



U.S. Department of the Interior
Bureau of Land Management

Libra Solar Project

Draft Environmental Impact Statement

January 2024

Volume 1

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Prepared by:

U.S. Department of the Interior
Bureau of Land Management

In Cooperation with:

U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
Nevada Department of Wildlife
Mineral County, Nevada
Lyon County, Nevada
U.S. Department of Defense, Hawthorne Army Depot

DRAFT EIS

DOI-BLM-NV-C000-2023-0001-EIS

Libra Solar Project

Prepared by

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January 2024

MISSION STATEMENT

The Bureau of Land Management's mission is to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.

ENVIRONMENTAL IMPACT STATEMENT FOR THE LIBRA SOLAR PROJECT

Responsible Agency: United States Department of the Interior, Bureau of Land Management

Document Status: Draft (X) Final ()

Abstract: Arevia Power, LLC, is proposing to construct, operate, maintain, and decommission an approximately 700-megawatt photovoltaic solar electric generating facility and ancillary facilities (Project) on 5,778 acres of federal lands administered by the United States (U.S.) Department of the Interior, Bureau of Land Management (BLM). The Project site is in Mineral County and Lyon County, Nevada, approximately 55 miles southeast of the Reno metropolitan area and 11 miles southeast of the town of Yerington. The expected life of the Project is 30 years.

The BLM has prepared this Draft Environmental Impact Statement (Draft EIS) with input from cooperating agencies and American Indian Tribes to address the impacts of the Project. The cooperating agencies include the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Nevada Department of Wildlife, Mineral County, and Lyon County. This Draft EIS evaluates the Proposed Action, three alternatives to the Proposed Action, and the No Action Alternative. The Proposed Action and the alternatives involve development within a requested right-of-way that includes the same solar site; however, each action/alternative differs in how the facility would be constructed, the components that would be constructed including the generation-tie (gen-tie) line, and the site access routes used during construction. The Proposed Action would involve solar development utilizing traditional development methods, which include disk and roll to remove vegetation in the solar array areas. Alternative 1 would reduce disturbance to major washes, vegetation, and soils within the solar array areas by locating development areas outside of the major washes and providing guidelines to limit vegetation disturbance during construction. Alternative 1 includes alternative construction methods such as drive and crush, the goal being to maintain vegetation root structures and to promote restoration over the lifespan of the Project. Alternative 2 would provide supplemental access during construction to disperse some of the concentrated vehicle trips anticipated under the Proposed Action. Alternative 3 entails connecting the gen-tie line from the Project to the proposed Greenlink West Transmission Project through a new switching station under the Greenlink West line, removing the need for approximately 23.6 miles of gen-tie, when compared to the Proposed Action. The No Action Alternative would be a continuation of existing conditions. The alternatives were developed using input from the public, stakeholders, tribal interests, and cooperating agencies. Environmental and planning issues addressed include impacts on recreational off-highway vehicle access. Impacts to grazing allotments, transportation, and environmental justice are also evaluated.

Review Period: Comments on the Draft EIS for the Libra Solar Project will be accepted for 45 calendar days following publication of the U.S. Environmental Protection Agency's Notice of Availability in the Federal Register. Comments can be submitted through the National BLM NEPA Register website, listed below. All comments must be received no later than 5:00 p.m. on February 5, 2024.

For further information, please contact:

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National BLM NEPA Register Website: <https://eplanning.blm.gov/eplanning-ui/project/2022592/510>



United States Department of the Interior



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Dear Reader:

Enclosed for your review and comment is the Draft Environmental Impact Statement (Draft EIS) for the Libra Solar Project (Project). The Draft EIS was prepared by the United States (U.S.) Department of the Interior, Bureau of Land Management (BLM) pursuant to the Federal Land Policy and Management Act of 1976 and the National Environmental Policy Act of 1969. The Project includes, through a right-of-way application, the construction, operation, maintenance, and decommissioning of an approximately 700-megawatt photovoltaic solar electric generating facility and ancillary facilities on approximately 5,778 acres of federal lands administered by the BLM.

In preparing the Draft EIS, the BLM has developed a range of options to resolve resource conflicts by considering: (1) issues raised through public scoping and consultation and coordination with cooperating agencies and American Indian Tribes, (2) issues raised by agency resource specialists, and (3) applicable planning criteria. This process has resulted in the development of three alternatives in addition to the Proposed Action. The No Action Alternative is also addressed, which constitutes a continuation of current land management in the application area. These alternatives are described in Chapter 2 of the Draft EIS.

The BLM has designated all elements of Alternative 1, Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance combined with Alternative 2, Supplemental Access During Construction, as the preferred alternative. As described in the Draft EIS, these alternatives would reduce ground disturbance, promote restoration over the lifespan of the project, and provide supplemental transportation routes during construction. Chapter 3 presents the affected environment and analyzes the potential impacts on resources or resource uses from implementation of the alternatives. Chapter 4 describes the BLM's consultation and coordination efforts throughout the process.

The BLM encourages the public to review and provide comments on the Draft EIS. Of importance is feedback concerning the adequacy of the alternatives and any new information that would help the BLM produce the Final EIS. In developing the Final EIS, which is the next phase of the planning process, the BLM, as the decision-maker, may select various components from each of the alternatives analyzed in the Draft EIS for the purpose of creating a Project that best meets the need to protect the environmental resource values of the Project area, while providing for multiple uses.

The Draft EIS is available on the Project website at: <https://eplanning.blm.gov/eplanningui/project/2022592/510>. Hard copies are also available for public review at the Carson City District

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Office, at the Lyon County Library in Yerington, Nevada, the Schurz Tribal Community Center in Schurz, Nevada, and at the Mineral County Public Library in Hawthorne, Nevada.

Public comments will be accepted for 45 calendar days following the U.S. Environmental Protection Agency's publication of its Notice of Availability in the Federal Register. The BLM can best use your comments and resource information submissions if received within the review period. Written comments may be submitted as follows:

National BLM
NEPA Register: <https://eplanning.blm.gov/eplanning-ui/project/2022592/510>

Email: blm_nv_ccdo_libra_solar@blm.gov

Mail: Libra Solar Project c/o Melanie Hornsby, Project Manager
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5665 Morgan Mill Rd.
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To facilitate the analysis of comments and information submitted, we encourage you to submit comments in an electronic format. Before including your address, telephone number, email address, or other personal identifying information in your comment, be advised that your entire comment, including your personal identifying information, may be made publicly available at any time. Although 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.

An in-person and a separate, virtual public meeting will be held to provide the public with opportunities to submit comments and seek additional information. The dates and times of these meetings will be announced at least 15 days prior to the first meeting via a press release and on the Project website: <https://eplanning.blm.gov/eplanning-ui/project/2022592/510>.
Thank you for your continued interest in the Libra Solar Project.

Sincerely,



Kimberly D. Dow
District Manager
Carson City District Office

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ES. Executive Summary

ES-1 Introduction

Overview

This Draft Environmental Impact Statement (Draft EIS) has been prepared by the United States (U.S.) Department of the Interior (DOI), Bureau of Land Management (BLM). This Draft EIS analyzes effects of and alternatives to the Libra Solar Project (Proposed Action or Project) described in the Plan of Development (POD) submitted by Arevia Power, LLC (Applicant). The BLM has prepared this Draft EIS in accordance with the National Environmental Policy Act of 1969 (NEPA) (Title 42 of the *United States Code* [U.S.C.] 4321 *et seq.*) and the Council on Environmental Quality (CEQ) NEPA Implementing Regulations (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508), revised as of May 20, 2022. The BLM is the Lead Agency for this Draft EIS pursuant to 40 CFR 1501.7.

Section 3104 of the Energy Act of 2020 (codified at 43 U.S.C. § 3004) directs the Secretary of the Interior to issue permits that, in total, authorize production of at least 25 gigawatts (GW) of electricity from wind, solar, and geothermal projects by 2025. Additionally, Executive Order 14082 requires federal agencies to prioritize promoting construction of clean energy generation, storage, and transmission, and enabling technologies through efficient, effective mechanisms that incorporate community engagement.

Purpose and Need

The need for the action (processing the Applicant's Application) is to respond to the Applicant's request for a right-of-way (ROW) authorization to construct, operate, maintain, and decommission the proposed Project in accordance with BLM's responsibility under the Federal Land Policy and Management Act (FLPMA) and 43 CFR Part 2800. The need for the action is also created by BLM's obligation to contribute towards the achievement of the goals established in Section 3104 of the Energy Act of 2020 and Executive Order 14057 through the development of renewable energy production on federal public land.

The purpose of BLM's action is to determine if the Applicant's project and alternatives are consistent with relevant laws, regulations, and policies, and to consider whether to grant, grant with modifications, or deny the ROW.

Decisions to be Made

The BLM will decide whether to deny the proposed ROW, grant the ROW, or grant the ROW with modifications. A ROW, if granted, would include terms, conditions, and stipulations that the BLM determines to be in the public interest and may include modifying the proposed use or changing the location of the proposed facilities (43 CFR 2805.10(a)(1)).

ES-2 Proposed Action and Alternatives

Introduction

In accordance with the CEQ's NEPA Regulations (40 CFR § 1502.14), an EIS must present the environmental impacts of a proposed action, no action, and other reasonable action alternatives, as well as provide a comparison of the impacts by alternative. The EIS must define the issues such that the public and decision makers can readily understand them, thus contributing to a basis for an informed and reasoned decision.

Alternatives to the Proposed Action were developed by the BLM to avoid or reduce various resource conflicts. Resource conflicts include loss of habitat for wildlife species, changes to drainages and hydrology, loss of grazing land for rangeland permittees, traffic, socio-economic impacts from an influx of workers to construct the facility, and dust generation during construction.

Three alternatives to the Proposed Action were developed in response to issues raised by the public and agencies during scoping. One alternative addresses alternative methods to construct the facility to preserve vegetation and site hydrology. Another alternative specifically addresses adding supplemental construction access. The last alternative presents an option for reducing effects of the Project's method for connecting to the regional transmission system.

Several other alternatives were identified and considered but were eliminated from detailed analysis. Additional information on the development and details of the alternatives to the Proposed Action is provided in Section 2, including other alternatives considered but eliminated from further analysis and the rationale for eliminating them from detailed analysis. The following sections provide an overview of the Proposed Action and the alternatives carried forward for analysis in this Draft EIS.

Proposed Action

The Applicant is requesting BLM authorization to construct, operate, maintain, and decommission a 700-megawatt (MW) photovoltaic solar electric generating facility and ancillary facilities. The proposed on-site solar facilities include 34.5 kilovolt (kV) above ground or underground collector lines, a 2.8-acre operation and maintenance (O&M) facility, an 8.3-acre substation facility, a battery energy storage system, internal access roads, access roads along a generation tie line (gen-tie) line, a perimeter road, perimeter fencing, a water storage tank for fire protection, drainage control features, and an on-site water well. The Project would result in the permanent disturbance of approximately 3,420 acres within the 5,778-acre ROW application area. The Project site is in Mineral County and Lyon County, Nevada, approximately 55 miles southeast of the Reno metropolitan area and 11 miles southeast of the town of Yerington.

Alternatives

Several potential alternatives were identified and considered by the Applicant and the BLM. Of the various alternatives considered, the No Action, the Proposed Action, and three additional alternatives were identified for analysis in the Draft EIS, listed here:

1. Alternative 1: Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance
2. Alternative 2: Alternative Supplemental Access During Construction
3. Alternative 3: Alternative Gen-tie Connecting to Greenlink West

Each action alternative includes approval of a ROW grant by BLM. The Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance Alternative would modify the Proposed Action to reduce disturbance to major washes and vegetation and soils within the solar site by avoiding and establishing development areas outside of the major washes and providing guidelines for limiting vegetation disturbance during construction. The Supplemental Access During Construction Alternative would also modify the Proposed Action to provide supplemental access during construction to disperse some of the proposed vehicle trips concentrated on East Walker Road under the Proposed Action. The Gen-tie Connecting to Greenlink West Alternative would connect the gen-tie line from the Project to the proposed Greenlink West Transmission Project through a new switching station under the Greenlink West line. This alternative requires authorizations that are not guaranteed at this time. NV Energy must support this alternative in consideration of system operation and integration.

No Action Alternative

CEQ regulations (40 CFR 1500–1508) for implementing NEPA require that an EIS alternatives analysis include a No Action Alternative. In accordance with this requirement, under the No Action Alternative, BLM would deny the ROW grant, the Project would not be constructed, and the BLM would continue to manage the land consistent with the 2001 Carson City Field Office Consolidated Resource Management Plan (CRMP). Under the No Action Alternative, the Project area would remain open for future solar development or other uses consistent with the BLM statutory, regulatory, and planning guidance and policies.

ES-3 Consultation and Coordination

Public Participation

Numerous opportunities for public input have occurred during BLM's NEPA decision-making process. The BLM published a Notice of Intent (NOI) to prepare an EIS for the Project in the *Federal Register* on April 24, 2023, which initiated a 30-day public scoping period for the Project, ending on May 24, 2023. The BLM hosted a virtual public scoping meeting for the Project on May 8, 2023. Agencies and stakeholders were notified by postcard of the public scoping meeting opportunity. The BLM received 25 emails and letters during the scoping period. A Scoping Report was prepared to summarize the comments received (BLM 2023) and can be found at the BLM's National BLM NEPA Register website: <https://eplanning.blm.gov/eplanning-ui/project/2022592/570>. External scoping also included meetings with the grazing permit operator, meetings with off-highway vehicle (OHV) users, and feedback from interested parties including the Los Angeles Department of Water and Power (LADWP) and Nevada Copper.

Publication of the Draft EIS in the *Federal Register* of the U.S. Environmental Protection Agency's (USEPA) Notice of Availability (NOA) of the Draft EIS initiates a 45-day public review and comment period under NEPA.

Interagency Consultation and Coordination

Cooperating Agencies

In July 2022, the BLM sent Cooperating Agency invitation letters for the Project to federal, state, and local agencies. The Cooperating Agencies that accepted the invitation include USEPA; Hawthorne Army Depot; U.S. Fish and Wildlife Service (USFWS) Migratory Bird Program; Nevada Department of Wildlife; Mineral County, Nevada; and Lyon County, Nevada.

Tribes

The BLM has initiated government-to-government consultation with Indian Tribes, pursuant to Executive Order 13175 of November 6, 2000 (Consultation and Coordination With Indian Tribal Governments); American Indian Religious Freedom Act (AIRFA); and Executive Order 13007, Indian Sacred Sites; and consistent with the Programmatic Agreement for the Western Solar Plan (2012). In a separate process, Indian Tribes have also been invited to participate specifically in the NEPA review and under Section 106 of the National Historic Preservation Act (NHPA).

The BLM is conducting on-going government-to-government consultation with Bridgeport Indian Colony, Fallon Paiute-Shoshone Tribe, Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, Walker River Paiute Tribe, Washoe Tribe of Nevada and California, Yerington Paiute Tribe, and Yomba Shoshone Tribe. Key concerns include potential impacts to the Piston-Black Mountain Conservation Area and other nearby sensitive cultural sites, particularly along the gen-tie line. In a process separate from the government-to-government consultation, the BLM also invited the following Tribes, which are within an extended regional area, to participate in scoping to inform the NEPA and NHPA Section 106 reviews: Moapa Band of Paiutes, Las Vegas Paiute Tribe, Kaibab Band of Paiutes, Paiute Indian Tribe of Utah, Ely Shoshone Tribe, and Duckwater Shoshone Tribe. The Moapa Band of Paiutes provided scoping comments on topics such as biological resources, vegetation removal, viewshed analyses, Project water use, and cultural resources.

On June 26, 2023, and July 12, 2023, the BLM hosted virtual tribal meetings to present the proposed action, show maps of the Project facilities, and provide an overview of key resource findings based on the completed technical studies. Representatives from the Walker River Paiute Tribe, Reno-Sparks Indian Colony, and Fallon Paiute Shoshone Tribe participated in the meetings.

The BLM has identified potential impacts to cultural resources in this Draft EIS and is continuing discussions with Tribes through formal and informal consultation to ensure that all concerns are considered in proposed mitigation.

State Historic Preservation Office Consultation

Section 106 of the NHPA requires that all federal agencies consider the effect of undertakings they conduct, license, approve, or fund on historic properties. The Section 106 implementing regulations at 36 CFR 800.8(c), allow a Federal agency to use the NEPA environmental review process to comply with Section 106 of the NHPA in lieu of the procedures set forth in 36 CFR 800.3 - 800.6. The BLM initiated Section 106 consultation with the Nevada State Historic Preservation Office (SHPO) and the Advisory Council of Historic Preservation (AChP) on April 14, 2022. This Section 106 consultation process is integrated with the NEPA process for the Project; see Chapter 4 regarding additional information on coordination and consultation. The BLM has consulted with the SHPO and AChP and will continue to consult regarding the Draft EIS consistent with the standards set forth in 36 CFR 800.8(c)(1). BLM is sending eligibility determinations on resources for SHPO concurrence.

ES-4 Issues

Areas of controversy raised during scoping by the public and agencies that are analyzed in detail in this Draft EIS are summarized in Table Executive Summary (ES)-1. All issues described in Table ES - 1 have been analyzed in detail within the Draft EIS. Further detail is included in each respective resource sub-section within Chapter 3. Several other resource topics in addition to those listed in the table are analyzed in the Draft EIS, including Geology, Soils, and Mineral Resources; Native American Concerns; and Transportation.

Table ES - 1 Areas of Controversy Raised During Scoping and Analyzed in Detail

Resource or EIS topic	Topic
Land use and realty	Commenters raised questions about whether the gen-tie would impact existing ROWs. An existing deenergized distribution-line ROW owned by NV Energy doing business as Sierra Pacific Power is located within the Project solar site and would need to be realigned and LADWP operates a transmission line in the vicinity of the Project.
Minerals	Commenters raised questions about whether the Project would impact access to the Pumpkin Hollow Mine, located adjacent and north of the Project site. The gen-tie would cross unpatented mining claims held by Nevada Copper.
Rangelands/grazing	Commenters raised questions about whether the Project could impact two active grazing allotments and pasture fences, pipelines, wells, and troughs within the Project area.
Recreation	Commenters raised questions about whether the Project would impact OHV usage and race routes located in the Project area. The Nevada Off-Road Association expressed support for the Project given that key special recreational permitting (SRP) OHV routes would remain open.
Visual resources	The Project is in an unclassified visual resource management (VRM) class but was assigned an interim VRM of Class IV. Commenters raised questions about the visibility of the site from Pistone-Black Mountain National Conservation Area.
Water resources	The Project would have water needs that may be sourced by groundwater. Commenters raised questions about groundwater uses, drainage pattern changes and the need to avoid significant drainages with a buffer.
Vegetation and noxious weeds	Invasive species can be spread by off-road vehicles and contaminate formerly weed-free areas. Commenters raised questions about weed control and integrated weed management planning, given the scale of disturbance.

Resource or EIS topic	Topic
General wildlife; special status species; and threatened, endangered, and candidate species	<p>Commenters raised questions about potential impacts to big game species, small mammals, and migratory birds, as well as loss of habitat and the loss of movement corridors through the solar site. Several commenters raised questions about potential impacts to Bi-State sage grouse, a special status species under consideration for listing as endangered or threatened under the Endangered Species Act (ESA). The Project site does not support suitable habitat for Bi-State sage-grouse and it is not located within any mapped habitat identified in the 2016 Record of Decision and Land Use Plan Amendment for the Nevada and California Greater Sage Grouse Bi-State Distinct Population Segment in the Carson City and Tonopah Field Office (2016 Bi-State Sage Grouse Plan Amendment) (BLM 2016). This species is addressed in the Draft EIS, given questions and concerns, despite it not being present nor having any potential to be directly or indirectly affected.</p> <p>The USFWS raised concerns regarding yellow-billed cuckoo, a federally listed endangered species. This species has not been documented in or near the Project area during recent surveys, nor in the past. The species could, theoretically, migrate along the Walker River corridor. A single crossing of the gen-tie occurs over the Walker River. As such, this species is addressed in the Draft EIS to identify the means of avoidance.</p>
Cultural resources	<p>Commenters raised questions about potential impacts to traditional and cultural Native American resources (including, but not limited to natural resource values encompassing water resources, wildlife, and big game; and other spiritual values), archaeological resources, and historic resources. Tribes also raised questions about whether the Project would impact accessibility to Piston-Black Mountain National Conservation Area from the site.</p>
Air quality and greenhouse gases/ climate change	<p>Project construction would result in air quality impacts including exhaust emissions as well as dust generation. Commenters raised questions about dust control as well as quantification of potential air quality impacts.</p>
Socioeconomics	<p>Commenters raised questions about potential socioeconomic impacts including impacts to housing demand, including transient housing; economic conditions; property values; community services; and tax revenues.</p>
Environmental justice	<p>The Project region includes low-income, minority, and Native American populations. Commenters raised questions about potential disproportionate and adverse impacts to these populations.</p>
Public health and safety	<p>Commenters raised questions about potential impacts to wildfire risk and disposal of hazardous wastes and wastes such as batteries, transformers, semiconductors, and inverters.</p>
Soils	<p>Commenters raised questions about potential soils impacts from dust and erosion.</p>
Transportation and traffic	<p>Lyon County and a resident raised questions about potential traffic and safety impacts due to increased Project construction traffic on East Walker Road.</p>

ES-5 Comparison of Effects

Table ES - 2 compares the anticipated effects of the Proposed Action and each alternative on the resources analyzed in this Draft EIS. The No Action Alternative would have no effects to any of the environmental resources listed, as the Project would not be built.

