling of materials and wastes. Waste management would emphasize the recycling of wastes where possible and would identify the specific landfills that would receive wastes that cannot be recycled.

Mechanical treatment of weeds is the preferred method for the Project; however, herbicides may be used if necessary. Herbicide use would follow those approved in BLM's Programmatic EIS (PEIS) for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Managed Lands in 17 Western States (BLM 2007, BLM 2017). The herbicides that may be used in mowed areas, based on those allowed on BLM lands, include aminopyralid, clopyralid, imazapyr, imazapic, glyphosate, metasulfuron methyl, and rimsulfuron. The applicant would implement a Site Restoration Plan and an Integrated Weed Management Plan that specifies procedures for managing vegetation and minimizing the spread of non-native and noxious weeds, including integrated pest management and use of herbicides. Standard Operating Procedures (SOPs) would be incorporated into the Integrated Weed Management Plan (**Appendix F** of the DEIS) and implemented. Herbicides that are believed to have deleterious effects on reptiles, such as 2,4-D, would not be allowed. Any herbicide use would be used during the less active tortoise season.

Water is the preferred method for reducing dust for the Project; however, palliatives may be used in permanent disturbance areas at the beginning of construction where tortoises have been excluded. Approved palliatives for use in desert tortoise habitat include Road Bond 1000, Soil Cement (for roads and heavy traffic areas), Formulated Soil Binder (FSB) 1000 (for non-traffic areas on finer soils) and Plas-Tex (For non-traffic areas on sandier/rockier soils). Since palliatives would only be used in areas where tortoises have been excluded, they should not come into contact with these substances.

### 5.2.11 Attraction of Human Subsidized Predators

Avian predators and scavengers such as the common raven and canids benefit from a myriad of resource subsidies provided by human activities as a result of substantial development within the desert as compared to undeveloped desert landscapes (Boarman and Sazaki 1996). These subsidies can include food (e.g. garbage), water (e.g. temporary water ponds), nesting substrates (e.g. transmission lines and fencing), and safety from inclement weather or predators (e.g. buildings). Ravens and other predators may be attracted to elevated structures associated with the Proposed Action such as the perimeter fencing, gen-tie line poles, and the poles and buildings in the substation area. There is a potential for increased sources of food, trash or water both during construction and operation of the Project, particularly at facilities where people concentrate; however, a Raven Control Plan (**Appendix I** of the DEIS) was developed and would be approved prior to the initiation of construction activities. It addresses trash and litter control. These would reduce or eliminate potential raven (or other avian predators) related impacts to desert tortoises.

### 5.2.12 Operations and Maintenance

Because the solar site would be enclosed with permeable fencing and most vegetation would be maintained on the site during operations, it is likely that tortoises would pass through the solar site and reoccupy them to some extent, though the extent to which tortoise would reoccupy the site is unknown at this time. The presence of desert tortoises on the solar site may result in take (injuries or death). Tortoises may be injured or killed during routine maintenance of facilities inside by maintenance vehicles on the solar site. Minimization measures, such as biological monitors for ground disturbing activities, speed limits, and WEAP, would help to minimize impacts to desert tortoise during these routine maintenance activities (Refer to **Section 2.6**).

### Determination

Implementation of the Proposed Action may affect, and is likely to adversely affect, the desert tortoise in the Action Area. This determination is based on the following considerations:

- Construction of the Proposed Action may result in impacts to up to 57 adult desert tortoises through injury or direct mortality of desert tortoise.
- Construction-related impacts on the desert tortoise could include direct mortality or injury as a result of being crushed by vehicles and disturbance of soil. During pedestrian surveys of the Action Area, desert tortoise sign (e.g., scat, tracks, burrows, shell fragments) as well as live tortoises were observed. In addition to the direct and indirect effects of construction on the tortoise, temporary and permanent disturbance to desert tortoise habitat would occur.
- Capturing, handling, and relocating desert tortoises out of the solar site may result in harassment and possibly injury or death (Blythe et al. 2003). To minimize this effect, tortoises would be handled in accordance with USFWS handling protocols (Minimization Measures 4, 5, and 6).
- O&M activities along the gen-tie line, site access roads, and within the solar site could include direct mortality or injury as a result of being crushed by vehicles. Desert tortoises are expected to re-inhabit the solar site during operations, the extent of which is unknown at this time. Minimization measures (**Section 2.6**) would be implemented to minimize this risk.

## 5.3 Moapa Dace

The Moapa dace is only known to occur in the Muddy River and several associated headwater springs in the Warm Springs area. These springs represent the primary water source for the Muddy River to which the Moapa dace is endemic. The Proposed Action would include water withdrawal of up to 500 acre-feet (af) over approximately 12 to 14 months for construction-related activities and up to 10 acre-feet per year (afy) for panel washing and domestic use during the O&M period. Groundwater withdrawals represent the only potential effect to Moapa dace from the Proposed Action. The gen-tie line structures over the Muddy River would be placed so that they span the River and no impacts are expected within the river system.

### 5.3.1 Water Drawdowns

The entire flow of the Muddy River is derived from the discharge from the regional carbonate aquifer, except during infrequent precipitation events that increase River flows for up to a few days. Consumptive uses include 1) natural evapotranspiration, 2) surface-water diversions, and 3) groundwater diversions.

On July 14, 2005, a Memorandum of Agreement (MOA) was signed by the Southern Nevada Water Authority (SNWA), Meadow Valley Wash Water District (MVWWD), Coyote Springs Investments (CSI), Moapa Band and the USFWS regarding the withdrawal of 16,100 afy from the regional carbonate aquifer in Coyote Spring Valley and California Wash Basins that included conservation measures for the Moapa dace. The MOA outlined specific conservation actions that each party would complete in order to minimize potential impacts to the Moapa dace should water levels decline in the Muddy River system as a result of the cumulative withdrawal of 16,100 afy of groundwater from the two basins. On January 20, 2006, the USFWS concluded intra-service consultation and issued a programmatic biological opinion (PBO) entitled the *Intra-Service Programmatic Biological Opinion for the Proposed Muddy River Memorandum of Agreement Regarding the Groundwater Withdrawal of 16,100 Acre-Feet per Year from the Regional Carbonate Aquifer in Coyote Spring Valley and California Wash Basins, and Establish Conservation Measures for the Moapa Dace, Clark County, Nevada* (PBO).

The PBO indicated that the adverse effects associated with the withdrawal of 16,100 afy of groundwater would not result in “jeopardy” for the Moapa dace. Current monitoring data indicate that no instream flow trigger points have been reached (USFWS 2021b).

The Moapa dace would not be directly affected by the construction or O&M of the proposed action. However, groundwater withdrawals associated with the proposed action would indirectly affect the Moapa dace. The effects of these groundwater withdrawals were previously analyzed in the 2006 PBO which evaluated the cumulative effects associated with the withdrawal of up to 16,100 afy from the carbonate aquifer in Coyote Spring Valley and California Wash basins. The Tribe is one of several parties that would withdraw water under this analysis. Up to 2,500 afy of Tribal withdrawals were included for the Tribe out of the total 16,100 analyzed in the 2006 PBO; the 500 af for approximately 12 to 14 months (construction) and 10 afy (operations) of withdrawals proposed by the Project would be included in the previously permitted 2,500 afy. The K-road Project has already been built and is permitted to use up to 40 afy during operations (BIA 2012); the Moapa Solar Energy Center has not been built and water allocations (100 AF for construction and up to 30 afy during operations [BIA 2014]) would not be used as that will now become part of the Arrow Canyon Solar Project (ACSP) which is in construction and is permitted to use 100-300 afy during construction and up to 30 afy during operations (BIA 2020b); the Eagle Shadow Mountain project is in construction and is permitted to use 200 afy during construction and up to 20 afy during operations (BIA 2020a); together, the Southern Bighorn I and II Solar Projects are permitted to use