Table ES - 2 Comparison of Impacts between Proposed Action and Alternatives – Major System Features

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
Recreation: Access to existing recreation opportunities or areas	Up to 5,141 acres of land open for recreational use would be removed from use for a period of approximately 30 years. Direct access to Old State Road 2C and other designated OHV routes would remain open through construction and for the life of the Project. The Proposed Action would result in loss of approximately 14 miles out of 12,357 total miles of OHV trails within the Carson City District (approximately 0.1 percent).	Reduced compared with the Proposed Action. Approximately 2.25 miles of additional drainages would be unfenced as compared with the Proposed Action, allowing for continued OHV access. Impacts to designated trails would be the same as the Proposed Action.	Same as Proposed Action.	Reduced compared with the Proposed Action because trails and race routes would not be crossed by the gen-tie.	No change, existing recreational access and opportunities would remain.
Soils: Erosion and topsoil	The solar site would result in 3,306 acres of new ground disturbance and the gen-tie would result in 104 acres of new ground disturbance. Surface disturbances and removal of vegetation during construction would increase the potential for soil erosion. Potential adverse effects would be	Reduced compared with the Proposed Action, with 1,807 acres of estimated ground disturbance compared with 3,306 for the Proposed Action. Minimizing soil disturbance, avoiding large drainages, and maintaining vegetation would reduce erosion and	Same as Proposed Action.	Reduced compared with the Proposed Action since approximately 11.8 acres of new ground disturbance would result for the gen-tie, as compared with 104 acres for the Proposed Action.	No change to existing soil conditions.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	minimized with implementation of the Storm Water Pollution Prevention Plan (SWPPP) during construction and through mitigation, including erosion stabilization, during O&M. Grading for site preparation could result in loss of topsoil and would be minimized through best management practices (BMPs), including topsoil salvage.	loss of topsoil over the life of the Project.			
Land Use and Realty: Grazing	The Project would result in the loss of 5,141 acres of grazing lands operated by a permit holder due to development of the solar site and impacts to 104 acres for the gen-tie. The Applicant would work with the grazing permit holder to provide infrastructure improvements and a new water source to allow for grazing in other portions of the allotment west of the Project site. Due to the removal of all	The impacts would be reduced as compared with the Proposed Action, by allowing for faster restoration of grazing land after decommissioning.	Same as Proposed Action.	Similar but reduced as compared with the Proposed Action. Rangeland is located along the gen-tie and construction would result in some impacts to 104 acres of grazing land under the Proposed Action for the gen-tie, which would be reduced to 11.8 acres under this alternative.	No change in to existing grazing operations.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	vegetation on the solar site and the slow revegetation process of desert landscapes, the loss of grazing land could persist for decades to century or more after decommissioning.				
Water resources: Sedimentation and flooding	The Proposed Action would involve surface disturbance through traditional construction methods, which could increase erosion and sedimentation during construction and O&M. The Proposed Action is not anticipated to increase the likelihood of on- or off-site flooding, which is further reduced through inclusion of retention basins, and major drainage features would remain undeveloped. Stormwater flows level out in the mid-valley and would not impact any other land uses. Implementation of the SWPPP BMPs and other	Reduced compared with the Proposed Action. Minimizing soil disturbance, avoiding large drainages, and retention of existing vegetation would reduce sediment loss and erosion and would reduce the increases in off-site flow volumes and velocities such that they would be similar to pre-Project conditions.	Same as Proposed Action	Reduced compared with the Proposed Action. By reducing the gen-tie from 24.1 miles to 0.54-mile, fewer impacts to drainages from the gen-tie and gen-tie access road construction would occur.	No change to existing sedimentation or flooding regimes.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	measures would further minimize the impact.				
Water resources: Groundwater quality or quantity	The Proposed Action would have no impact on groundwater quality. If a groundwater well were developed, groundwater pumping would not have direct impacts to water quantity available to surrounding water users (i.e., East Walker River) or other beneficial uses. The project could use water for dust control. Cumulative impacts to groundwater use and surface manifestations of groundwater would be minimized or avoided through the water appropriation review process.	Similar to the Proposed Action. A reduction in the need for dust-control water may be possible for this alternative.	Similar to the Proposed Action, although approximately 10 to 15 percent more water may be needed for dust control.	Similar to the Proposed Action. Less dust-control water would be needed for this alternative since the gen-tie would be reduced from 24.1 miles long to 0.54 mile long.	No change to existing groundwater resources.
Vegetation and plants: Native vegetation communities and plants and wildlife habitat	Approximately 3,420 acres of previously undisturbed native vegetation would be permanently removed.	Reduced compared with the Proposed Action. With the application of less intensive and less disturbing construction methods within the solar array blocks, on-site vegetation would experience a higher	Same as Proposed Action.	Reduced compared with the Proposed Action since 11.8 acres of new disturbance to native vegetation would occur for the gen-tie, as compared with	No change to existing vegetation or wildlife habitat.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
		likelihood of survival and regrowth during and after construction as well as during O&M. Minimizing soil disturbance and retention of existing vegetation would reduce impacts to natural vegetation communities and plants.		104 acres for the Proposed Action.	
Vegetation and plants: Special status plant species	A few populations or individuals of sensitive plant species are present in areas proposed for disturbance, including an estimated 35 individuals of sand cholla and one location of Tonopah milkvetch, which would be permanently lost. Special status plant distribution is anticipated to be similar outside of the Project area and, although impacts would be adverse, the Proposed Action would not be expected to jeopardize the viability of the species in the region. Implementation of mitigation measures and	Reduced compared with the Proposed Action. With the application of less intensive and disturbing construction methods within the solar array blocks, special status plant species would experience a higher likelihood of survival and regrowth during and after construction as well as during O&M. Minimizing soil disturbance and retention of existing vegetation would reduce impacts to special status plant populations.	Same as Proposed Action.	Reduced compared with the Proposed Action since 11.8 acres of new disturbance to native vegetation would occur for the gen-tie, as compared with 104 acres for the Proposed Action.	No change to existing special status plant species.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	BMPs that include avoidance and worker education would reduce impacts.				
Vegetation and plants: Invasive noxious species	Vegetation removal and use of construction equipment and vehicles could facilitate the spread of invasive weeds. The Site Restoration and Revegetation Plan and Integrated Weed Management Plan would control propagation of invasive species, but invasive species may persist, resulting in an adverse impact to habitat and wildlife.	Reduced compared with the Proposed Action. Minimizing soil disturbance and retention of existing vegetation within solar array blocks would reduce the opportunity for the spreading of existing and introduction of new invasions of noxious weeds.	Greater potential for adverse impacts due to introduction of more vehicle trips to supplemental routes, which could spread weeds, although no new ground disturbance would be associated with this alternative as compared with the Proposed Action.	Reduced as compared with the Proposed Action by reducing the length of the gen-tie, which can be a vector for noxious weeds, from 24.1 miles to 0.54 mile.	No change to existing invasive noxious species.
Wildlife: Special status wildlife species	The Project Area is not within a migratory corridor for big game species although pronghorn antelope have been seen on the site and in the valley, no roosting habitat for bats occurs on the solar site but forage over the site occurs, and the solar site does not contain suitable nesting habitat for golden eagles.	Reduced compared with the Proposed Action. With the application of less intensive and disturbing construction methods under the solar arrays, there would be reduced impact on special status wildlife habitat. Separately fenced solar array blocks that allow for wildlife to move between them through the solar	Same as Proposed Action.	Reduced as compared with the Proposed Action by reducing overall disturbance from 104 acres to 11.8 for the gen-tie and switching station. The largest reduction in impacts would be to migratory birds, particularly in proximity to the	No change to existing special status wildlife species.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	Surveys found potential occurrence of desert kangaroo rats; however, occurrences were so few, it is unlikely they are present in large numbers, and the Proposed Action is not anticipated to impact species viability although it would result in loss of habitat for these wildlife species.	site would also reduce impacts as compared with the Proposed Action.		Mason Valley Wildlife Management Area (WMA) and the Walker River.	
Air quality and climate change: Dust and vehicle emissions	The Proposed Action would involve ground disturbance through the use of construction vehicles, which would generate fugitive dust and vehicle emissions during construction and decommissioning. The Proposed Action would not result in violations of air quality standards with the application of dust control measures. Project would reduce greenhouse gas emissions from solar energy generation.	Similar to the Proposed Action. Minimizing soil disturbance and retention of existing vegetation could result in increases of fugitive dust and vehicle emissions during construction and O&M, since in areas where vegetation is left the soils would not be compacted.	With the inclusion of one or more supplemental access routes during construction, air quality emissions from vehicle combustion engines would be dispersed across multiple roadways. While regional air quality impacts would be similar to those for the Proposed Action, emission concentrations during construction along East Walker Road could be reduced.	Reduced by reducing the length of the gentie from 24.1 miles to approximately 0.54 mile. A new road would be constructed that would result in approximately 1.4 acres of new disturbance as compared with 64 acres under the Proposed Action. Air quality impacts would be reduced.	No beneficial impact of reduction in greenhouse gas emissions. No fugitive dust and vehicle emissions related to the Project.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
Visual resources: Contrasting visual elements	The Proposed Action would create, at most, moderate contrast when viewed from identified <i>key observation points</i> (KOPs). The Proposed Action would meet the objectives associated with VRM Class IV from all KOPs, which is the interim assigned class. Since the area is assigned the interim Class IV rating, the Project would be in conformance with the CRMP.	Reduced as compared with the Proposed Action since vegetation would be maintained under the panels. Visual impacts would also be reduced at decommissioning since up to 65 percent of the original application area would be expected to be maintained, as compared with 35 percent under the Proposed Action.	Same as Proposed Action.	Reduced as compared with the Proposed Action by eliminating over 24 miles of new gen-tie through the valley and concentrating all impacts at and adjacent the solar site.	No change to existing visual resources.
Socioeconomics and environmental justice (EJ)	Vacant housing and temporary accommodations would accommodate the potential influx of workers during construction, although the Project would put pressure on local housing availability, cost, and rental rates. It is anticipated that most construction workers would be transient or would commute from the nearest population centers in Reno and Carson City.	Impacts from construction, including on housing availability and cost, would be increased since construction would take approximately two months longer under this alternative.	Same as Proposed Action.	Decreasing the length of the gen-tie would reduce potential effects on the communities and reduce the workforce needed to construct the Project under this alternative.	

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	Impacts to the housing market from permanent workers would be adverse to EJ communities. A Workforce Housing and Transportation Plan could mitigate the worker influx impacts on housing and EJ communities.				
Transportation: Roadway operations	<p>During peak construction activity, the Project under the Proposed Action would result in increased traffic volumes through Yerington.</p> <p>Implementation of any requirements identified by the Nevada Department of Transportation (NDOT), as well as Lyon County, and the Traffic and Transportation Plan are expected to reduce impacts related to roadway operations and traffic hazards, but impacts could remain adverse.</p>	<p>Impacts from construction traffic would be increased since construction would take approximately two months longer under this alternative.</p>	<p>The supplemental access route(s) would reduce traffic impacts to East Walker Road but increase impacts along the supplemental route(s).</p>	<p>Reducing the length of the gen-tie from 24.1 miles to 0.54 mile would reduce impacts from construction traffic and from crossing US 95A, compared with the Proposed Action.</p>	<p>No change to existing roadway operations.</p>
Public health and safety: Fire risk	The Project area is within a moderate-risk area for wildfire. Removal of on-site vegetation and	Potentially greater as compared to the Proposed Action. Maintenance of vegetation in the solar	Same as the Proposed Action.	Reducing the length of the gen-tie from 24.1 miles to 0.54 mile would reduce	No change to existing fire risk.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	implementation of a Fire Prevention and Safety Plan would minimize adverse impacts related to wildfire. Battery storage facilities would require special measures to minimize fire risk and coordination with the local fire response teams to ensure they can address electrical fires.	array blocks could nominally increase risk of a fire spreading in the facility if one were to ignite, but the risk would be similar to existing conditions.		fire risk compared to the Proposed Action, since electrical transmission can be a source of accidental fire ignition in the event of a failure.	
Cultural Resources	The Proposed Action would have the potential to physically impact one National Register of Historic Places (NRHP)-eligible historic property, and to visually impact six historic properties. Implementation of mitigation would reduce potential impacts through data collection efforts.	Impacts from Alternative 1 would be the same as the Proposed Action.	Impacts from Alternative 2 would be the same as the Proposed Action.	Impacts to cultural resources would be reduced. Under this alternative, the physical impacts to one resource would still occur; however, visual impacts would only occur to one resource (the same resource also physically impacted).	No change to historic properties would occur.

Chapter 1 Introduction, Purpose, and Need

1.1 Introduction

This Draft Environmental Impact Statement (Draft EIS) has been prepared by the United States (U.S.) Department of the Interior (DOI), Bureau of Land Management (BLM). This Draft EIS analyzes effects of and alternatives to the Libra Solar Project (Proposed Action or Project) described in the Plan of Development (POD) submitted by Arevia Power, LLC (Applicant) (Arevia 2023). The BLM has prepared this Draft EIS in accordance with the National Environmental Policy Act (NEPA) (Title 42 of the *United States Code* [U.S.C.] 4321 *et seq.*) and the Council on Environmental Quality (CEQ) NEPA Implementing Regulations (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508), revised as of April 20, 2022. The BLM is the lead agency, authorized through the Federal Land Policy and Management Act of 1976 (FLPMA), as amended.

Section 3104 of the Energy Act of 2020 (codified at 43 U.S.C. § 3004) directs the Secretary of the Interior to issue permits that, in total, authorize production of at least 25 gigawatts (GW) of electricity from wind, solar, and geothermal projects by 2025. Additionally, Executive Order 14082 requires federal agencies to prioritize promoting construction of clean energy generation, storage, and transmission, and to enable technologies through efficient, effective mechanisms that incorporate community engagement.

1.2 Background and Project History

The Applicant applied to the BLM's Carson City District Office (CCDO) for a right-of-way (ROW) grant to provide the necessary land and access for the construction and operation of the proposed solar facility and interconnection to the regional transmission system. The Project would include up to a 700-megawatt alternating current (MWac) solar photovoltaic (PV) power generating facility with an up to 700 MW battery energy storage system (BESS) on approximately 5,141 acres of BLM-managed public land located to the east of Yerington, Nevada, in Mineral County, immediately adjacent the county line. The Project includes a new 24.1-mile-long generation tie-line (gen-tie) extending to the Fort Churchill substation in Lyon County, of which 22.9 miles would be on BLM-managed lands. The total ROW requested for the solar facility, gen-tie, and access road is 5,778 acres.

The Project is located within a designated solar variance area under the BLM's 2012 Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States (referred to as the Western Solar Plan herein) (BLM 2012). The BLM completed the variance process for the Project in coordination with appropriate federal, State, and local agencies and Tribes in December 2021, and conducted the required public outreach. After careful consideration of the variance process requirements, the BLM decided to continue processing the application and proceed with initiation of the NEPA process.

Nevada legislation (Nevada Revised Statute (NRS) 704.7316) requires utilities to reduce coal-fired electric generation emissions and replace that generation capacity with renewable energy. Additionally, Nevada's Renewable Portfolio Standards (N.R.S. 704.7801) currently require 29 percent of renewable energy in 2023; 34 percent in 2024 through 2026; 42 percent in 2027 through 2029; and finally, 50 percent in 2030 and each year thereafter. New renewable energy facilities must be built to meet these goals and include substantial solar energy facilities, of which the Project is representative. The Project would generate electricity that is cost-competitive with electricity from other types of renewable projects and would complement the body of large transmission projects operated by NV Energy. The Fort Churchill substation would be the interconnection point for the Project and is also the northern origination point of the segment of the proposed Greenlink West transmission line that terminates at the Harry Allen substation in Clark County, Nevada.

1.3 BLM Purpose and Need

The need for the action (processing the Applicant's application) is to respond to the Applicant's request for a ROW authorization to construct, operate, maintain, and decommission the proposed Project in accordance with the BLM's responsibility under the FLPMA and 43 CFR Part 2800. The need for the action is also created by the BLM's obligation to contribute towards the achievement of the goals established in Section 3104 of the Energy Act of 2020 and Executive Order 14057 through the development of renewable energy production on federal public land.

The purpose of the BLM's action is to determine if the Applicant's project and alternatives are consistent with relevant laws, regulations, and policies, and to consider whether to grant, grant with modifications, or deny the ROW.

1.4 Authorizing Laws, Regulations, Permits, and Guidelines

Applicable laws, regulations, and policies were considered in the development of the Draft EIS. Implementing the Project would also require authorizing actions from other federal, State, and local agencies with jurisdiction over certain aspects of the Project, as shown in Table 1.4-1. Note that the list is not all inclusive. The Applicant is responsible for applying for and acquiring permits, as needed.

Table 1.4-1 Authorizing Laws, Regulations, Permits, and Guidelines

I. Federal permits, authorizations, or inter-agency consultations
U.S. Department of the Interior, BLM: <ul style="list-style-type: none"> • ROW grant under Title V of the FLPMA • EIS and ROD to support issuance of ROW grant • Modifications to existing BLM grazing permit
Federal Aviation Administration (FAA) <ul style="list-style-type: none"> • Obstruction Evaluation with FAA in coordination with the U.S. Air Force
U.S. Army Corps of Engineers <ul style="list-style-type: none"> • Section 404 Nationwide Permit enrollment for impacts to jurisdictional waters, if any
State Historic Preservation Office <ul style="list-style-type: none"> • National Historic Preservation Act Compliance, Section 106 (54 USC § 306108)
II. State of Nevada permits or authorizations:
Nevada Division of Environmental Protection <ul style="list-style-type: none"> • Surface Area Disturbance Permit • General Stormwater Permit for Construction Activities (Notice of Intent and General Permit) • Section 401 of the Clean Water Act Water Quality Certification • General Stormwater Discharge Permit • Working in Waters Permit • Wastewater Discharge Permits
Nevada Public Utilities Commission <ul style="list-style-type: none"> • Nevada Utility Environmental Protection Act Permit
Nevada Division of Water Resources <ul style="list-style-type: none"> • Groundwater Well Permit
Nevada Department of Motor Vehicles and Public Safety <ul style="list-style-type: none"> • Longer Combination Vehicle Permit • Nevada State Hazardous Materials Storage Permit
Nevada Department of Transportation (NDOT) <ul style="list-style-type: none"> • ROW Occupancy Permit (NRS §§ 408.423, 408.210; NAC § 408)

III. Mineral County permits or authorizations:
Mineral County Building Inspector Department
<ul style="list-style-type: none"> • Building Permit • Renewable Energy Special Use Permit (Mineral County Code Chapter 17.37)
IV. Lyon County permits or authorizations:
Lyon County Community Development Department
<ul style="list-style-type: none"> • Site Development Permit • Drainage Study/Floodplain Development Permit

1.5 Relationship of the Project to BLM Policies, Plans, and Programs and Land Use Plan Conformance Determination

1.5.1 BLM Carson City Field Office Consolidated Resource Management Plan

The proposed solar facility is located primarily on federal lands administered by the BLM under the 2001 Carson City Field Office Consolidated Resource Management Plan (BLM 2001) (referred to hereafter as the CRMP). The CRMP is a consolidated decision document produced as guidance for BLM land use decisions and management of natural resources within the Carson City District. The BLM reviews proposed projects to ensure that a project is in conformance with the CRMP objectives and management directions.

The BLM has reviewed the Project and has determined that the proposed Project is in conformance with the CRMP, as it meets or exceeds the standard operating procedures (SOPs) listed for each applicable resource area and aligns with the CRMP identified desired outcomes. The CRMP SOPs applicable to the Project are identified in detail in Appendix B. Conformance is summarized in the following table.

Table 1.5-1 Summary of Project Conformance with the 2001 CRMP

Resource or resource area	Applicable objective, policy, goal, or requirement summary	Summary of conformance
Rangeland	Maintain or improve public rangelands to enhance productivity for rangeland and watershed values and manage livestock at existing levels.	The grazing permit holder was notified of the Project's potential to preclude livestock grazing per 43 CFR 4110.4-2. In accordance with the BLM Instruction Memorandum (IM) 2011-181, the Applicant coordinated directly with the permit holder to develop mitigation that funds improvements to existing livestock water conveyances to underutilized existing pastures. With implementation of the mitigation, the permit holder would be able to maintain their current level of grazing in conjunction with the Project. Further detail on mitigation measure (MM) RG-1 is included in Section 3.11.
Riparian Management	Protect and maintain existing and potential fisheries and riparian areas in good or better condition.	The gen-tie would cross over the Walker River and a riparian area with open water, although transmission structures would be cited to minimize effects to riparian habitat.

Resource or resource area	Applicable objective, policy, goal, or requirement summary	Summary of conformance
		A stormwater pollution prevention plan (SWPPP) would apply during construction. A Clean Water Act Section 404 Nationwide Permit and a Section 401 Certification may also apply to the Project and would reduce potential effects. Under MM WR-1, road drainage and maintenance would be coordinated with Lyon County to address any erosion to reduce potential adverse effects from sedimentation to the East Walker River.
Wildlife	Manage habitats to provide forage for a reasonable number of big game. Protect fisheries and riparian habitats in good or better condition. Maintain or improve wildlife habitat, reducing conflicts while providing appropriate resource use. Maintain or improve aquatic and meadow habitats. Maintain or improve public rangelands to enhance rangeland values, including for wildlife.	The solar field would be excluded for large game foraging although the Project would incorporate permeable fencing for small game access. Implementation of MM WILD-8 requires the Applicant to provide funding to support restoration of springs south of the Project site for the benefits of big game, including pronghorn, as compensatory mitigation. Implementation of MM VG-1, additionally, would require revegetation of disturbed areas to restore wildlife habitat within the solar site. Riparian and rangeland resources are addressed above, addressing CRMP conformance.
Soils, Watershed, and Air	Reduce soil loss and associated flood and sediment damage on public lands and maintain air quality through case-by-case reviews of activities on public lands.	The SWPPP would include site-specific erosion control BMPs, which would comply with the Western Solar Plan Project Design Feature (PDF) SR2-1 to reduce stormwater runoff. MM SOILS-1 would reduce the amount of ground disturbance happening at one time (see Section 3.9 for details). Project activities would not cause emissions that would violate State or federal ambient air quality standards (National Ambient Air Quality Standards [NAAQs]), as required by the Clean Air Act. The Applicant would implement best management practices to manage fugitive dust. Project activities would follow applicable local, State, tribal, and federal air quality requirements (see Section 3.3 for details).
Water Resources	Maintain or enhance water quality and availability on public lands.	The Applicant would incorporate Western Solar Plan PDFs and MM SOILS-1 to the Project to reduce erosion and sedimentation

Resource or resource area	Applicable objective, policy, goal, or requirement summary	Summary of conformance
		and maintain the quality of waters crossing the Project site.
Recreation	Provide a wide range of quality recreation opportunities on public lands	No Special Recreation Management Areas (SRMAs) are located in the vicinity of the Project area. OHV use in the Project area is limited to existing roads, trails, and dry washes and certain race routes would be left open through the solar site to facilitate access. The Project would remain in compliance with the applicable recreation objective of the CRMP.
Visual Resources (VRM)	Protect the visual resource values of Bureau managed public lands against unnecessary and undue degradation.	The lands affected by the Project do not have an assigned VRM Class. The BLM Manual H-8410-1 guidance was followed to assign an interim VRM class to the Project area, based on several factors. A Class IV was assigned, which allows for major modification of the landscape. The Project would be consistent with VRM Class IV management objectives.
Minerals and Energy	Encourage development of energy and mineral resources in a timely manner to meet national, regional, and local needs consistent with the objectives for other public land uses.	The Project includes renewable energy development that is consistent with State of Nevada and federal energy goals and the CRMP. The Project would not impact any known mineral resources.
Cultural Resources	Protect cultural and paleontological resources to the maximum extent practical and manage for the public benefit.	The Project design avoids NRHP-eligible pre-historic resources but could impact six NRHP-eligible historic-era resources, as well as non-eligible resources. Mitigation to ensure full avoidance of eligible prehistoric resources and to document eligible historic resources would reduce effects. The Western Solar Plan PDFs CR1-1, 2-1, 3-1, 3-3 would be implemented, as well as an Inadvertent Discoveries Plan developed, to further protect cultural resources. No paleontological resources are known to be present.