400 afy during construction and 40 afy during operations (BIA 2021); the Chuckwalla Solar Projects are in the permitting phase and will include three separate phases that will be built at separate times; each phase is proposing to use between 100 and 300 afy during construction and 30 afy for each phase during operations for a total of 90 afy during operations (BIA 2022). Total water use from the Muddy River system for all these projects, combined with the Proposed Action (up to 500 af for approximately 12-14 months for construction and 10 afy during operation), would be up to approximately 1,700 afy during construction (which would not occur at the same time) and up to 230 afy during operations, under the allotted 2,500 afy for the Tribe. The use of the 500 af for construction and 10 afy for operations would contribute to ongoing adverse effects to Moapa dace as was analyzed in the 2006 PBO to which this document tiers.

#### **Determination**

Groundwater pumping associated with the Proposed Action may affect, and is likely to adversely affect, Moapa dace because the withdrawal of water (500 af during construction and 10 afy during operations) could contribute to ongoing adverse effects as analyzed in the 2006 PBO.

### **5.4 Cumulative Effects**

Cumulative effects are those effects from future private, state, or Tribal activities that are likely to occur within the Action Area. Future federal actions are excluded as these are subject to Section 7 consultation under the ESA (50 CFR 402.02). The Eagle Shadow Mountain Solar Project is under construction on the Moapa River Indian Reservation (construction began in mid-2020). The Arrow Canyon Solar Project was recently approved and is under construction on the Reservation (construction began mid-2021). The Southern Bighorn Solar II and Solar I Projects were approved concurrently and would be located on the Reservation. The Gemini Solar and Battery Storage Project was recently approved and is under construction. It is to be located on BLM land southeast of the Reservation and the Yahthumb Project. The Chuckwalla Solar Project is in the permitting phase and would be located in the southeast corner of the Reservation. Since the action areas are managed by BIA and BLM, Section 7 consultation would be required.

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## **Appendix A. USFWS IPaC Species List**



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Southern Nevada Fish And Wildlife Office  
4701 N. Torrey Pines Drive  
Las Vegas, NV 89130-2301  
Phone: (702) 515-5230 Fax: (702) 515-5231

In Reply Refer To:  
Project Code: 2022-0048363  
Project Name: Yahthumb Project

May 27, 2022

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

### To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems 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 threatened and endangered species and to determine whether projects may affect threatened and endangered 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, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared 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 a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

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

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

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Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Migratory Birds
  - Wetlands
-

## **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:

### **Southern Nevada Fish And Wildlife Office**

4701 N. Torrey Pines Drive  
Las Vegas, NV 89130-2301  
(702) 515-5230

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## Project Summary

Project Code: 2022-0048363

Event Code: None

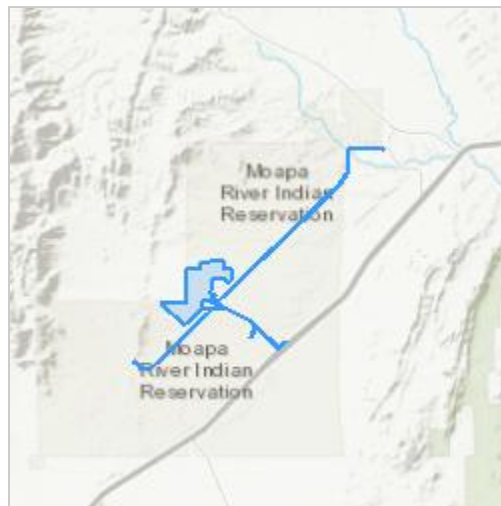
Project Name: Yahthumb Project

Project Type: Power Gen - Solar

Project Description: Photovoltaic Solar Project and gen-tie line

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@36.621788,-114.6868262240317,14z>



Counties: Clark County, Nevada

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## Endangered Species Act Species

There is a total of 6 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 Fisheries<sup>1</sup>, 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.