1.5.2 Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States

The BLM and the U.S. Department of Energy released the Final Programmatic Environmental Impact Statement for Solar Energy Development (Western Solar Plan) in Six Southwestern States (Arizona, California, Colorado, Nevada, New Mexico, and Utah) in June 2012 (BLM and DOE 2012) and in October 2012, the Approved Resource Management Plan/ROD was signed (BLM 2012). The Western Solar Plan facilitates the permitting of solar energy development projects on federal lands in a more

efficient, standardized, and environmentally responsible manner as compared with prior solar energy policies. The Western Solar Plan established locations well suited for utility-scale production of solar energy, known as solar energy zones (SEZs), and also designated variance areas for solar development on federal lands outside of the SEZs but not otherwise excluded by the Western Solar Plan. Variance areas are evaluated by the BLM on a case-by-case basis. The Project area is within a variance area and, thus, the Project was subject to the variance approval process. The Project is in conformance with the Western Solar Plan.

The NEPA analysis process includes a review of the Project to ensure it is consistent with and incorporates the management prescriptions from the Western Solar Plan, as well as the relevant design features identified in the PEIS. An NOI to update the Western Solar Plan was published in the *Federal Register* on December 8, 2022 (BLM 2022). The update process is underway, but the existing Western Solar Plan prescriptions are currently valid and, thus, analyzed in this Draft EIS.

1.5.3 Final Programmatic Environmental Assessment Integrated Weed Management Plan and Final Programmatic Environmental Impact Statement for Vegetation Treatment Using Herbicides in 17 Western States

Herbicide applications on federal lands administered by the BLM in the Carson City District are guided by the 2015 Integrated Weed Management Plan Final Programmatic Environmental Assessment (PEA) (BLM 2015). Through established procedures, the final PEA provides a weed treatment framework and analysis for the Carson City District in which site-specific treatments may be authorized. This Draft EIS conforms with the PEA, requiring a Pesticide Use Proposal (PUP) prior to any type of herbicide application. The PEA tiers to the 2007 Vegetation Treatments Using Herbicide on Bureau of Land Management Lands in 17 Western States PEIS (BLM 2007).

This EIS also conforms with the 2007 Vegetation Treatments Using Herbicide on Bureau of Land Management Lands in 17 Western States PEIS (BLM 2007), as well as to the 2016 Final Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States PEIS (BLM 2016). The 2007 PEIS analyzed the effects from 14 herbicide active ingredients that were identified by the BLM as effective in treating certain types of vegetation while the 2016 PEIS analyzed an additional three herbicide active ingredients. The 2007 and 2016 Final PEIS documents address a wide range of issues, including the effect of these herbicides on the health of humans, vegetation, fish and wildlife, livestock, and wild horses and burros. The Final PEISs also consider water quality and Native American use of resources, and evaluate the cumulative impacts of herbicide use by the BLM and other landowners. Both Final PEISs include design features that must be adhered to when using the herbicides. The analysis of herbicide uses in this EIS is tiered from the PEA and PEIS.

1.6 Interagency Coordination

1.6.1 Cooperating Agencies

The CEQ regulations (40 CFR § 1501.8) emphasize agency cooperation early in the NEPA process and allow a lead agency (in this instance, the BLM) to request the assistance of other agencies that have either jurisdiction by law or special expertise regarding topics considered in an EIS. Said regulations also allow an agency to request that the lead agency designate it as a cooperating agency. Cooperating agencies for this Project include the U.S. Fish and Wildlife Service (USFWS); the U.S. Environmental Protection Agency (USEPA); the Nevada Department of Wildlife (NDOW); Mineral County, Nevada; Lyon County, Nevada; and the U.S. Department of Defense, Hawthorne Army Depot. See Chapter 4 for more information on consultation and coordination.

1.6.2 U.S. Fish and Wildlife Service

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) requires federal agencies to ensure that actions they fund, authorize, permit, or conduct will not jeopardize the continued existence of any

federally listed species or adversely modify designated critical habitats. No federally listed or threatened species have potential to occur in the Project area or be affected by the Project and, thus, formal consultation is not expected for the Project.

1.6.3 State Historic Preservation Office

Section 106 of the National Historic Preservation Act (NHPA) requires that all federal agencies consider the effect of undertakings they conduct, license, approve, or fund on historic properties. The BLM will comply with the Section 106 process under 36 CFR § 800.8(c), which permits federal agencies to integrate Section 106 and NEPA. The BLM is consulting with the SHPO, and will continue to consult, regarding the Draft EIS, consistent with the standards set forth in 36 CFR § 800.8(c)(1).

1.7 Scoping and Public Involvement

1.7.1 Overview

The purpose of the scoping process is to identify relevant topics that influence the scope of the Draft EIS, including alternatives. Internal scoping involves the use of BLM and cooperating agency staff to assist in determining topics to be analyzed in the NEPA document. External scoping involves notification and opportunities for feedback from other agencies, organizations, Tribes, local governments, and the public to also determine topics to be analyzed.

The analysis topics identified during Project scoping are presented in Table 1.7-1. Some topics identified during internal and external scoping did not warrant detailed analysis in the Draft EIS; those topics are described in Table 1.7-2. Overall public involvement associated with the Project is summarized in Chapter 4 of this Draft EIS.

1.7.2 Internal Scoping

Internal scoping was conducted among the BLM interdisciplinary team and cooperating agencies to identify issues prior to public scoping. Interdisciplinary team members with specific expertise provided early input through completion of a Baseline Data Needs Assessment Form to refine the resource areas requiring further analysis and the approach to the environmental analysis.

1.7.3 External and Public Scoping

1.7.3.1 External Scoping

External scoping included meetings with the grazing permit holder, meetings with OHV users, and feedback from interested parties including LADWP, Nevada Copper, and the grazing permit operator. Tribal outreach was also conducted as part of the external scoping process and included workshops with the Tribes.

1.7.3.2 Public Scoping

The BLM initiated the public scoping process for the Project with the publication of an NOI to prepare an EIS for the Project in the *Federal Register* on April 24, 2023, which initiated a 30-day public scoping period for the Project that ended on May 24, 2023 (BLM 2023a). BLM also issued a press release following the publication of the NOI in the *Federal Register*, which announced a virtual public scoping meeting for the Project on May 8, 2023. Agencies and stakeholders were notified by postcard of the public scoping meeting opportunity. The meeting was attended by 15 people. Attendees included representatives from agencies and organizations as well as private companies, and individuals. The BLM received 25 emails, letters, or individual verbal comments during the scoping period. A Scoping Report was prepared to summarize the comments received and is available in the Project Record (BLM 2023b).

1.7.3.3 Issues Identified

The analysis topics presented in Table 1.7-1 were identified during the public scoping period as well as through internal BLM interdisciplinary team scoping. Resources analyzed in detail have been identified as those topics that are significant and/or are necessary to make a reasoned choice between alternatives. The CEQ guidelines on NEPA (40 CFR §§ 1500–1508) require agencies to identify and eliminate topics that are deemed, from detailed study, not to be subject to an adverse impact. All considerations described in Table 1.7-1 have been analyzed in detail within the Draft EIS. Further detail is included in each respective resource sub-section within Chapter 3.

Other topics raised during scoping included the development of alternatives to leave vegetation and hydrology in place, similar to other recent projects in southern Nevada, and to address cumulative impacts from the numerous solar and energy projects proposed in the region and throughout Nevada. Alternatives and cumulative impacts are analyzed in detail in this Draft EIS.

Table 1.7-2 discusses the resource topics that are addressed but not analyzed in detail in the Draft EIS.

Table 1.7-1 Resource Topics Analyzed in Detail

Resource or EIS topic	Consideration
Land use and realty	Commenters raised questions about whether the gen-tie would impact existing ROWs. An existing deenergized distribution-line ROW owned by NV Energy doing business as Sierra Pacific Power is located within the Project solar site and would need to be realigned. LADWP operates a transmission line in the vicinity of the Project.
Minerals	Commenters raised questions about whether the Project would impact access to Nevada Copper's Pumpkin Hollow Mine, located adjacent and north of the Project site. The gen-tie would cross unpatented mining claims owned by Nevada Copper.
Rangelands/grazing	Commenters raised questions about whether the Project could impact two active grazing allotments and pasture fences, pipelines, wells, and troughs within the Project area.
Recreation	Commenters raised questions about whether the Project would impact OHV usage and race routes located in the Project area. The Nevada Off-Road Association expressed support for the Project given that key special recreational permitting (SRP) OHV routes would remain open.
Visual resources	The Project is in an unclassified visual resource management (VRM) class but was assigned an interim VRM of Class IV. Commenters raised questions about the visibility of the site from Piston-Black Mountain National Conservation Area.
Water resources	The Project would have water needs that may be sourced by groundwater. Commenters raised questions about groundwater uses, drainage pattern changes, and the need to avoid significant drainages with a buffer.
Vegetation and noxious weeds	Invasive species can be spread by off-road vehicles and contaminate formerly weed-free areas. Commenters raised questions about weed control and integrated weed management planning, given the scale of disturbance.
General wildlife; special status species; and threatened,	Commenters raised questions about potential impacts to big game species, small mammals, and migratory birds, as well as loss of habitat and the loss of movement corridors through the solar site. Several commenters raised questions about potential impacts to Bi-State sage grouse, a special status

Resource or EIS topic	Consideration
endangered, and candidate species	<p>species under consideration for listing as endangered or threatened under the ESA. The Project site does not support suitable habitat for Bi-State sage-grouse and it is not located within any mapped habitat identified in the 2016 Record of Decision and Land Use Plan Amendment for the Nevada and California Greater Sage Grouse Bi-State Distinct Population Segment in the Carson City and Tonopah Field Office (2016 Bi-State Sage Grouse Plan Amendment) (BLM 2016). This species is addressed in the Draft EIS, given questions and concerns, despite it not being present nor having any potential to be directly or indirectly affected.</p> <p>The USFWS raised concerns regarding yellow-billed cuckoo, a federally listed endangered species. This species has not been documented in or near the Project area during recent surveys, nor in the past. The species could, theoretically, migrate along the Walker River corridor. A single crossing of the gen-tie occurs over the Walker River. As such, this species is addressed in the Draft EIS to identify the means of avoidance.</p>
Cultural resources	<p>Commenters raised questions about potential impacts to traditional and cultural Native American resources (including, but not limited to natural resource values encompassing water resources, wildlife, and big game, and other spiritual values), archaeological resources, and historic resources. Tribes also raised questions about whether the Project would impact accessibility to Piston-Black Mountain National Conservation Area from the solar site.</p>
Air quality and greenhouse gases/ climate change	<p>Project construction would result in air quality impacts including exhaust emissions as well as dust generation. Commenters raised questions about dust control as well as quantification of potential air quality impacts.</p>
Socioeconomics	<p>Commenters raised questions about potential socioeconomic impacts including impacts to housing demand, including transient housing; economic conditions; property values; community services; and tax revenues.</p>
Environmental justice	<p>The Project region includes low-income, minority, and Native American populations. Commenters raised questions about potential disproportionate and adverse impacts to these populations.</p>
Public health and safety	<p>Commenters raised questions about potential impacts to wildfire risk and disposal of hazardous wastes and wastes such as batteries, transformers, semiconductors, and inverters.</p>
Soils	<p>Commenters raised questions about potential soils impacts from dust and erosion.</p>
Transportation and traffic	<p>Lyon County and a resident raised questions about potential traffic and safety impacts due to increased Project construction traffic on East Walker Road.</p>

Table 1.7-2 Topics Not Further Analyzed in the EIS

Resource topic	Rationale for dismissal from detailed analysis
Wild horses and burros	The Project area is not within any herd management areas. The Wassuk herd is located to the south. Impacts to wild horses and burros management would not occur.
Acoustics	No sensitive noise receptors (e.g., residences) are located within 5.5 miles of the solar site. Acoustic impacts to humans would not occur. Impacts to wildlife from noise would be temporary and would not result in long-term disturbance or avoidance; however, these noise-related impacts are addressed under biological topics.
Paleontology	Based on the geological resources underlying the site, impacts to paleontological resources are not anticipated.
Wilderness	No wilderness areas nor wilderness study areas nor areas with wilderness characteristics are in the Project area, and wilderness areas would not be impacted by the Proposed Action or the alternatives.
Area of Critical Environmental Concern (ACEC)	There are no ACECs in the Project vicinity.
Farmlands	No soils designated as prime or unique farmlands are located within the solar site. Some areas of prime or unique farmlands are located along the gen-tie; however, the limited disturbance footprint of the gen-tie of approximately 104 acres distributed over 24.1 miles (or approximately 4.3 acres per mile) would result in minimal, temporary impacts, and thus, impacts would not be adverse. Neither the Proposed Action nor the alternatives would impact soils as to irreversibly convert farmlands to nonagricultural use.
Wild and scenic rivers	There are no designated/eligible/suitable wild and scenic rivers within the Project vicinity.
Cave and karst resources	There are no cave or karst areas within the Project site.
Trails and travel management	No Travel Management Plans or designated trails are located within the Project area.
Woodland or forestry	No woodland or forestry products are in the Project area. Cacti are addressed under vegetation and sensitive plant species.

Chapter 2 Proposed Action and Action Alternatives

2.1 Introduction

2.1.1 Right-of-Way Application and Proposed Action

Libra Solar, LLC, filed an application to construct, own, operate, and decommission the Project, consisting of a 700 MWac solar PV power generating facility and 700 MW BESS, a gen-tie, and an access road within a ROW of approximately 5,778 acres of BLM-administered land located in Mineral and Lyon counties, Nevada. The Project would be constructed using PV solar modules mounted on single-axis, horizontal tracker structures combined with an integrated BESS. The power produced by the Project would be conveyed to the NV Energy transmission system via interconnection with the NV Energy grid at the Fort Churchill substation.

The Project as presented in the ROW application POD is considered the Proposed Action in this Draft EIS. The Project solar site is in Mineral County, Nevada, approximately 55 miles southeast of the Reno metropolitan area and 11 miles southeast of the town of Yerington. U.S. Route 95 (US 95) is 7 miles east of the solar site and State Route 208 (SR 208) is 8 miles west. The gen-tie line and access road would extend into Lyon County. The regional context of the Project area is shown in Figure 2.1-1 and Figure 2.1-2. Figure 2.1-3 includes the solar development areas within the solar site and the Project elements that comprise the Proposed Action.

2.1.2 Development of Action Alternatives

In accordance with the CEQ's NEPA Regulations (40 CFR § 1502.14), an EIS must present the environmental impacts of a Proposed Action and alternatives in comparative form. The EIS must define the issues to be readily understood by the public and decision makers, thus contributing to a basis for an informed and reasoned decision.

Reasonable alternatives to the Proposed Action were developed by the BLM to avoid or reduce resource conflicts and meet the purpose and need, in accordance with the BLM NEPA Handbook §6.6.1. Three alternatives to the Proposed Action were selected for detailed analysis in the Draft EIS. Details on the development of the alternatives to the Proposed Action and their impacts are provided in the *Alternatives Report* (Panorama 2023), which includes descriptions of other alternatives considered but eliminated from further analysis.

The following section describes the Project as it would be implemented under the Proposed Action. Three alternatives (Alternative 1, Alternative 2, and Alternative 3) were developed in response to issues raised by the public and agencies (see the *Scoping Report for the Libra Solar Project* (BLM 2023c)). Alternative 1, as described in Section 2.4, proposes the use of specific construction methods that would reduce impacts to vegetation, drainage, and topography. Alternative 2, as described in Section 2.5, is focused on reducing impacts associated with the Project's access road during construction. Alternative 3, described in Section 2.6, would reduce many of the impacts associated with the gen-tie, but the feasibility of this alternative remains uncertain and would depend on the approval and construction of the proposed Greenlink West Transmission Project, which is currently undergoing NEPA review (BLM 2023b). Alternative 3 is fully analyzed in this Draft EIS, but is not the preferred alternative due to its dependence on a currently unapproved project. Several other alternatives were identified and considered, but were eliminated from detailed analysis. Section 2.8 identifies these alternatives and provides the rationale for eliminating them from detailed analysis.

Figure 2.1-1 Regional Context of the Proposed Project

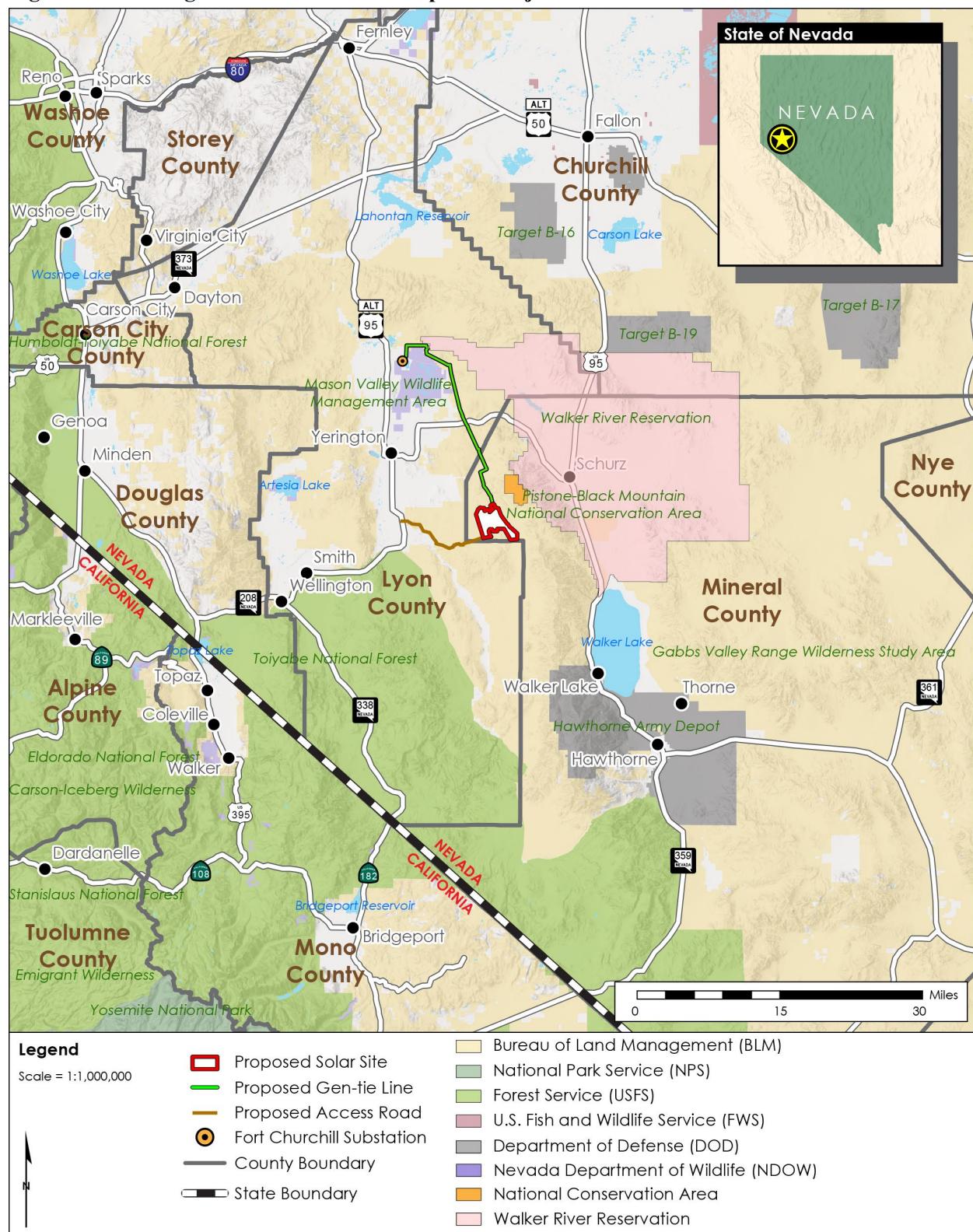


Figure 2.1-2 Proposed Project Location

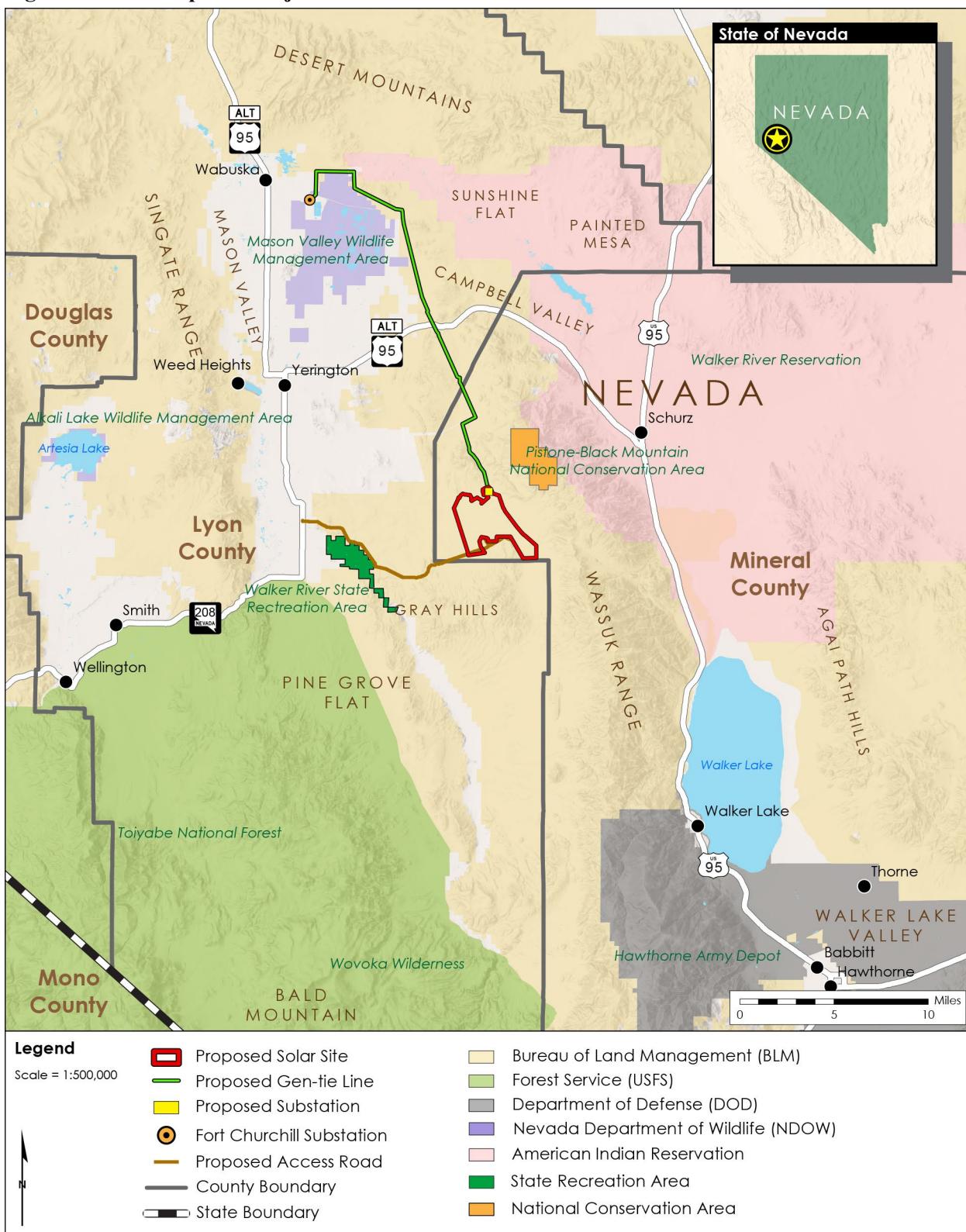
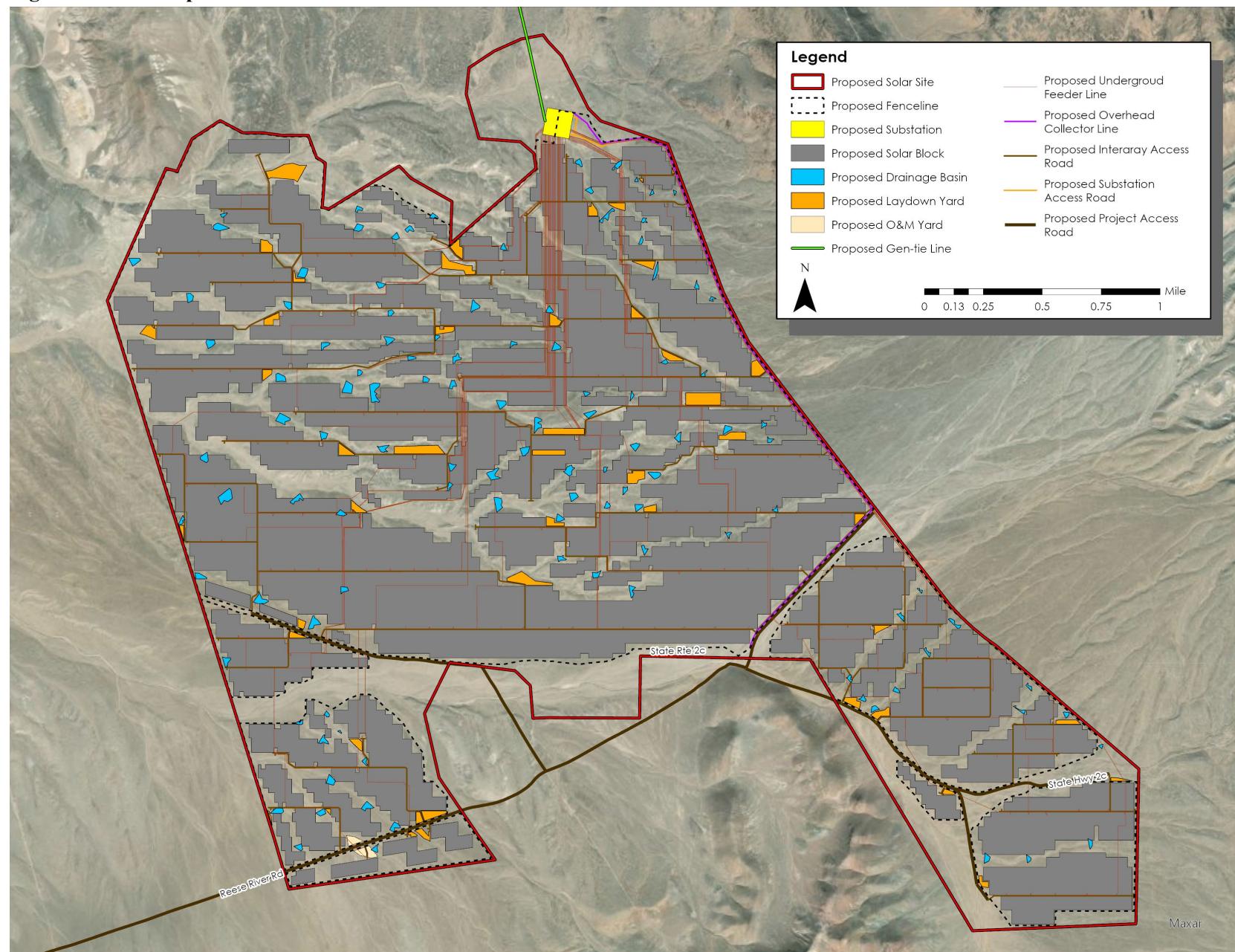


Figure 2.1-3 Proposed Solar Site Facilities

2.2 Proposed Action

2.2.1 Overview

The Proposed Action includes obtaining a ROW for and the construction, operation and maintenance (O&M), and decommissioning of the Project. The Project includes the following primary components: 1) a 700 MWac solar PV power generating facility; 2) a 700 MW BESS; 3) linear and ancillary facilities, including access roads, electrical distribution lines, and communication cables; 4) O&M facilities; and 5) a substation and a 24.1-mile-long 345 kilovolt (kV) or 525 kV gen-tie line into the Fort Churchill substation, of which 22.9 miles would be on the BLM-managed lands.

2.2.2 Proposed Action Project Components

2.2.2.1 Overview

This section provides a summary of the Proposed Action. A detailed explanation of each component and its corresponding construction requirements is provided in the Draft Libra Solar Project POD, dated November 2023, which is incorporated by reference.

The Project includes the solar site ROW (5,141 acres) and a gen-tie ROW including gen-tie access (603 acres). A ROW would also be established along an existing access road to the solar site, which comprises 34 acres along 11.6 miles on the BLM lands. The total acreage requested for the ROW is 5,778 acres under the Proposed Action. The Project would interconnect with the NV Energy transmission grid at the Fort Churchill substation in Lyon County.

2.2.2.2 Solar PV Modules/Array

The Project would be a solar PV power generating facility. PV modules convert sunlight into direct current (DC) electricity that would be collected and converted to alternating current (AC) electricity through a system of inverters. Medium-voltage transformers would convert the AC electricity to 34.5 kV then transfer the energy to the on-site substation, where it would then be converted and transferred. The electricity would be stepped up with high-voltage transformer(s) to 345 kV or 525 kV and then delivered to the Fort Churchill substation (also known as the point of interconnection [POI]) via a new 345 kV or 525 kV gen-tie line (see Figure 2.1-2, page 2-3, above).

The highest point for a horizontal tracker would be achieved during the morning and evening hours, when the trackers are tilted at their maximum angle and would be a maximum of 12 feet above the ground surface, depending on the grade where the posts are installed. Panels would be mounted on single-axis trackers in north-south oriented rows. Spacing between rows would be set in the final design but would allow for clearance for maintenance vehicles and panel access.

An above-ground or under-ground DC electrical collection system would connect each solar array to a power conversion station (PCS), which would include an inverter that converts DC power to AC power, a medium-voltage transformer that steps up the voltage to 34.5 kV, and other controls/data equipment. The Project could include solar arrays of 2 MWac or more. Inverters may be installed on raised platforms to minimize ground disturbance and hydrologic alterations, if determined feasible during final design. An AC electrical collection system would be installed above ground or underground within the solar array blocks to deliver the energy from the PCSs to the solar site substation. Collection line poles may be steel or wood and could have multiple circuits on poles with insulating conductors.

Current PV technology could generate 1 MW of electricity per 6 to 9 acres of land suitable for construction of PV arrays and associated facilities. However, PV technology is rapidly improving, and the potential MW/acre may increase prior to the start of Project construction. For purposes of this Draft EIS, a 700 MW project is assumed. The exact final Project output may be higher or lower depending on the procured panel technology.

2.2.2.3 Battery Energy Storage System

The Project would include a BESS of up to 700 MWdc. Approximately 392 equipment areas, each with approximately 23 to 25 380 MWdc, 3.7-hour storage-duration battery racks, would be built. The entire BESS would comprise approximately 72,000 individual batteries (8 batteries per battery rack). Lithium iron phosphate batteries may be used (otherwise, the best technology at the time of construction would be used) and would undergo thermal propagation tests and comply with the latest codes and standards. The battery racks would be installed adjacent to the AC/DC power converter and PCS on either a foundation or pilings as needed to protect the racks from stormwater runoff. The battery racks may be enclosed in multiple, dispersed climate-controlled structures approximately 5 feet long by 5 feet wide by 8 feet tall. Alternatively, battery racks may be stored in enclosures in a single designated fenced and cleared area of the solar site, near the on-site collector substation, which would occupy approximately 35 acres. The battery energy storage system could be constructed on a raised platform. The feasibility of raising the structures would be determined at final design.

2.2.2.4 Linear and Ancillary Facilities Associated with the Solar Site

Fencing

The entire solar site would be fenced to restrict public access during construction and O&M. The fencing would be outside of major routes through the development area, including Reese River Road and Old State Road 2C, such that the public could continue to use these roads. The height of the perimeter fencing would be approximately 6 to 7 feet and may be chain-link or another design. The fence may include barbed wire on the top. The on-site substation would be fenced as well. The fence posts would be set in concrete or driven into the ground. Controlled access gates would be located at all entrances to the facility. Fencing would be grounded per industry standards.

The perimeter fencing would include design elements to ensure permeability by small animals, which could include 12 inch by 12 inch openings in the lower section of the fencing every 0.25 miles or installing an approximately 8 to 12 inch gap at the base of the fence, as shown in Figure 2.2-1, for the length of the fence. The final fence design would be determined in coordination with the BLM and considering feedback from the resource agencies.

Internal Road System

Within the fenced solar site, a roadway system for the development and maintenance of the solar arrays and equipment would be developed consisting of an internal grid and perimeter roadways, graded, and covered in aggregate (6 inches in depth) or compacted soil (12 inches of recompacted native material). Approximately 34 miles of internal access roads would be installed. The internal access road system for the Proposed Action is shown in Figure 2.1-3. Existing roads within the solar site would also be utilized and maintained as part of the internal access system.

Drainage Systems

The solar field would include drainage control structures, including linear ditches, swales, and retention basins, as shown in Figure 2.1-3. The drainage systems would be within the fenced solar field and would collect and move water away from facilities and slow the downstream flows. The Project would include approximately 21 acres of swales and ditches and 45 acres of retention basins.

Meteorological Stations and Microwave Stations

Temporary and permanent meteorological stations would be installed within and around the perimeter of the solar site. Communication service to the Project would be provided by local service providers and/or a microwave tower and wireless system that would collect and send data to the supervisory control and data acquisition system (SCADA). The Project would include on-site communication lines connecting the Project components.

Figure 2.2-1 Example of Small Mammal Permeable Fencing

Existing Distribution Line Reroute

An existing electrical distribution line (NVN-093397) that leads to a decommissioned communications tower, located to the east of the Project area in the Wassuk Range, would need to be re-routed through the solar site. The existing electrical distribution line would be re-routed along Old State Road 2C, which would remain open through the Project area, and then would connect back to the existing line at the Project's eastern boundary or through an opening between solar array blocks. The re-route would occur within the proposed ROW for the Project. This distribution system would also be utilized to provide power to the O&M facilities. The Applicant would undertake a permitting process with NV Energy to both re-route the distribution line and adjust its ROW application with the BLM, and to re-energize the line to the point of connection to the solar construction facilities (Panorama Environmental, Inc. 2023).

2.2.2.5 Solar Field Access Road

Access for the Project during both construction and O&M would be off State Route (SR) 208 to East Walker Road, connecting to Reese River Road and Old State Road 2C. East Walker Road is an unpaved public roadway maintained by Lyon County. Approximately 2.3 miles of East Walker Road is on County-managed lands while the remaining 3.6 miles is on the BLM-managed lands. The initial 1.5 miles of East Walker Road to SR 208, heading east, may be paved with traffic-calming measures installed, the design of which would be determined in coordination with Lyon County Roads Department. A new 900-foot-long, 24-foot-wide road spur would be constructed between East Walker Road and Reese River Road, on the BLM-managed lands, to smooth a curve in the road at the existing intersection. Reese River Road would then be utilized to access the solar site and would be widened from 15 feet to 24 feet as would a portion of Old State Road 2C, for a total of 7.8 miles of widening.

Access would remain open through the solar site along Reese River Road and Old State Road 2C, as previously stated. In addition to widening, improvements to Reese River Road and Old State Road 2C would include some permanent upgrades to facilitate the use of heavy equipment, including laying of gravel substrate and creation of low-water crossings. The access road would also require stabilization of low-water crossings, which may include installation of cut-off walls to reduce the impact to the road surface during high water flows.

2.2.2.6 Operations and Maintenance Facilities

O&M Building

The Project would include a 2.8-acre O&M facility that would accommodate an O&M building, a paved parking area, and other associated facilities such as above-ground water storage tanks, a septic system, security fencing, signage, lighting, and, potentially, flagpoles. The O&M building would either utilize portable toilets or have an on-site septic system designed per County standards. Portable toilets and washing stations would be serviced by a contracted company, if used. Other facilities, such as a warehouse for materials storage, may be constructed within the O&M area footprint. Plant auxiliary systems would be designed to control, protect, and support O&M activities. These systems include the lighting system and the fire protection system. The solar site would be monitored 24 hours per day, seven days per week during O&M.

Lighting System

Permanent outdoor night lighting would be provided at the administration/O&M building and on-site substation; however, some portable lighting may be required for some maintenance activities that must be performed at night. Lighting would be kept to the minimum required for safety and security. Sensors, switches, and timers would be used to keep lighting turned off when not required, and all lights would be hooded and directed downwards so as to minimize backscatter and off-site light.

Fire Protection

The Project's fire-protection water system would be supplied from a water storage tank, with sizing and design of the facilities determined in the final design phase in coordination with the Mineral County Fire Department. The BLM and local emergency services would have emergency access to the solar site via a locked gate to facilitate response time for wildfire and non-wildfire incidents. A Fire Management Plan would be implemented to reduce fire risk to the solar site and surrounding public lands for the life of the Project. If required by the fire department, a perimeter fire road may also be installed.

2.2.2.7 Substation and Gen-tie

Substation

The Project would require an on-site 345 kV or 525 kV substation, which would be 8.3 acres in size. The substation would be constructed to comply with applicable electrical safety codes. The substation would be separately fenced to provide increased security around the medium- and high-voltage electrical equipment. The substation area would include a transformer containment area, a microwave tower, a control house, and one or more transformers. The height of components in the substation varies, with the maximum highest being the gen-tie pole, at 180 feet. The on-site substation would be a series of 34.5 kV breakers for collection of power from the solar modules via the electrical collection system, a common busbar, and a step-up transformer.

Gen-tie

The Project would require the construction of an approximately 24.1-mile 345 kV or 525 kV circuit and fiber optic data telecommunications system for interconnection to the utility transmission grid system at the existing Fort Churchill substation. Approximately 22.9 miles of the 24.1-mile gen-tie alignment would be on the BLM-managed lands, with most of the alignment within an existing designated energy corridor, with two exceptions. The proposed gen-tie alignment deviates from the designated energy corridor along a 4-mile section where the energy corridor overlaps with the Mason Valley Wildlife Management Area (WMA). The gen-tie alignment also deviates from the designated energy corridor

where it exits the solar site to the north, for the first approximately 4.4 miles. This realignment was established because the energy corridor passes through mapped habitat for the Bi-State sage grouse, while the realigned route does not. The gen-tie ROW width would be approximately 200 feet. Where adjacent, the gen-tie would be constructed outside the ROW of the proposed NV Energy Greenlink West 525 kV line, with an appropriate buffer. The Project would require approximately 190 gen-tie poles, most likely H-frame structures, cleared out up to 30 feet around each pole base.

The overhead line and fiber optic data telecommunications system would be installed per local and national electrical code requirements and in tandem with the gen-tie alignment. Support structures would be galvanized steel monopoles or H-frames, with a dull gray appearance and would be used to support interconnection to the NV Energy transmission system. A point of change of ownership (POCO) would be established with NV Energy, from which the remaining line extending to the Fort Churchill substation would be owned by NV Energy. All overhead electrical lines would be designed and installed in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC 2006). The Applicant also would prepare and adhere to a Bird and Bat Conservation Strategy (BBCS) to address potential impacts to birds and bats during the construction and O&M phases of the Project.

Gen-tie Access Roads

Existing or planned roads that are approximately 20 feet wide would be used for primary access to the gen-tie line. Spur roads would be constructed off the existing roads to allow access to each gen-tie structure. Approximately 16.9 miles of 20-foot-wide spur roads would be constructed, and approximately 18.1 miles of existing (or proposed for Greenlink West) unpaved, 15-foot-wide access roads would be used without improvements. Another 17 miles of 15-foot-wide existing access roads would require improvements. The existing and new spur roads needed for the gen-tie alignment are shown in the POD.

2.2.2.8 Proposed Action Summary of Permanent Disturbance

Permanent disturbance is associated with all long-term Project components and associated facilities throughout the 30-year lifespan of the Project, including the solar arrays, BESS, roads and access routes, power distribution equipment, substations, gen-tie and transmission infrastructure, and permanent fencing. These areas would not be reclaimed until the end-of-life of the Project, which would occur in accordance with the BLM-approved Decommissioning and Site Reclamation Plan.

Table 2.2-1 summarizes anticipated permanent disturbance associated with the Proposed Action. The table also summarizes the temporary disturbance associated with construction, as described in Section 2.2.3.

2.2.3 Proposed Action Construction

2.2.3.1 Construction Facilities and Temporary Disturbance

Temporary facilities would be installed for the facilitation of construction and would not become part of the permanent facility. Temporary disturbance areas would be restored in accordance with the BLM-approved Site Restoration and Revegetation Plan following the completion of primary construction activities. These facilities include the following (all values are approximate):

- An approximately 3-acre office complex made up of a gravel base and trailers,
- 1 acre of nurseries for salvaged cacti,
- 80 acres of material storage and laydown yards, including for worker vehicle parking,
- 82 acres of gen-tie structure work areas comprising 75-foot-by-50-foot areas per pole, and
- 18 acres of gen-tie pull and tension sites comprising 100-foot-by-200-foot pull and tension sites.

Table 2.2-1 Summary of Estimated Permanent and Temporary Disturbance for the Proposed Action

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
Solar facility				
Solar array blocks	Permanent	3,062	3,062	Solar panels, posts, and other associated equipment would be installed within this graded area. Vegetation would be allowed to regrow after construction. Includes 0.6 acre of disturbance to account for an estimated 135,818 3-inch screw posts throughout the facility (estimated assuming 118 posts per 1 acre of solar array).
O&M facility	Permanent	2.8	2.8	Includes the O&M building, paved parking lot, and water storage tanks all within the facility footprint surrounded by a perimeter security fence.
Substation	Permanent	8.3	8.3	Includes main power transformers, containment pit, control building, substation steel structures, high voltage circuit switching and protection equipment, and communications tower within substation footprint surrounded by a perimeter security fence.
Access roads and driveways for solar field	Permanent	89	89	34.2 miles of 20-foot-wide roads within and in between solar array blocks would be graded and covered with gravel base or compacted native soil.
Water storage facilities	Temporary	4.0	4.0	Temporary water-storage facilities would either be installed in distributed locations or consolidated.
Construction office complex	Temporary	3.0	3.0	An area used during construction for temporary offices and maintenance of equipment and vehicles.
Nurseries	Temporary	1.0	1.0	Salvaged cacti would be stored in a single consolidated location or distributed locations until replanted on the site in temporary use areas.
Material storage and laydown yards	Temporary	80	80	Several distributed and consolidated laydown yards for parking of worker vehicles as well as storage of materials and equipment.