### Birds

NAME	STATUS
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/6749">https://ecos.fws.gov/ecp/species/6749</a>	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/3911">https://ecos.fws.gov/ecp/species/3911</a>	Threatened
Yuma Ridgway"s Rail <i>Rallus obsoletus yumanensis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/3505">https://ecos.fws.gov/ecp/species/3505</a>	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 <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/4481">https://ecos.fws.gov/ecp/species/4481</a>	Threatened

## Fishes

NAME	STATUS
Moapa Dace <i>Moapa coriacea</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1771">https://ecos.fws.gov/ecp/species/1771</a>	Endangered

## Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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# **USFWS National Wildlife Refuge Lands And Fish Hatcheries**

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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## Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

**The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\) list](#) or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bendire's Thrasher <i>Toxostoma bendirei</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9435">https://ecos.fws.gov/ecp/species/9435</a>	Breeds Mar 15 to Jul 31
Costa's Hummingbird <i>Calypte costae</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9470">https://ecos.fws.gov/ecp/species/9470</a>	Breeds Jan 15 to Jun 10

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NAME	BREEDING SEASON
<p><b>Golden Eagle</b> <i>Aquila chrysaetos</i></p> <p>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p> <p><a href="https://ecos.fws.gov/ecp/species/1680">https://ecos.fws.gov/ecp/species/1680</a></p>	<p>Breeds Dec 1 to Aug 31</p>

## Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

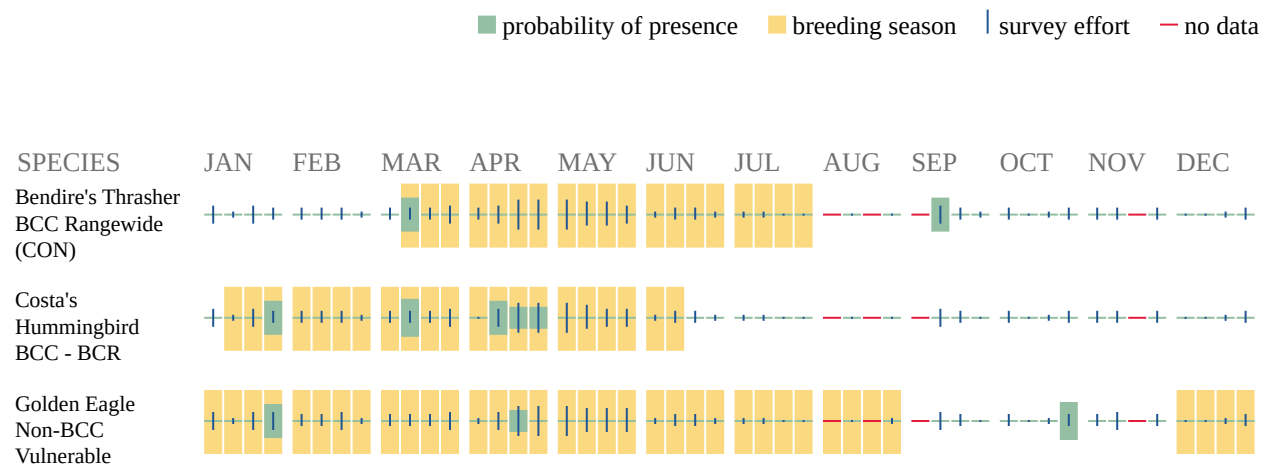
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

### No Data (—)

A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## Migratory Birds FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#)

may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

### **What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

### **What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### **How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
-

2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities,



should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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## Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

### RIVERINE

- [Riverine](#)

### FRESHWATER POND

- [Palustrine](#)
-

## **IPaC User Contact Information**

Agency: Bureau of Indian Affairs  
Name: Scott Albrecht  
Address: 8071 E 33rd ave  
City: Denver  
State: CO  
Zip: 80238  
Email: salbrecht@heritage-ec.com  
Phone: 3033305531

## **Lead Agency Contact Information**

Lead Agency: Bureau of Indian Affairs

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