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
BESS	Permanent	35	35	Most likely co-located with the substation and thus requiring up to 35 acres. If distributed across the solar site, 392 locations of battery storage facilities would be used.
Equipment areas	Permanent	1.3	1.3	196 equipment areas, which include inverters and medium-voltage transformers distributed across the site.
Aboveground collector lines	Permanent	1.2	1.2	Approximately 3.1 miles of collector lines (assumed to follow internal access roads) on approximately 164 aboveground poles (assumed to be installed every 50 feet) with an up to 10-foot clearance around pole.
Feeder lines	Permanent	40	40	Approximately 111 miles of underground feeder lines installed in an up to 3-foot-wide trench.
Swales	Permanent	21	21	Swales with approximately 40-foot widths constructed throughout the site to address stormwater runoff.
Retention basins	Permanent	45	45	Retention basins are distributed throughout the site for stormwater control.
Existing unpaved access roads	Permanent, existing	50.2	50.2	Existing unpaved 24-foot-wide access roads within the solar facility.
Total new permanent		3,306	3,306	
<i>Total existing¹</i>		50	50	<i>N/a</i>
<i>Temporary (may overlap permanent)³</i>		84	84	<i>N/a</i>
Gen-tie line and gen-tie access roads				

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
Gen-tie lines and spur roads to gen-tie lines	Permanent	59	64	BLM: Approximately 22.9 miles of gen-tie line with 176 H-frame poles cleared out approximately 0.12 acres around each set of poles, with 16.9 miles of 20-foot-wide spur roads to access each set of poles. All: Approximately 24.1 miles of gen-tie line with 190 H frame poles cleared out approximately 0.12 acres around each with 16.9 miles of 20-foot-wide spur roads to access each pole.
Gen-tie structure work areas	Temporary	76	82	125-foot-by-150-foot work areas at each gen-tie pole with 176 on the BLM lands and 190 on all lands.
Gen-tie Line Pull and Tension Sites	Temporary	14	18	120-foot by 100-foot pull sites where the gen-tie line direction changes sharply.
Existing gen-tie access roads (no improvements needed)	Existing	5.7	8.2	BLM: Approximately 5.6 miles of 15-foot-wide existing access roads on BLM lands. All: Approximately 18.1 miles of 15-foot-wide existing access roads as part of Project and Greenlink West
Existing access roads (improvements needed)	Permanent, existing/planned	31	31	BLM: Approximately 17 miles of 15-foot-wide existing access roads requiring improvements as part of proposed Greenlink West access on the BLM lands. All: Approximately 18.1 miles of 15-foot-wide existing access roads as part of Project and Greenlink West
Proposed access roads (Greenlink West)	Permanent, planned	0.9	0.9	Approximately 1/2 mile of 15-foot-wide proposed access roads as part of proposed Greenlink West on the BLM lands.
Total new permanent		91	104	
<i>Total existing¹</i>		<i>5.7</i>	<i>8.2</i>	<i>N/a</i>

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
<i>Temporary (may overlap permanent)³</i>		90	100	N/a
Solar facility access road				
Low-water crossings	Permanent	1.1	1.4	Low water crossing improvements along the existing unpaved access road to reach the solar site
Intersection improvement	Permanent	0	0.2	Roadway curve widening at intersection of State Route 208 and East Walker Road
New disturbance to widen existing access roads	Permanent	8.2	8.2	7.8 miles of Reese River Road and Old Route 2C on the BLM lands would be widened through new disturbance from 15 feet to 24 feet
New access road spur	Permanent	0.5	0.6	A new spur road approximately 900 feet long (0.2 mile) and 24 feet wide, extending from East Walker Road to Reese River Road on BLM lands would be constructed.
Existing unpaved access roads	Permanent, existing	24	28	BLM: Existing, unpaved, 11.4-mile-long access road on the BLM land. 3.6 miles would be approximately 24 feet wide (on East Walker Road, maintained by Lyon County) while the remaining 7.8 miles on Reese River Road and Old Route 2C would be 15 feet wide. All: Additional 2.3 miles of existing, approximately 20- to 24-foot-wide, unpaved East Walker Road, not on the BLM land, 1.5 of which may be paved.
Total new permanent		9.7	10	N/a
<i>Total existing¹</i>		24	28	N/a

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
Subtotal new permanent disturbance		3,411	3,420	N/a
<i>Subtotal existing¹</i>		80	86	<i>N/a</i>
<i>Subtotal temporary disturbance (may overlap permanent disturbance)</i>		174	184	<i>N/a</i>

Notes:

1. Numbers may not be added due to rounding.
2. Data on Project components is based on preliminary engineering and assumptions. The information presented is subject to change.
3. Temporary disturbance acreages may overlap with permanent disturbance acreages.

2.2.3.2 Construction Sequencing

Construction of the Project under the Proposed Action and alternatives would follow the sequencing described below:

- **Geotechnical investigation:** Prior to construction and after the BLM approval, a detailed geotechnical investigation of the Project area would be necessary to finalize engineering specifications.
- **Temporary storage and laydown yards:** Temporary staging areas would be established to facilitate construction activities and mobilize equipment and materials. Temporary storage and laydown yards would be prepared during the onset of construction. These areas would be placed outside of the channels of drainages.
- **Site preparation:** Site preparation would include land-surveying and site delineation; trenching and excavation; and dust, erosion, and sediment control. Incised drainages would be left in place and largely unaltered; land contours would be maintained although drainage would be controlled using retention basins, affecting site hydrology after construction; any saleable mineral materials would likely be balanced in the Project area (i.e., any saleable minerals extracted from within the ROW would be used within the ROW for construction); should any excess saleable mineral materials be generated during construction, the materials would be disposed of and exported from the Project area through a BLM Contract for the Sale of Mineral Materials or Free Use Permit or otherwise stockpiled within the ROW or another mineral mining site for future disposal by the BLM. The site preparation would also follow a Signage and Flagging Plan, which would be reviewed and approved by the BLM prior to construction.
- **Solar array assembly:** Solar array assembly would include mobilization of material and equipment to individual solar array block areas; preparation of trenches, installation of underground cable, and backfill of trenches; installation of posts and table frames for the tracking system; installation of PV modules; connection of electrical terminations; and inspection, testing, and commissioning equipment.
- **Construction of electrical collection and transmission systems:** The electrical collection and transmission-system infrastructure would entail the installation of the direct-current power-conversion stations and SCADA systems; the power and control equipment; the high-, medium-, and low-voltage cables; grounding of all equipment; and installation of communication systems.
- **Construction of on-site substation:** An 8.3-acre on-site substation, including a transformer containment area, a microwave tower, a control house, and one or more transformers, would be constructed on site. The transformer containment area would be lined with an impermeable membrane covered with gravel. The remaining substation area would be constructed with excavation and pouring of a foundation, as well as installation of electrical equipment and overhead cabling, installation of a control building, and installation of all auxiliary systems (e.g., heating, ventilation, lights).
- **Construction of auxiliary systems and infrastructure:** Internal roadways and transmission access would be constructed through grading, compacting, and leveling. Construction of auxiliary systems and infrastructure, including internal access roads, the O&M facilities, lighting, fencing, fire protection system, and water storage and delivery system would be constructed.

2.2.3.3 Construction Water Use, Waste, and Power

An estimated 1,000 acre-feet of water would be required during the Project construction period for construction-related activities, including dust control. The primary waste generated at the Project during construction and O&M would be non-hazardous solid and liquid wastes. Limited quantities of hazardous materials would be used and stored on site, and some waste would be generated. All waste, including batteries, would be properly disposed of, or recycled in accordance with regulations and a Waste and Hazardous Materials Management Plan as well as a Spill Prevention, Control, and Countermeasures Plan (SPCCP). Spent lithium-ion batteries would be recycled if a battery cannot be recycled due to damage or other issues, the battery would be disposed of at an appropriate facility. The types and quantities of hazardous materials and wastes are provided in the POD. Power

would be supplied through an existing distribution line that would be energized through agreements with NV Energy.

2.2.3.4 Construction Method, Workforce, Equipment, and Schedule

Construction activities would occur between 5:00 a.m. and 5:00 p.m. up to 7 days per week. The on-site construction workforce would consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The on-site construction workforce is anticipated to be an average of approximately 400 construction workers with a peak of up to approximately 700 workers, assuming some periods of construction would minimize the workforce while others would be more workforce reliant. For example, the geotechnical investigation would require as little as up to five personnel for a time period of up to one month. The site preparation, solar array assembly, the construction of electrical collection and transmission systems, construction of on-site substation, and the construction of auxiliary systems and infrastructure would overlap for a period of six months from February to July 2025, where the peak of 700 workers would be anticipated (refer to Table 2.2-3). Most construction staff and workers would commute daily to the job site from the Reno and Carson City metropolitan areas, but up to 10 percent of the workforce may be drawn from within Mineral County, from the city of Yerington, and other areas of Lyon County. Anticipated construction traffic volume is provided in Table 2.2-2. A Traffic Management Plan would be prepared prior to construction for review by the BLM.

Table 2.2-2 Construction Vehicle Daily Roundtrips

Construction phase	Daily worker vehicle trips	Daily haul truck trips	Daily water truck trips	Daily pickup truck trips
Civil works	78	47	40	5
Installation of solar arrays	183	15	40	5
Installation of electrical collection systems	85	4	20	5
Installation of on-site collector substation	38	6	20	5
Civil works gen-tie	78	47	20	5
Installation of gen-tie	80	4	20	5

Typical equipment that would be used for the generation facilities and on-site substation includes the following:

- Tractors
- Excavators
- Graders
- Excavators
- Bulldozers
- Backhoes
- Cutting machines
- End loaders
- Delivery trucks
- Disk/tillers
- Dump trucks
- Trenching machines
- Pile drivers
- Flatbed trucks
- Cranes
- Rollers
- Water supply trucks
- Water spray trucks
- Vibratory rollers
- Pumps
- Forklifts and carry decks
- Electrical test equipment
- Concrete mixers
- Compaction machines
- Survey equipment
- Off-road buggies
- Light trucks

The Project construction schedule would be phased over 16 months. Commencement of construction on a portion of the site could occur in December 2024, with the Project coming online in May 2026. The estimated construction schedule is provided in Table 2.2-3.

Table 2.2-3 Estimated Construction Schedule

Activity	Duration	Timeframe
Site preparation (Project solar site)	8 months	December 2024 to July 2025
Site preparation (Project access roads)	2 months	January 2025 to March 2025
Installation of PV arrays	14 months	February 2025 to March 2026
Installation of electrical collection systems	11 months	February 2025 to March 2026
Installation of on-site collection substation	11 months	December 2024 to November 2025
Installation of gen-tie line	11 months	December 2024 to November 2025
Testing and commissioning	Ongoing	March 2026 to April 2026
Site reclamation	Ongoing	No later than June 2026

2.2.4 Proposed Action Operation and Maintenance

Operation of the Project would create 15 permanent jobs (Triple Point Strategic Consulting, 2022). The solar power plant would be operated remotely 7 days per week using automated facility controls and monitoring systems with SCADA control systems. Operations staff would be located off site, with daily site visits for security, routine inspection and maintenance, and repairs. At designated intervals, approximately every 10 to 15 years, major equipment maintenance would be performed. O&M procedures would be consistent with industry standards and practices for maintaining plant components for as long as acceptable so as to reduce waste. Solar panels would be recycled in accordance with the EPAs recommendations for recycling of utility-scale solar panels. The Applicant and facility operator would be responsible for identifying and managing the recycling and disposal of all Project components in accordance with the appropriate State and federal solar recycling programs available at the time.

Routine inspection and maintenance activities are listed along with frequencies for each in the POD. PV panel cleaning would occur as needed to maintain optimal power-generation performance. PV array cleaning may occur approximately two times per year and could take approximately 24 hours to complete (including nighttime panel cleaning) and may require some use of water. The Project would require up to 28 acre-feet of water per year for O&M facility purposes (e.g., worker subsistence, sanitation, fire protection, PV array cleaning). Project roads and the O&M area would be maintained free of vegetation.

Vegetation management would be required to control vegetation and prevent the spread of undesirable non-native and noxious weeds. Vegetation management would occur through mechanical methods (i.e., discing) and the BLM-approved chemical controls (i.e., herbicides). The use of herbicides would fall under the 2015 Final PEA Integrated Weed Management Plan (BLM 2015); tiered from the 2016 Plan for the BLM's Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States (BLM 2016), which is tiered from the 2007 PEIS for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States (BLM 2007). A PUP would be prepared 30 days prior to application and would provide the specifications for herbicide application, including the type of herbicide(s) proposed for use, method of application, and quantities of to be applied. Following application, a Pesticide Application Record (PAR) would be submitted to the BLM 24 hours post application. Only herbicides and application methods and quantities approved in Nevada and the Carson City District and included in the RODs for the PEISs would be used. Herbicide use would be conducted in accordance with BLM Manual 9011: Chemical Pest Control and the BLM Handbook H-9011-1: Chemical Pest Control (BLM 1988). SOPs for herbicide use would be implemented.

The Applicant would implement a Site Restoration and Revegetation Plan and an Integrated Weed Management Plan that specify procedures, including use of herbicides for managing vegetation and reducing the spread of non-native and noxious weeds. The plans would be submitted to the BLM for review and approval prior to the issuance of a Notice to Proceed (NTP), should the Project be approved.

2.2.5 Proposed Action Decommissioning and Site Reclamation

The objective of Project decommissioning and reclamation is to remove the installed power generation equipment and to encourage revegetation of native species, as feasible. The Applicant would be required to post a reclamation bond as a condition of the ROW authorization issuance in order to ensure the availability of funds for site decommission and reclamation. The Project's bond would be based on the approved Decommissioning and Site Reclamation Plan. The plan will be finalized based on the selected Alternative prior to issuance of NTP. The life of the Project would be approximately 30 years. While it is possible that the Project is repowered at the end of the 30-year period, for the purposes of the Draft EIS, decommissioning has been analyzed in Chapter 3 for all resources. Prior to termination of the 30-year ROW grant, the Applicant would update the site-specific Decommissioning and Site Reclamation Plan.

The Decommissioning and Site Reclamation Plan would provide details regarding the removal of all Project components, reuse of materials to the extent feasible, and site restoration activities to a percentage of reference site conditions. The Decommissioning and Site Reclamation Plan would discuss all currently applicable laws, ordinances, regulations, and standards associated with the reuse, safe storage, or disposal of Project materials. The plan would also include a description of procedures for removal, groundwater required for removal, and for notification of regulatory agencies. Decommissioning requires approximately one-third of the workforce, time, and resources as construction of the Project; therefore, it would be expected to occur over six months and require the support of approximately 150 workers on average. Similarly, water use is estimated to require one-third the amount of construction or 335 acre-feet. The BLM would review the plan prior to approval.

2.3 No Action Alternative

Under the No Action alternative, the BLM would not authorize a ROW grant for the Project. No solar site, substation, gen-tie line, O&M facilities, or other Project components would be constructed. The BLM would continue to manage the land consistent with the CRMP (BLM 2001), as amended. Any future applications for solar development of the site would be subject to the site-specific conditions identified in the BLM's Western Solar Plan (BLM and DOE 2012), or as updated, and the applicable laws and land use plans in place at the time of application.

2.4 Alternative 1: Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance

2.4.1 Overview

Alternative 1 (Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance) is designed as a Project lifespan alternative; it would modify elements of the Proposed Action throughout construction, O&M, and decommissioning. The intent of Alternative 1 is to reduce disturbance to major washes, vegetation, and soils within the solar site by locating development areas outside of the major washes and providing guidelines to limit vegetation disturbance during construction. Restoration would be conducted over the lifespan of the Project through development and implementation of a Site Restoration and Revegetation Plan. Reducing disturbance would help to preserve soils, soil seed banks, native perennial vegetation, wildlife habitat, and sensitive plant species, as well as reduce the potential for the introduction of invasive weeds, fugitive dust, and erosion from increased stormwater runoff volumes and velocities. Alternative 1 is also designed to simplify the reclamation of the Project site at the Project's end-of-life.

2.4.2 Elements the Same as the Proposed Action

All of the Project's solar site components (i.e., solar array blocks, BESS, linear and ancillary facilities, water retention facilities, O&M facilities, and on-site substation) would be largely the same as for the Proposed Action, with the same energy production and storage capacity. The gen-tie line and access roads would also be the same as for the Proposed Action.

2.4.3 Elements Unique to Alternative 1

2.4.3.1 Project Design

Development Blocks

Under Alternative 1, Project development in the solar site would be limited to seven defined "development blocks" to avoid major washes (i.e., where modeled flows could exceed 3 feet in 100-year storm events) and key access routes. Acreages of the seven development blocks are shown in Table 2.4-1. The balance of the 5,141-acre application area, comprising 707 acres, would be outside of fenced areas under this alternative. Figure 2.4-1 also shows how the site would be divided into development blocks under Alternative 1. The minimum setback for solar arrays is outside the 100-year flood plain of the large washes, as well as major roadways that would remain open. Alternative 1 would also create permeability through the Project solar site for movement of recreationalists and wildlife, including game species. A more detailed site plan for Alternative 1 is shown in the *Alternatives Report*, available with the Draft EIS on the BLM's National BLM NEPA Register website.

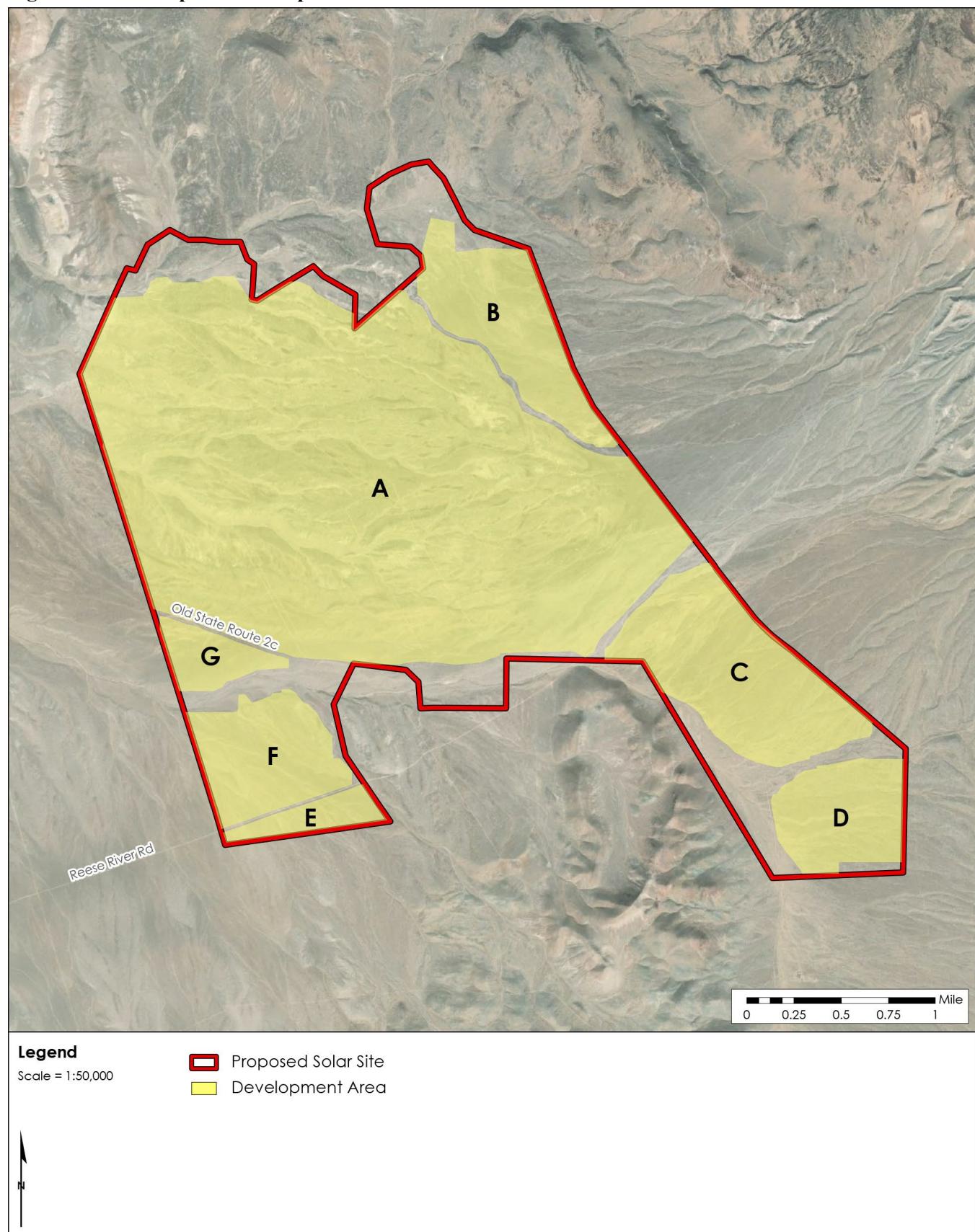
Table 2.4-1 Acreages of Development Blocks under Alternative 1

Development block	Area (acres)
A	3,000
B	317
C	469
D	225
E	71
F	259
G	93
Total	4,434

Vegetation and Topography Maintenance

Alternative 1 includes several thresholds of disturbance for each type of construction method to be used within the solar array areas. The thresholds do not apply to areas of permanent disturbance, such as equipment pads, buildings, driveways, conduit channels, internal access roads within the solar array development blocks, or detention basins. Under Alternative 1, overland travel methods would be utilized to develop the solar array blocks, so as to reduce disturbance to topography, soils, and vegetation and vegetation root systems. Methods would include both overland travel that maintains vegetation and overland travel that crushes vegetation but aims to preserve the root ball. The methods allow for some grading in the solar array development blocks. The thresholds are as follows:

- **Grading:** Traditional construction methods (i.e., disc and roll and grading) would be allowed for adjustments to topography or to construct around other constraints more easily. Within the solar array blocks, a maximum disturbance guideline for grading for panel installation is established at approximately 20 percent.
- **Overland travel/maintain vegetation:** Approximately 40 percent of the existing remaining perennial vegetation within each solar array block (not including areas for equipment pads, access roads, conduits, detention basins, etc.) would be preserved through limited overland travel and avoidance. During final design, the Applicant would need to demonstrate to the BLM that this goal is feasible through selected construction methods.

Figure 2.4-1 Proposed Development Blocks under Alternative 1

- **Overland travel/crushed vegetation:** The remaining 40 percent of the solar array blocks (not including areas for equipment pads, access roads, conduits, detention basins, etc.) would be constructed using overland travel, with the vegetation crushed over successive equipment passes. The number of passes would be limited to the minimum needed to construct the features, with the goal of maintaining root balls so that portions of these areas could later be restored.
- **Site Restoration and Revegetation Plan:** Alternative 1 also includes restoration over the lifespan of the Project to maintain the perennial vegetation cover and to restore vegetation that was subject to drive and crush within the solar array block area. The Site Restoration and Revegetation Plan would also dictate maintenance of the vegetation for fire and operational safety over the lifespan of the Project. The Site Restoration and Revegetation Plan would identify the methods selected, including the seed mixes to be used to restore areas, if needed, in coordination with the BLM. The goal is that by the end-of-life of the Project, up to 65 percent of the original application area (3,341 out of 5,114 acres) would have perennial vegetation cover. Decommissioning would then be accomplished without greatly increasing the disturbance. Alternative 1, like the Proposed Action, would also require implementation of an Integrated Weed Management Plan over the lifespan of the Project.

2.4.3.2 Alternative 1 Construction

The key feature of this alternative that differs from the Proposed Action is that the solar array blocks would be constructed utilizing overland travel methods. Table 2.4-2 summarizes the guidelines for soil and vegetation maintenance for this alternative broken down by construction method. *Overland travel/maintain sustainable vegetation* describes alternative, non-traditional development methods for construction of solar arrays. This construction method is expected to improve the retention of native vegetation, wildlife habitat, soils, and seed banks, while minimizing air quality impacts (i.e., from fugitive dust) and water resource impacts. This alternative construction method, thus, falls under the second "tier" of the mitigation hierarchy established by the BLM, which is to "minimize impacts by limiting the degree or magnitude of the action and its implementation" (BLM 2021, chap. 3). Methods that include overland travel but result in driving and crushing vegetation are expected to maintain root systems and reduce impacts to vegetation and hydrology as compared with disc and roll and grading methods. Restoration in these areas of crushed vegetation is expected to be more feasible over time, as described below under "Operation and Maintenance (O&M)".

The methods necessary for maintaining vegetation and establishing limited travel paths require specialized equipment and additional construction time. Therefore, the construction period for Alternative 1 would likely be longer than for the Proposed Action, at an estimated 18 months versus 16 months. The additional construction time would be in the early stages of the Project, during site preparation and PV array installation. The total estimated number of workers are expected to be the same as described for the Proposed Action.

Table 2.4-2 Avoidance/Disturbance Area by Project Construction Method under Alternative 1

Construction method	Avoidance areas or avoided features within application area (acres)	Solar array block construction (acres)	Permanent disturbance areas (e.g., substation, internal roads, detention basins, power stations, BESS) (acres)	Total (acres)	Percentage of application area
Avoidance of key areas (e.g., washes)	1,864	0	0	1,864	36%
Overland travel/maintain	0	1,220 ^a	0	1,220	24%

Construction method	Avoidance areas or avoided features within application area (acres)	Solar array block construction (acres)	Permanent disturbance areas (e.g., substation, internal roads, detention basins, power stations, BESS) (acres)	Total (acres)	Percentage of application area
sustainable vegetation					
Overland travel/crush vegetation (potentially restorable)	0	1,220 ^b	0	1,220	24%
Clear and cut/graded	0	612 ^c	215 ^d	827	16%
All combined	1,864	3,053	215	5,141	100%
Total maintained vegetation at end of construction	1,864	1,220	0	3,084	60%
Total maintained vegetation by end of operation	1,864	1,465 ^d	0	3,329	65%

Notes:

- ^a Equals 40 percent of the solar array development blocks, not including areas of permanent disturbance for facility features (e.g., equipment pads, access roads, conduits, detention basins)
- ^b Equals 40 percent of the solar array development blocks, not including areas of permanent disturbance for facility features (e.g., equipment pads, access roads, conduits, detention basins)
- ^c Equals 20 percent of the solar array development blocks, not including areas of permanent disturbance for facility features (e.g., equipment pads, access roads, conduits, detention basins), which may be graded for topography or other needs.
- ^d Assumes that 20 percent of the overland travel/crush vegetation would recover during operations. This estimate is conservative but allows for on-going impacts to vegetation from operations and is a minimum.
- ^e O&M facility (2.8 acres), substation (8.3 acres), access roads and driveways (89 acres), water storage facility (4 acres), BESS (2.7 acres), equipment areas (1.4 acres), aboveground collector lines (1.2 acres), feeder lines (40 acres), swales (21 acres), retention basins (45 acres)

2.4.3.3 Operation and Maintenance (O&M)

During O&M, areas of vegetation would be maintained. Vehicle trips between solar array blocks would be limited to access roads and the shortest path to equipment off of the access roads, with the goal of minimizing impacts to existing vegetation. Vehicular access would occur in the smallest possible vehicle to complete the activity or, when possible, on foot. Vegetation under panels and around equipment would be trimmed or mowed as needed to ensure safe operation. The Site Restoration and Revegetation Plan would be initiated following completion of the primary construction phase, during O&M. The goal would be to restore vegetation so that up to 65 percent of the total initial application area is maintained with vegetation.

2.4.3.4 Decommissioning

Decommissioning would be as described in Section 2.2.5 for the Proposed Action and consist of removing all Project materials from the site. Areas without vegetation through the solar array blocks would be used for access to the maximum extent possible. Restoration and reclamation of the remaining Project disturbance would then be undertaken. Decommissioning would be performed as identified in the Decommissioning and Site Reclamation Plan.

2.5 Alternative 2: Alternative Supplemental Access During Construction

2.5.1 Overview

Alternative 2 (Alternative Supplemental Access During Construction) includes providing supplemental access during construction to disperse some of the vehicle trips that under the Proposed Action would be concentrated on East Walker Road. This alternative was discussed with Nevada Copper, who has agreed to allow for supplemental access through their private property on the Pumpkin Hollow Mine, contingent on a mutual legal agreement identifying the terms of use. Cooperative agreements would also be obtained with LADWP to also use existing roads on the BLM land for which they hold a non-exclusive ROW.

2.5.2 Elements the Same as the Proposed Action

All elements of the Project would be the same as those of the Proposed Action under this alternative. The solar site and gen-tie would be constructed exactly as described for the Proposed Action (unless this alternative is layered with Alternative 1, in which case all elements would be the same as for Alternative 1). The primary difference in this alternative is the addition of supplemental access routes used during construction.

2.5.3 Elements Unique to Alternative 2

2.5.3.1 Project Design

The current number of vehicle trips per day is estimated in the Air Quality Report (RCH 2023). The estimated trips by Project phase are provided in Table 2.2-2 and would include several hundred roundtrips per day during peak construction. The Proposed Action includes one access route to the Project site, relying on East Walker Road to connect to Reese River Road. East Walker Road is a local, mostly unpaved road serving two residences, agricultural areas, and recreationalists accessing the Walker River State Recreation Area and the BLM lands.

Alternative 2 would involve partial use of one or two additional access options for a portion of the vehicle trips in order to reduce the impact on the residences along East Walker Road, as well as resulting impacts compounded by traffic associated with the Walker River State Recreation Area. No upgrades or new disturbance would be associated with the use of supplemental access routes. Maintenance of the supplemental access roads is expected and would be the responsibility of the Applicant. The supplemental access routes are summarized in Table 2.5-1 and shown in Figure 2.6-1 and Figure 2.6-2.

Table 2.5-1 Supplemental Access Road Options under Alternative 2

Access route option	Description
Pursel Lane to LADWP's transmission access road to a new spur road to the solar site, utilizing State Route 877 to Pursel Lane.	County maintained portion of Cremetti Road/Pursel Lane/SR 827: 3.5 miles of paved, approximately 24-foot-wide road. Privately maintained portion of Pursel Lane: 4.3 miles of unpaved but improved road on the Pumpkin Hollow Copper Mine LADWP transmission access road on the BLM land to Reese River Road:

Access route option	Description
	6.6 miles of unpaved, approximately 15-foot-wide road adjacent LADWP's transmission line
LADWP Transmission Access Road from US Route 95 Alternate (US 95A) to Reese River Road	LADWP Transmission Access Road on the BLM land to Reese River Road: 13.8 miles of unpaved, approximately 15-foot-wide road on the BLM land but adjacent LADWP's transmission line

2.5.3.2 Project Construction

Supplemental access routes would only be utilized during Project construction. The purpose of the supplemental access routes would be to reduce some of the vehicle trips along East Walker Road by dispersing them across other access routes. A typical scenario could include reducing worker-vehicle travel by diverting up to 25 percent to other routes. Construction workers would likely be commuting from the Reno and Carson City metropolitan areas. A percentage of workers could be directed to the supplemental access routes.

2.5.3.3 Project O&M and Decommissioning

Alternative 2 would not apply to the O&M phase of the Project. The supplemental access routes would only be utilized during Project construction. Decommissioning requires approximately one-third the workers and trips and thus impacts would be reduced compared with the Proposed Action. The routes, particularly through the Nevada Copper property, may not exist at the time of decommissioning.

2.6 Alternative 3: Alternative Gen-tie Connecting to Greenlink West

2.6.1 Overview

Alternative 3 (Alternative Gen-tie Connecting to Greenlink West) entails connecting the gen-tie line from the Project to the proposed Greenlink West Transmission Project through a new switching station under the Greenlink West line. This alternative requires authorizations that are not guaranteed at this time. NV Energy must approve this alternative in consideration of system operation and integration. This alternative's feasibility also depends upon the approval and construction of the proposed Greenlink West Transmission Project, which is currently also undergoing NEPA review (the 90-day public comment period on the Draft EIS concluded on August 3, 2023).

2.6.2 Elements the Same as the Proposed Action

All of the Project solar site components (i.e., solar PV modules/arrays, BESS, linear and ancillary facilities, water retention facilities, operations, and maintenance facilities) would be the same as described for the Proposed Action, with the exception of the location of the on-site substation. The Project solar site access road would also be the same as described for the Proposed Action (unless this alternative is layered with Alternative 1, in which case all elements except for the substation would be the same as for Alternative 1).

Figure 2.6-1 Proposed Alternative 2 Access Route Option: Pursel Lane to LADWP Transmission Line Road

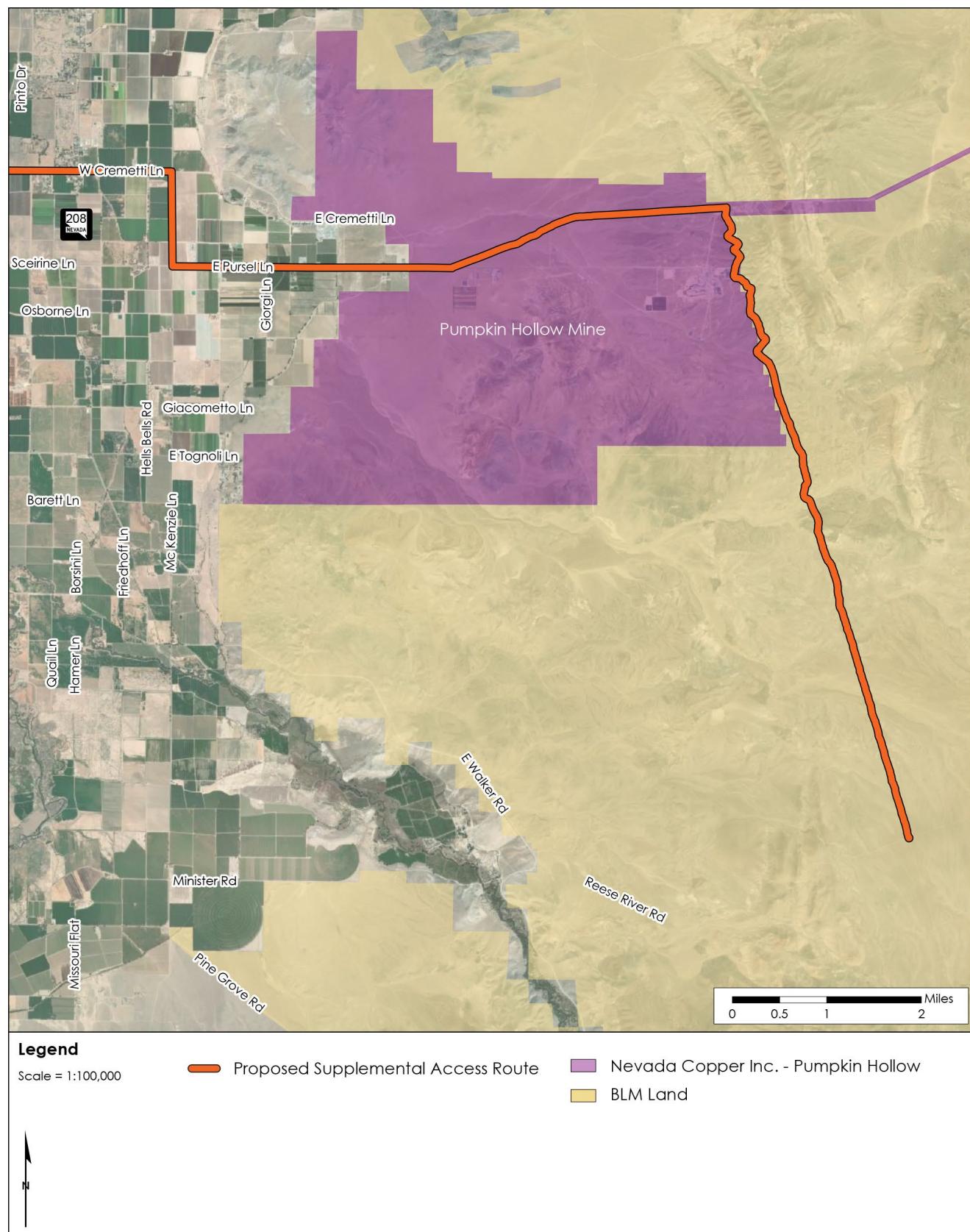
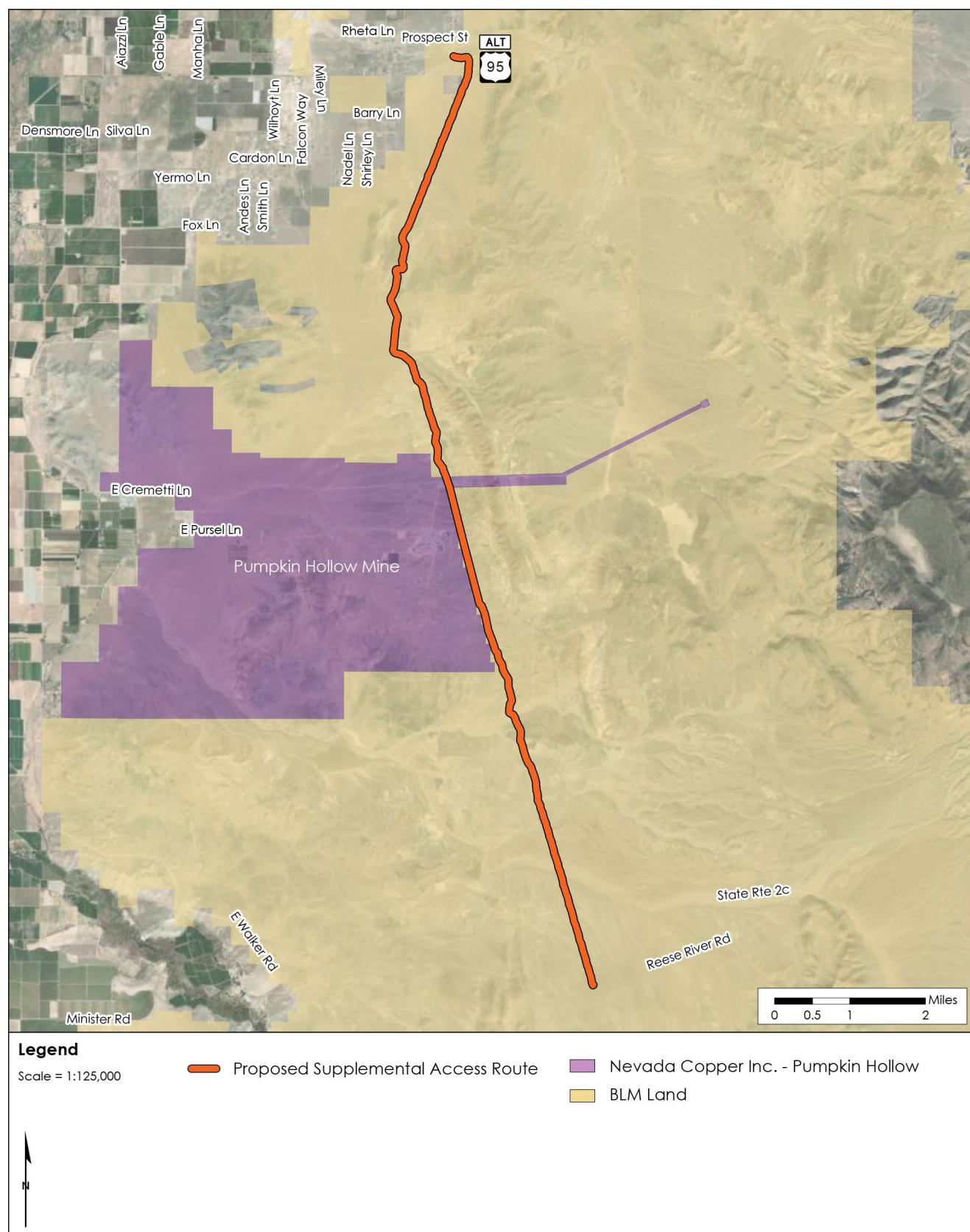


Figure 2.6-2 Proposed Alternative 2 Access Route Option: LADWP Transmission Line Road from US 95A



2.6.3 Elements Unique to Alternative 3

2.6.3.1 Project Design

Alternative 3 entails moving the proposed 525 kV substation on the solar site further south along the eastern boundary of the site, building a new switching station under the proposed Greenlink West line, and building a new 0.54-mile-long 525 kV gen-tie between the solar site substation and new switching station, as shown in Figure 2.6-3. The gen-tie would include approximately four tubular steel or H-frame transmission line poles similar to those described for the Proposed Action. A switching station is an electrical substation with only one voltage level, whose only function is switching actions. Switching stations do not have transformers but can tie together two or more electrical circuits through switches. The switching station would connect into the proposed Greenlink West transmission line to feed power generated at the Project solar site into NV Energy's system. The proposed Greenlink West transmission line would then continue on to the Fort Churchill substation. Under Alternative 3, the on-site 525 kV substation would displace solar arrays as they are located under the Proposed Action design. Solar arrays would instead be located in the area of the substation under the design of the Proposed Action, with no net change in the number of solar arrays. The on-site substation footprint would remain at 8.3 acres. The new switching station under the proposed Greenlink West transmission line would be approximately 8 to 10 acres in size. The new switching station would be owned and operated by NV Energy. All of the new infrastructure, including the gen-tie line and the switching station, would be located within the existing Section 368 designated utility corridor adjacent to the solar site. The estimate of new disturbance associated with the gen-tie is shown in Table 2.6-1.

Table 2.6-1 Summary of Estimated New Permanent Disturbance for the Gen-tie under Alternative 3

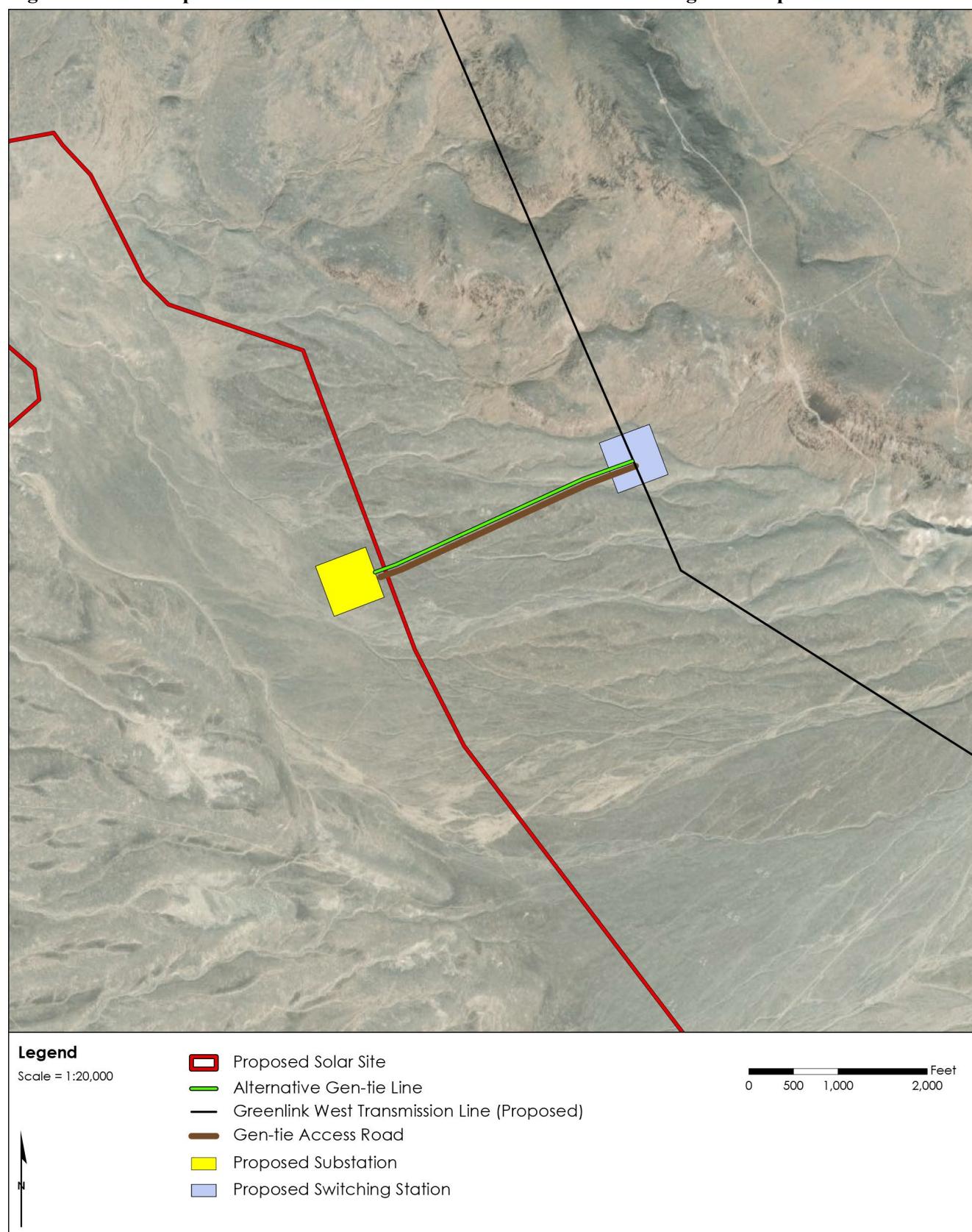
Component	Acres of impact	Description
Gen-tie line	0.5	Approximately 0.54 mile of gen-tie line with 4 H-frame poles; approximately 0.12 acre cleared out around each
New access road along gen-tie line	1.3	Approximately 0.54 mile of new 20-foot-wide access road from the Project substation to the switching station
New switching station	10	A new switching station within the adjacent Section 368 utility corridor, between the solar site and Greenlink West.
All	11.8	

2.6.3.1 Project Construction

The Project substation would be constructed as described for the Proposed Action. The new switching station would also require the same construction methods as the on-site substation. Switching station construction would consist of site grading, concrete equipment foundation forming and pouring, crane-placed electrical and structural equipment, underground and overhead cabling and cable termination, ground grid trenching and termination, control building erection, and installation of all associated systems including, but not limited to, heating, ventilating, and air conditioning system components; distribution panels; lighting; communication and control equipment; and lightning protection. The switching station area would be excavated to a depth of 10 feet. After installation of the grounding grid, the area would be backfilled, compacted, and leveled, followed by the application of 6 inches of aggregate rock base. Equipment (i.e., breakers, buswork, and metal dead-end structures) installation would follow. A prefabricated control house would be installed to house the electronic components required for the substation equipment.

2.6.3.1 Project O&M and Decommissioning

The O&M and decommissioning phases would be the same as for the Proposed Action; however, only 0.54 mile of gen-tie line would need to be maintained. NV Energy would maintain the switching station.

Figure 2.6-3 Proposed Alternative 3: Gen-tie and Substation Connecting into Proposed Greenlink West

2.7 Federal Lead Agency Preferred Alternative

Under NEPA, the *preferred alternative* is a preliminary designation of the lead agency's preference of action among the Proposed Action and alternatives. The identification of a preferred alternative does not constitute a commitment or decision in principle by the BLM, and there is no requirement for the BLM to select the preferred alternative in the ROD. Under NEPA, a lead agency may select a preferred alternative for a variety of reasons, including the agency's priorities in addition to the environmental considerations discussed in the Draft EIS. The BLM, at the ROD, may also choose components of different alternatives, as presented, and evaluated in the Draft EIS. In accordance with NEPA (40 CFR § 1502.14(d)), the BLM has designated all elements of Alternative 1, Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance combined with Alternative 2, Supplemental Access During Construction as the preferred alternative.

2.8 Alternatives Considered but Eliminated from Detailed Study

The BLM eliminated from further detailed analysis any alternatives that met the following criteria (BLM 2008, §6.6.3):

- It is ineffective (it would not respond to the purpose and need).
- It is technically or economically infeasible (consider whether implementation of the alternative is likely given past and current practice and technology; this does not require cost-benefit analysis or speculation about an applicant's costs and profits).
- It is inconsistent with the basic policy objectives for the management of the area (such as, not in conformance with the LUP).
- Its implementation is remote or speculative.
- It is substantially similar in design to an alternative that is analyzed.
- It would have substantially similar effects to an alternative that is analyzed.

Several alternative sites, technologies, and methods were considered but eliminated, as described in Table 2.8-1. Additional information on the alternatives considered but eliminated is provided in the *Alternatives Report* (Panorama 2023).

Table 2.8-1 Alternatives Considered but Rejected

Alternative	Description
Private land	Much of the available private land in the region is dominated by agricultural use or terrain that is not suitable for solar development or is part of the Pumpkin Hollow Copper Mine. Additionally, 85 percent of the land in Nevada is owned by the federal government, which limits the amount of available private land for development.
Other BLM-administered lands	Other suitable areas are proposed for other energy development projects (primarily solar) or have other constraints, including potential impacts from military operations, tribal lands, and special land uses, such as wetlands around the Fort Churchill substation or proximity to the Pony Express Trail and Lahontan Reservoir/Carson River.
Brownfield/degraded land	The USEPA tracks 480,000 contaminated sites for potential reuse for renewable energy development as part of its Re-Powering America's Lands Initiative. As with the private land alternatives previously described, it would be technically possible to develop solar energy on these contaminated sites. However, there were no identified sites in the region that would be sufficiently large enough to support a 700 MWac project with feasible access to transmission lines and substations with adequate capacity.

Alternative	Description
Other types of renewable energy: solar, wind or geothermal	Other types of renewable energy projects, including wind, geothermal, and other solar technologies, were eliminated from detailed consideration because they would not meet the BLM's purpose and need to respond to the Applicant's application.
Distributed generation	Distributed-generation solar was also eliminated from detailed consideration. <i>Distributed generation</i> refers to the installation of small-scale solar energy facilities at individual locations at or near the point of consumption (e.g., use of solar PV panels on a business or home to generate electricity for on-site consumption). Distributed-generation systems usually generate less than 10 MW and thus would fail to promote the BLM's objective to permit substantial quantities of renewable energy generation.
Demand-side management	This potential alternative to utility-scale solar PV energy development consists of a variety of approaches to reduce electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution. With population growth and increasing demand for energy, conservation and demand-side management alone is not sufficient to address energy demands. These efforts also do not respond to federal mandates to promote, expedite, and advance the production and transmission of environmentally sound energy resources, including renewable energy resources and, in particular, cost-competitive solar energy systems at the utility scale.
Concentrated photovoltaic technology	<i>Concentrated photovoltaic</i> (CPV) technology uses layers of wafers to absorb different wavelengths of sunlight and provide more power conversion efficiency than typical PV panels. This technology requires dual tracking technology to provide critical alignment with direct sunlight in order to be efficient. CPV panels are mounted on taller structures than traditional PV panels (as high as 40 feet above the surface). This alternative was eliminated from detailed study because this technology is relatively new and there are uncertainties for long-term performance reliability. Further, the manufacturing capacity to supply large-scale utility projects has not been proven to date.
Alternative access via Minister Road	Commenters during scoping suggested the use of Minister Road, through the Walker River State Recreation Area, to connect to Reese River Road as an alternative access route to the solar site. This alternative was evaluated through coordination with Nevada State Lands, who stated that use of their new road connecting to Minister Road through the park would only be used for park access and would not be compatible with construction traffic. Therefore, this alternative was rejected.

2.9 Comparison of Effects

This Draft EIS examines the range of reasonable alternatives developed to meet the Project's purpose and need, along with a No Action alternative. A No Action alternative is required to be considered under NEPA (40 CFR § 1502.14) as a basis for comparison. Table ES-2 in the Executive Summary to this EIS provides a comparison of the alternatives as described in Section 2.2.

Chapter 3 Affected Environment and Environmental Impacts

3.1 Introduction

3.1.1 Affected Environment

This chapter describes the existing or affected environment, including conditions and trends of the human and physical environment that could be affected by the Proposed Action and alternatives described in Chapter 2. The affected environment is presented for the Project area, including the Project solar site and all areas on which ancillary facilities (i.e., access roads, gen-tie lines) are proposed to be sited. Resources addressed include those that occur within, are adjacent to, or are associated with the Proposed Action and alternative analysis area (referred to as the *study area* for select resource topics). The affected environment establishes the baseline from which environmental effects are assessed.

3.1.2 Environmental Effects

This chapter also describes environmental consequences, referred to as “impacts” or “effects” of implementing the alternatives. Impacts are defined as modifications to the environment over existing conditions that are caused by a proposed action. Direct, indirect, and cumulative impacts are described in this chapter. Terminology for discussion of environmental impacts under NEPA is defined in part 1508 of the April 20, 2022, Phase 1 CEQ revisions of the Regulations for Implementing the NEPA (40 CFR §§ 1508.1(g)).

Potential impacts were evaluated based on the assumption that environmental commitments would be implemented as part of the proposed activities. Environmental commitments may include BMPs, minimization measures, mitigation measures, conservation measures, environmental compliance, compensatory mitigation, programmatic design features (PDFs), SOPs, or other commitments. Proposed environmental commitments summarized for each resource are in Appendix E, *Mitigation, Monitoring, and Reporting Measures*. The BLM would implement these measures directly or through third-party delegation to avoid, minimize, and mitigate environmental impacts of the Project.

Because the Project is tiered to the 2012 Western Solar Plan, the Project is subject to the Western Solar Plan PDFs (Appendix A in the Western Solar Plan), which would potentially reduce the impacts of the Project (BLM and DOE 2012). PDFs are presented first with “Western Solar Plan PDF” followed by the acronym for the applicable resource topic used in the Western Solar Plan. The CRMP identifies SOPs that could reduce effects, which are also identified where applicable in the analysis.

3.1.3 Mitigation Measures Identified in the Analysis

Project specific mitigation measures (MMs) are proposed, where applicable, based on potential for adverse effects from the Project. An MM is a specific requirement of Project implementation that either avoids, reduces, or minimizes a potential environmental impact. MMs are designed to be appropriate, effective, and enforceable in accordance with CEQ guidance (CEQ 2011). Each mitigation measure is assigned an alphanumeric reference code consisting of “MM” followed by an abbreviation representing the applicable resource topic, and a serialized number. For example, mitigation measures applicable to impacts to land use are assigned a reference code beginning with “MM-LU-.”

3.2 Cumulative Impacts

3.2.1 Overview

Cumulative impacts are the incremental impacts of past, present, and reasonably foreseeable future actions in combination with the direct and indirect impacts of the Project. Other projects are considered regardless of what agency (federal or non-federal), or individual undertakes the project. The cumulative impacts analysis in this EIS considers the potential for cumulative impacts in the vicinity of the Project, in Lyon and Mineral counties, Nevada. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.1(g)(3)). Under NEPA, a cumulative impacts analysis is accomplished through the following steps:

- Establish geographic and temporal scopes for analysis.
- Identify the affected environment, including resources, ecosystems, and human communities, their baseline conditions, and current stresses in relation to regulatory thresholds.
- Identify past, present, and reasonably foreseeable future actions within the geographic and temporal scope and their impacts to resources.
- Determine the incremental environmental effects of the project combined with past, present, and reasonably foreseeable future actions and provide a discussion of the magnitude and significance of each.

3.2.2 Geographic Extent and Timeframe for Cumulative Analysis

Table 3.2-1 provides the geographic scope of the cumulative impacts analysis for potentially affected resources within the Project area. The geographic scope of impacts will vary based on the nature of the resource being evaluated and the distance at which an impact might occur. For example, the analysis of air quality impacts may have a larger geographic scope than that for soils.

The temporal scope of this cumulative impacts analysis is the lifespan of the Project, from implementation to 30 years in the future, followed by the decades over which restoration activities could continue. Projects with potential cumulative impacts for which an application has been submitted to a permitting agency or that are in the planning stage have been included in the analysis. Past and present projects are only included if their current impacts would aggregate with those of the Proposed Action or alternatives. Past projects are only included to the extent that their impacts are ongoing. For example, the Pumpkin Hollow Copper Mine project is a past project, but plans for its future operation could contribute to cumulative impacts when considered with the Project.

Table 3.2-1 Geographic Extent of the Cumulative Impacts Analysis by Resource Topic

EIS topic or topics	Geographic scope	Explanation
Soils, water uses, and jurisdictional waters	Mason Valley Hydrographic Unit	Impacts from other projects within the same areas of surface hydrologic connectivity and within the connected groundwater system could aggregate. Soil destabilization and erosion from other projects in the same areas of surface water hydrologic connectivity could occur downstream.
Biological resources: general wildlife, special status species, and vegetation	The Mason Valley and Wassuk Range	Projects within this geographic boundary would be expected to affect similar vegetation, habitat, and wildlife. This geographic scope accounts for the area within which similar populations of species or habitat could occur.

EIS topic or topics	Geographic scope	Explanation
Land use, recreation, socioeconomic, environmental justice, public health, and safety; and mineral resources	Lyon and Mineral counties; Nye and Churchill counties considered for socioeconomic impacts	Projects within these geographic extents may also affect the same land uses and recreational resources, public services and communities, and mineral resources.
Rangeland Resources	Gray Hills, Perry-Springs Deadman, Black Mountain, Parker Butte, and Cleaver Peak allotments	Project that could affect the same allotments could have cumulative impacts.
Air quality	Mason Valley Hydrographic Basin	Projects within the same basin used for air impact analyses as the Project could have cumulative impacts. In Nevada, hydrographic basins are also used to address air quality.
Climate change	Nevada and California	Cumulative impacts from GHGs were considered for the states where the power generated from the solar facility could offset emissions from carbon-based power-generation sources.
Visual resources, recreation	Within an approximately 15-mile radius of the Project site	Projects within this geographic area could have adverse impacts on the same visual and recreational resources.
Historic resources, Native American religious concerns	Within 5-mile radius of the Project site	Impacts within this geographic area are likely to originate with the same ethnographic group or from the same historic period, and could have an impact on the visual, auditory, and atmospheric conditions of a resource.
Transportation	Transportation systems within Lyon, Churchill, and Mineral counties	Projects that use the same roadways would have the potential to contribute to cumulative effects.
Public health and safety	Lyon and Mineral counties	Projects that are located nearby could contribute to cumulative effects. Projects that utilize the same roadways could also contribute to cumulative effects and would be project-specific. Lyon and Mineral counties are considered for cumulative effects related to landfill and fire and emergency services.

3.2.3 Past, Present, and Reasonably Foreseeable Future Projects

The cumulative impacts analysis includes all projects related to renewable energy, transportation, infrastructure improvement, pipeline and electric transmission, and other large-scale, near-term plans that meet the following criteria:

- Projects for which environmental documents are in preparation or finalized,
- Projects in a detailed design or planning phase,

- Projects approved but not yet under construction (e.g., published NTPs, funding for construction),
- Projects approved and under construction, and
- Projects in the bidding or research phase that are reasonably likely to be proposed.

The actions listed in Table 3.2-2 and shown in Figure 3.2-1 are those within the geographic scope of the cumulative impacts analysis that are ongoing or reasonably foreseeable and that, along with the Project, could contribute to cumulative impacts. None of the listed actions are directly connected to or dependent on the Proposed Action or alternatives.

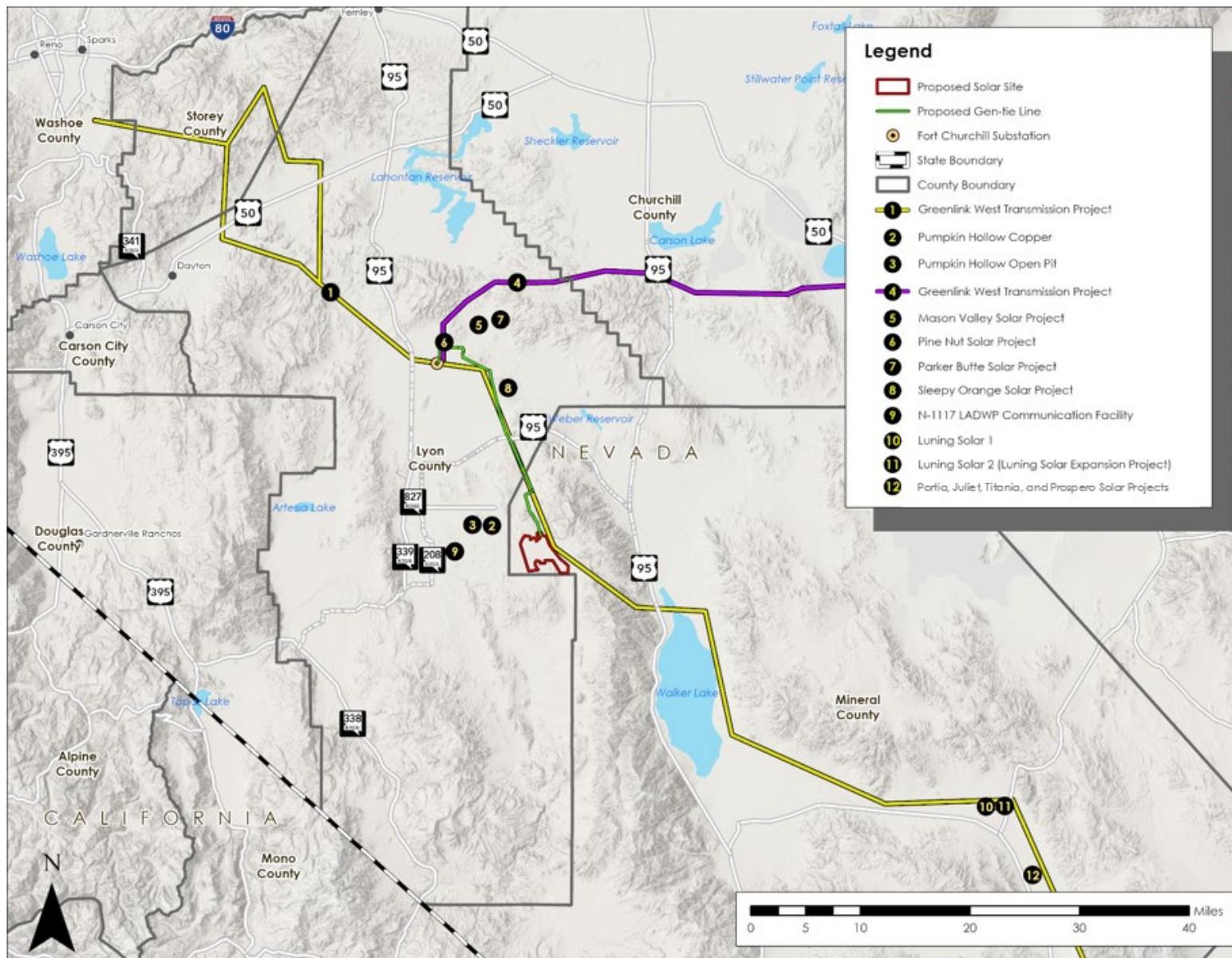
Table 3.2-2 Projects within the Geographic Scope of the Cumulative Impacts Analysis

#	BLM Serial Number (where applicable/assigned) and project name	Project type	Approximate size	County	Status	Construction method	Construction duration	Start of construction	End of construction/Start of Operations	Operations Duration
1	N-1117 LA Department of Water and Power Communication Facility	Communication site	N/a	Lyon, Mineral	Operating	N/a	N/a	N/a	N/a	30+ years
2	Pumpkin Hollow Copper Mine Underground Mine	Mine	N/a	Lyon	Operating	N/a	N/a	N/a	N/a	30+ years
3	Pumpkin Hollow Open Pit Development	Mine	N/a	Lyon	Proposed	Open pit mining	Unknown	Unknown	Unknown	Unknown
4	N-99863 Greenlink West Transmission	Electric transmission	120 kV, 345 kV, and 525 kV transmission facilities spanning 358 miles from Las Vegas to Yerington	Washoe, Storey, Lyon, Mineral, Esmeralda, Nye, Clark	Proposed	Grading	3 years	January 2024	December 2026	30+ years
5	Greenlink North Transmission Project	Electric transmission	525 kV gen-tie line spanning 235 miles from Ely to Yerington	Washoe, Storey, Lyon, Churchill, Lander, Eureka, White Pine	Proposed	Grading	3 years	January 2026	December 2028	30+ years
6	Mason Valley Solar	Power generation	400 MW solar project with 200 MW of battery storage on 2,877 acres of BLM land	Lyon	Application submitted; variance process not	Unknown	Unknown	Unknown	Unknown, but likely after 2026	Typically, 35-year ROW

#	BLM Serial Number (where applicable/assigned) and project name	Project type	Approximate size	County	Status	Construction method	Construction duration	Start of construction	End of construction/Start of Operations	Operations Duration
			with a 0.5-mile long 500 kV gen-tie		yet commenced					
7	Pine Nut Solar	Power generation	200 MW solar project on 2,300 acres of BLM land	Lyon	Application submitted; variance process not yet commenced	Unknown	Unknown	Unknown	Unknown, but likely after 2026	Typically, 35-year ROW
8	Parker Butte Solar	Power generation	550 MW and 275 MW battery on 1,765 acres of BLM land with a 12.5 mile long 345 kV gen-tie	Lyon	Application submitted; variance process not yet commenced	Unknown	Unknown	Estimated to commence in 2025	Estimated to be completed in 2027	Typically, 35-year ROW
9	Sleepy Orange Solar	Power generation	500 MW photovoltaic solar project, 500 MW battery energy storage system; 345 kV generation-tie line	Lyon	Application submitted; variance process not yet commenced	Unknown	Unknown	Unknown	Unknown, but likely after 2026	Typically, 35-year ROW
10	Luning Solar 1	Power generation	50 MW project in Mineral City, NV and a 1.6-miles-long 120 kV power line.	Mineral	Constructed and operational	N/a	N/a	N/a	Completed in 2017	2017 through 2047
11	Luning Solar 2 (Luning Solar Expansion Project)	Power generation	Includes construction of additional solar	Mineral	Approved in December 2021, with	Grading and clearing to install panels	Approximately 1 year	Unknown, potentially 2024	Unknown, potentially 2025	30 years

#	BLM Serial Number (where applicable/assigned) and project name	Project type	Approximate size	County	Status	Construction method	Construction duration	Start of construction	End of construction/Start of Operations	Operations Duration
			panel modules to deliver 60 MW of power, battery storage, and expansion of the existing Table Mountain substation		Decision Record.					
12	Portia, Juliet, Titania, and Prospero Solar Projects	Power generation	Construction of four adjacent solar facilities, each 350 MW, and with 138 or 230 kV gen-ties, and substation upgrades	Mineral	Application submitted; variance process not yet commenced	Unknown	Unknown	Unknown	Unknown, but likely after 2026	Typically, 35-year ROW

Figure 3.2-1 Cumulative Projects



3.3 Air Quality and Climate Change

3.3.1 Introduction

This section addresses the potential impacts of the Project on air quality. The information presented in this section is based on the Air Quality Technical Report for the Libra Solar Project (RCH 2023).

3.3.2 Analysis Area

Air quality is a regional resource and is neither defined nor limited by Project or jurisdictional boundaries. Hydrographic basins, defined as the area from which precipitation flows into a single stream or drainage, are also used to define local airsheds as the air quality management unit throughout Nevada. The hydrographic basins were developed based on topography and, thus, airsheds tend to be consistent with those basins. The Project area is located within the Mason Valley Hydrographic Unit or Basin, as shown in Figure 3.3-1.

Greenhouse gases (GHGs) are global pollutants and have atmospheric lifetimes of up to several thousand years, which permits dispersal of GHGs around the globe. The analysis area for GHG emissions, therefore, is global. This analysis focuses on Nevada and California where emissions are quantifiable (IPCC 2014).

3.3.3 Affected Environment

3.3.3.1 Overview

The Project site is located near Yerington, Nevada. Yerington has a dry desert climate with hot and dry summers and mild winters. The average temperature for summer is around 90 degrees Fahrenheit, and the winter temperatures rarely reach freezing. The area experiences little humidity. The region receives approximately 5 inches of rain per year and 4 inches of snow (Visual Crossing Corp. n.d.). Snow accumulates on the ground for only a few days per year most years.

The Project is in a region with moderate wind. The windier part of the year lasts for approximately 4 months, from mid-February through the end of June. The calmest month of the year in Yerington is January (WeatherSpark, n.d.). Meteorological data were obtained for the air quality analysis from Fallon Station for the five-year period of 2017 through 2021 (NOAA 2017; 2022). Winds are predominantly from the south-southwest-and west-northwest, with an average wind speed of 3.2 meters per second (7.2 mph).

3.3.3.2 Air Standards

The USEPA has set national ambient air quality standards (NAAQS) to protect public health and the environment. NAAQS are defined for six criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and particulate matter (PM). The State also has established air quality standard for the same pollutants (Nevada Administrative Code [NAC] Title 40 § 445B.22097). The State and NAAQS-established thresholds for the criteria air pollutants at different averaging periods, along with the primary and secondary standards for each, are provided in Table 3.3-1.

Primary standards are concentration thresholds that provide public health protection, including for sensitive populations such as asthmatics, children, and the elderly. Secondary standards are concentration thresholds provide public welfare from any known or anticipated adverse effects of a pollutant, including, but not limited to, protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

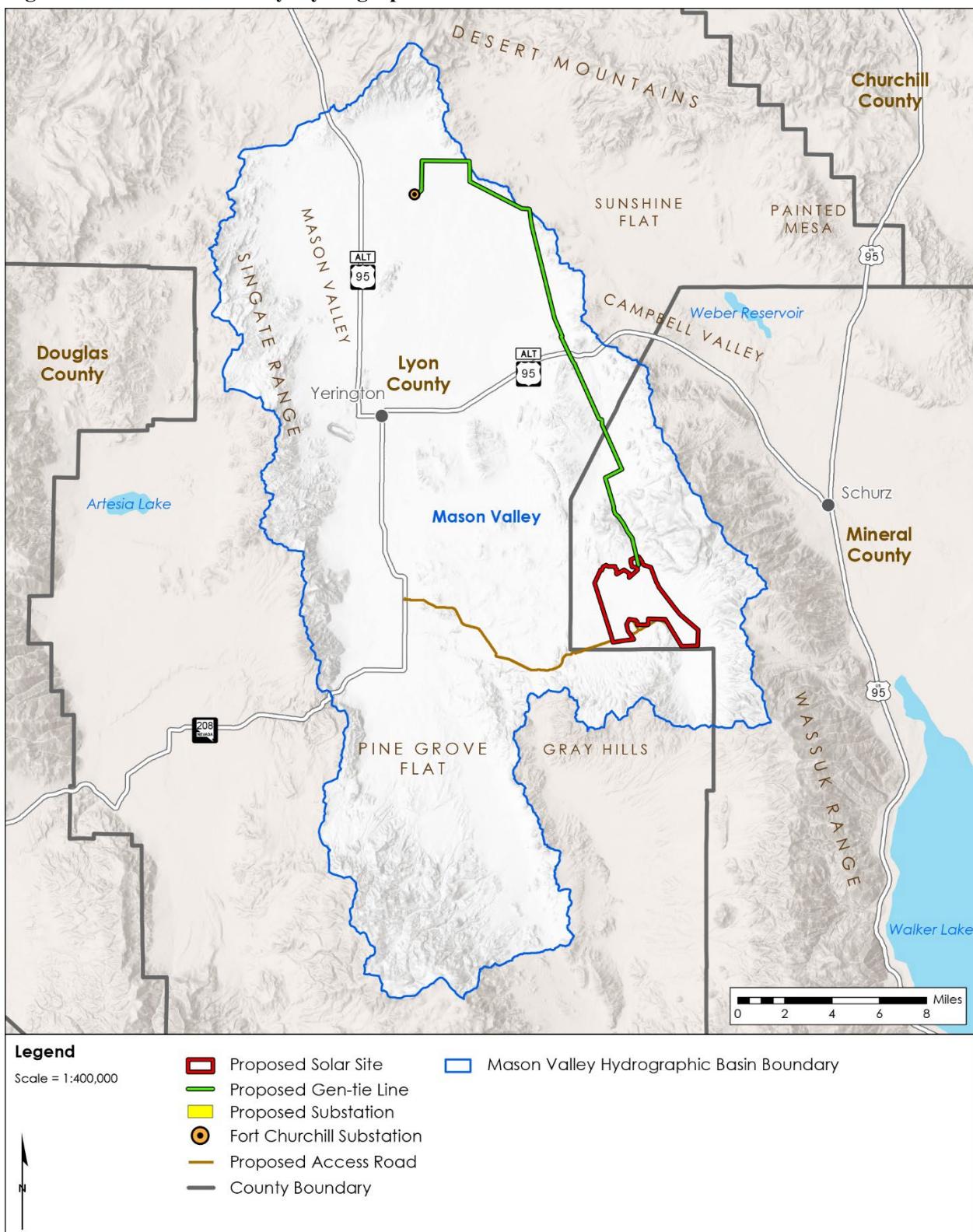
Figure 3.3-1 Mason Valley Hydrographic Basin

Table 3.3-1 Nevada and National Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging time	Nevada standards	NAAQS primary standards	NAAQS secondary standards
O ₃	8 hours	0.070 ppm	0.070 ppm (137 $\mu\text{g}/\text{m}^3$)	0.070 ppm (137 $\mu\text{g}/\text{m}^3$)
O ₃	1 hour	0.10 ppm (195 $\mu\text{g}/\text{m}^3$) ¹	N/a	N/a
CO	1 hour	35 ppm (40 $\mu\text{g}/\text{m}^3$)	35 ppm (40 $\mu\text{g}/\text{m}^3$)	N/a
CO	8 hours	9 ppm (10 $\mu\text{g}/\text{m}^3$) ² 6 ppm (7 $\mu\text{g}/\text{m}^3$) ³	9 ppm (10 $\mu\text{g}/\text{m}^3$)	N/a
NO ₂	1 hour	100 ppb (188 $\mu\text{g}/\text{m}^3$)	100 ppm (188 $\mu\text{g}/\text{m}^3$)	N/a
NO ₂	Annual arithmetic mean (AAM)	0.053 ppm (100 $\mu\text{g}/\text{m}^3$)	0.053 ppm (100 $\mu\text{g}/\text{m}^3$)	0.053 ppm (100 $\mu\text{g}/\text{m}^3$)
SO ₂	1 hour	75 ppb (196 $\mu\text{g}/\text{m}^3$)	75 ppb (196 $\mu\text{g}/\text{m}^3$)	—
SO ₂	3 hours	0.5 ppm (1,300 $\mu\text{g}/\text{m}^3$)	N/a	0.5 ppm (1,300 $\mu\text{g}/\text{m}^3$)
SO ₂	24 hours	0.14 ppm (365 $\mu\text{g}/\text{m}^3$)	0.14 ppm (365 $\mu\text{g}/\text{m}^3$) ⁴	N/a
SO ₂	AAM	0.030 ppm (81 $\mu\text{g}/\text{m}^3$)	0.030 ppm (81 $\mu\text{g}/\text{m}^3$) ⁴	N/a
Pb	Calendar quarter	N/a	1.5 $\mu\text{g}/\text{m}^3$	1.5 $\mu\text{g}/\text{m}^3$
Pb	Rolling 3-month average	0.15 $\mu\text{g}/\text{m}^3$	0.15 $\mu\text{g}/\text{m}^3$	0.15 $\mu\text{g}/\text{m}^3$
PM ₁₀	24 Hours	150 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$
PM ₁₀	AAM	50 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$
PM _{2.5}	24 hours	35 $\mu\text{g}/\text{m}^3$	35 $\mu\text{g}/\text{m}^3$	35 $\mu\text{g}/\text{m}^3$
PM _{2.5}	AAM	12.0 $\mu\text{g}/\text{m}^3$	12.0 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$
H ₂ S	1 hour	0.08 ppm (112 $\mu\text{g}/\text{m}^3$)	N/a	N/a

 mg/m^3 : milligrams per cubic meter

ppm: parts per million

ppb: parts per billion

 $\mu\text{g}/\text{m}^3$: micrograms per cubic meter

AAM: annual arithmetic mean

Notes:

Not applicable (N/a) indicates that the standard is not applicable to the Project.

For the Lake Tahoe Basin, #90

For areas less than 5,000 feet (1,524 meters) above mean sea level

For areas at or greater than 5,000 feet (1,524 meters) above mean sea level

Applies to areas of nonattainment; however, there are no SO₂ nonattainment areas in Nevada.

Source: (State of Nevada 2020; USEPA 2020)

3.3.3.3 Air Quality Designations

The USEPA designates attainment status for air quality standards within hydrographic basins. Attainment areas meet or exceed ambient air quality standards, and non-attainment areas do not. States with non-attainment areas are required to draft a State Implementation Plan (SIP), which must include measures that the state will take to improve air quality. Once the ambient air quality standards and additional redesignation requirements in the Clean Air Act are met, the USEPA designates the area as a "maintenance area" (U.S. Environmental Protection Agency (EPA), n.d.-a). The Project area is located within the Mason Valley Hydrographic Basin, which is in attainment for all pollutants. The Washoe County Hydrographic Basin is the nearest basin to the west of the Project area, and where Project workers are expected to originate as it contains the cities of Reno and Carson City. The Washoe County Hydrographic Basin is designated as a non-attainment area for PM₁₀, a maintenance area for CO, and attainment for all other criteria pollutants. Background concentrations for NO₂, CO and SO₂ can be found in the Air Quality Technical Report for the Libra Solar Project (RCH 2023).

3.3.3.4 Greenhouse Gases/Climate Change

The term greenhouse gasses (GHGs) refers to gases that trap heat in the atmosphere. GHGs are released into the earth's atmosphere through a variety of natural processes and human activities. The primary GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone, and water vapor. Others include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). GHG emission inventories are measured in units of carbon dioxide equivalent (CO₂e).

An expanding body of scientific research supports the theory that global climate change is currently affecting weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within the Western U.S. could be adversely affected by global climate change. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes, and drought; and increased levels of air pollution.

Nevada's GHG emissions inventory mirrors trends occurring across the Western U.S., where transportation-sector emissions (35 percent) exceed those from the energy sector (32 percent). Industrial, residential, and commercial emissions are growing rapidly while those associated with other sectors remain relatively consistent (State of Nevada 2020). Nevada generates emissions comprising less than 1 percent of the overall emissions in the U.S., which is proportional to the State's relative population.

3.3.4 Environmental Consequences

3.3.4.1 Methods

The air quality analysis presented herein follows guidance within Sections 5.11.1 and 5.11.2 and Appendices A.2 and M.13 of the Western Solar Plan (BLM and DOE 2012). Emissions generated during construction of the Project were calculated based on the detailed list of equipment and the schedule presented in the Project's POD (Arevia 2023). Dispersion modeling of the air emissions generated during construction was conducted to determine the maximum concentrations of criteria pollutants at receptor locations near the Project area (including the solar site, gen-tie, and access road) to evaluate compliance with NAAQS and Nevada air quality standards. Receptor locations include anywhere that a person could feasibly be, including at the fence line of the Project solar site and adjacent to the gen-tie alignment. Modeling methods and assumptions are provided in more detail in the Air Quality Technical Report for the Libra Solar Project (RCH 2023).

In addition to criteria air pollutants, hazardous air pollutants (HAPs) were also evaluated. HAPs (such as acetaldehyde, formaldehyde, benzene, toluene, and xylene) are gaseous organic and inorganic chemicals and PM, which the USEPA has identified to have known or suspected potential to cause cancer or other serious health effects. HAPs are emitted by a wide range of sources, including construction equipment and industrial facilities. The CAA mandates that the USEPA regulate HAP emissions. While no ambient

(i.e., outdoor) standards for HAP emissions levels have been developed, standards for HAP emissions emitted by stationary sources have been established. HAP emissions are calculated based on speciation factors that are essentially the percentage of an individual HAP within the total VOC emissions from construction equipment and vehicles.

The Project is in an attainment area for all NAAQS and is not subject to new or modified major source¹ permitting under the CAA's Prevention of Significant Deterioration (PSD) analysis (USEPA 2023). For informational purposes, however, an analysis was undertaken to calculate the air pollutants from the Project within the nearest location to Yosemite National Park and the other Class I areas, including Desolation Wilderness, Mokelumne Wilderness, Emigrant Wilderness, and Hoover Wilderness. These Class I areas are located within 62 miles of the Project area, the maximum recommended modeling distance for American Meteorological Society/USEPA Regulatory Model (AERMOD)(USEPA 2018). The closest Class I areas are Mokelumne Wilderness and Hoover Wilderness, located approximately 42 miles from the Project area. Yosemite National Park is located approximately 57 miles from the Project area.

3.3.4.2 Proposed Action

Construction Impacts

Air Quality. Construction-related emissions are expected to be short-term. Emissions include combustion emissions (CO, NO₂, SO₂) and fugitive dust. Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. Sustained high winds (greater than 25 mph) occur less than two percent of the time in the Project region (NOAA 2017; 2022). Fugitive dust, including wind-driven fugitive dust, generated during construction would include not only PM₁₀ but also larger particles. These dust particles would fall out of the atmosphere within several hundred feet of the construction areas, which could result in nuisance-type impacts. Table 3.3-2 presents the maximum combustion and fugitive dust emission (CO, NO₂, SO₂, PM₁₀, and PM_{2.5}) concentrations that were modeled for construction. The modeling was based on the Proposed Action, incorporating combustion and fugitive dust controls during 2025 and assuming water would be trucked to the Project area. Table 3.3-3 presents the same information but assumes use of an on-site groundwater well. With combustion and fugitive dust controls, the maximum concentrations for PM₁₀, PM_{2.5}, and the combustion-emissions criteria pollutants would not exceed the NAAQS and Nevada state standards. Impacts would not be substantially adverse.

The maximum impacts related to fugitive dust emissions would occur over the narrow geographical areas near the Project site and along the unpaved access road and gen-tie line over brief time periods (i.e., isolated conditions). The areas of maximum daily PM₁₀ conditions (given elevated background levels) that are near sensitive receptors include two residences on East Walker Road, one residence along the gen-tie at the eastern boundary of the Mason Valley WMA, and several residences located approximately 0.5 mile from the gen-tie in an area just north of US 95A. Attachment 3 of the Air Quality Technical Report for the Libra Solar Project (RCH Group 2023) provides modeling isopleths of concentration results for the maximum Project PM₁₀ and PM_{2.5} concentrations, assuming dust controls. The areas of highest PM₁₀ and PM_{2.5} concentrations include locations along the northern portion of the gen-tie and just north of US 95A along the gen-tie as well as along the access road. Sensitive receptors are located near US 95A location of highest concentration, although no standards would be exceeded with the use of controls.

¹ Major sources are medium to large industrial facilities that emit or have the potential to emit at least 100 tons per year of any criteria pollutant, or any stationary source that emits or has the potential to emit 250 tons per year of any criteria pollutants.

Table 3.3-2 Estimated Maximum Concentration with Controls (Trucking Option)

	CO 1-hour	CO 8-hour	NO ₂ 1-hour	NO ₂ annual	SO ₂ 1-hour	SO ₂ 3-hour	PM ₁₀ 24-hour	PM ₁₀ annual	PM _{2.5} 24-hour	PM _{2.5} annual
Project modeled concentration ($\mu\text{g}/\text{m}^3$)	20.6	5.72	21.3	1.58	2.23	1.25	36.2	7.26	2.79	0.93
Background concentration ($\mu\text{g}/\text{m}^3$)	2,483	1,852	88.1	21.1	8.45	6.41	103	18.4	16.6	4.80
Total concentration ($\mu\text{g}/\text{m}^3$)	2,504	1,858	109	22.7	10.7	7.66	139	25.6	19.4	5.73
NAAQS/NV state standard ($\mu\text{g}/\text{m}^3$)	40,000	10,000	188	100	196	1,300	150	50	35	12
Total percent of NAAQS/NV state standard	6.3	18.6	58.2	22.7	5.4	0.6	92.6	51.2	55.5	47.7
Exceed NAAQS/NV state standard? (Yes/No)?	No	No	No	No	No	No	No	No	No	No
Project concentration percent of NAAQS/NV state standard	0.1	0.1	11.3	1.6	1.1	0.1	24.2	14.5	8.0	7.8

Table 3.3-3 Estimated Maximum Concentration with Controls (Well Option)

	CO 1-hour	CO 8-hour	NO ₂ 1-hour	NO ₂ annual	SO ₂ 1-hour	SO ₂ 3-hour	PM ₁₀ 24-hour	PM ₁₀ annual	PM _{2.5} 24-hour	PM _{2.5} annual
Project modeled concentration (µg/m ³)	20.5	5.71	21.3	1.58	2.23	1.25	21.6	7.24	2.78	0.93
Background concentration (µg/m ³)	2,483	1,852	88.1	21.1	8.45	6.41	103	18.4	16.6	4.80
Total concentration (µg/m ³)	2,504	1,858	109	22.7	10.7	7.66	124	25.6	19.4	5.73
NAAQS/NV state standard (µg/m ³)	40,000	10,000	188	100	196	1,300	150	50	35	12
Total concentration percent of NAAQS/NV state standard	6.3	18.6	58.2	22.7	5.4	0.6	82.8	51.2	55.5	47.7
Exceed NAAQS/NV state standard (Yes/No)?	No	No	No	No	No	No	No	No	No	No
Project concentration percent of NAAQS/NV state standard	0.1	0.1	11.3	1.6	1.1	0.1	14.4	14.5	7.9	7.7

The Applicant would implement Western Solar Plan PDFs AQC1-1 and AQC 2-1 (BLM and U.S. DOE 2012, app. A) and the CRMP SOPs (BLM 2001) during construction. Western Solar Plan PDF AQC 1-1 requires applicants to consult with the BLM in the early phases of project planning to help determine conformance with NAAQS and other potential constraints associated with the proposed Project area. The Applicant has complied with this measure during the NEPA process and through preparation of the Air Quality Technical Report for the Libra Solar Project (RCH 2023). Western Solar Plan PDF AQC 2-1 requires projects to identify measures to minimize air quality impacts, such as using equipment that meets or exceeds emission standards specified in the state code of regulations and that meets the applicable USEPA Tier 3 and Tier 4 emissions requirements, and preparation of a dust abatement plan. These elements are included in the draft Dust Control and Air Quality Plan (Panorama 2023). As part of the plan, fugitive dust control measures would be implemented during construction, including but not limited to applying water in sufficient quantities to prevent the generation of visible dust plumes, applying the BLM-approved soil binders to uncovered areas, re-establishing ground cover as quickly as possible, using a wheel-washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site, and maintaining effective cover over exposed areas. The CRMP SOPs require projects to minimize soil disturbance, comply with the CAA and federal and state emission standards, and develop pollution abatement programs to provide for environmental protection and reasonable resource uses. While not modeled as paved, the Project also includes potentially paving the first 1.5 miles of East Walker Road in coordination with the two homeowners on East Walker Road and Lyon County Roads Department. Paving would further reduce dust generation on East Walker Road. While some exposure to dust and pollutants could still occur, exceedances of NAAQS (CO, NO₂, SO₂, PM₁₀, and PM_{2.5}) would not occur from construction of the solar site, access road, or gen-tie with implementation of the design features.

Table 3.3-4 presents the maximum CO, NO₂, SO₂, PM₁₀, and PM_{2.5} concentrations at Yosemite National Park during 2025, the maximum intensity construction period, from emissions from the Proposed Action, assuming inclusion of fugitive dust controls. The maximum concentrations for all pollutants and averaging periods are well below the PSD increment. No adverse effect on Yosemite National Park would occur. The Air Quality Technical Report for the Libra Solar Project (RCH 2023) also presents the calculation of effects to Desolation Wilderness, Mokelumne Wilderness, Emigrant Wilderness, and Hoover Wilderness, none of which would be adverse.

GHG. The estimated total construction GHG emissions for the Project is 16,877 metric tons of CO₂e. The estimated annual average construction GHG emissions for the Project is 5,626 metric tons of CO₂e. As indicated in Table 3.3-5, the 30-year amortized construction-related GHG emissions would be 563 metric tons of CO₂e per year. Per the USEPA GHG equivalencies calculator, the maximum emissions generated during construction of the Project would be the same as produced by 776 to 1,199 households annually from energy consumption (USEPA 2020a). Cumulative GHG emissions have been linked with accelerated global climate change. One-time generation of GHG emissions would be required for Project construction. The total quantity of construction emissions generated, however, would be significantly less than a single year of equivalent energy production using non-renewable resources.

Construction would contribute to an elevated level of CO₂ over a short period of time (16 months); climate change, however, is a long-term phenomenon. While the Project would result in a high level of emissions for a brief time, those emissions would be offset by the operational benefits of renewable energy power generation over the long-term. The net impact would be beneficial rather than adverse.

Hazardous Air Pollutants. In addition to criteria air pollutants, HAP may be emitted during construction through the use of construction equipment and industrial facilities. Mobile sources of hazardous air pollutant emissions result from fuel combustion in both on-and off-road vehicles. For vehicle operations associated with construction activities, worker commuting, and deliveries, the speciated hazardous air pollutant emissions include compounds such as acetaldehyde, formaldehyde, benzene, toluene, and xylene. See the Air Quality Technical Report for the Libra Solar Project (RCH 2023) for more details regarding the HAP calculations.

Table 3.3-4 Estimated Maximum Concentration at Yosemite National Park with Controls

	CO 1-hour	CO 8-hour	NO ₂ 1-hour	NO ₂ annual	SO ₂ 1-hour	SO ₂ 3-hour	PM ₁₀ 24-hour	PM ₁₀ annual	PM _{2.5} 24-hour	PM _{2.5} annual
Project Modeled concentration (µg/m ³)	0.37	0.06	3.35	0.03	0.06	0.02	0.22	0.01	0.02	<0.01
PSD Class I increment (µg/m ³)	—	—	—	2.5	25	—	8	4	2	1
Exceed PSD Class I increment (Yes/No)?	No	No	No	No	No	No	No	No	No	No

Table 3.3-5 Estimated Construction Greenhouse Gas Emissions

Source	Carbon dioxide equivalent (CO ₂ e) (metric tons)
Annual construction emissions 2024	2,617
Annual construction emissions 2025	12,259
Annual construction emissions 2026	1,984
Total construction emissions	16,858
Annual average construction emissions	5,619
Annual amortized construction emissions (30-year)	562

The highest HAPs emitted during construction would be formaldehyde at 2.4 tons. The combined total of all HAPs emitted during construction would be approximately 7.6 tons. The potentially emitted HAPs would be less than 10 tons per year for any individual HAP, and less than 25 tons per year for all HAPs combined; therefore, the Project would not be considered a major HAP emission source during construction.

Public Health. *Coccidioidomycosis*, commonly known as valley fever, is primarily a disease of the lungs that is common in the southwestern U.S. and northwestern Mexico. Valley fever can be transported through fugitive dust generated during construction and decommissioning. The Project would implement Western Solar Plan PDFs AQC1-1 and AQC1-2 as well as mitigation measure MM AIR-1 and MM AIR-2 to further reduce fugitive dust impacts during construction. With the implementation of these measures, the risk to workers of contracting valley fever would be minimized. See Section 3.16, Public Health and Safety for more information.

Operation and Maintenance Impacts

Air Quality. Vehicles transporting workers to and from the solar site and used to conduct maintenance activities would emit some pollutants. Some emissions may occur through the use of generators, but emissions are anticipated to be minimal as generators would only be used in case of emergencies and possibly during periodic maintenance, and thus only a few days per year. O&M could involve soil disturbance in portions of the Project area (for repairs and maintenance), but disturbance would be mostly limited to access roads. Wind events could disturb soil within the Project area, resulting in erosion and fugitive dust; however, high wind events are relatively uncommon in the Project region. Under existing conditions, the fugitive dust emissions of PM₁₀ and PM_{2.5} from wind erosion are estimated at 1,968 tons and 295 tons, respectively. During initial operation, the net increase in uncontrolled fugitive dust emissions of PM₁₀ and PM_{2.5} from wind erosion is estimated at 2,475 tons and 371 tons, respectively. That is, prior to the re-establishment of Project soil compaction, without dust controls, the fugitive dust emissions due to wind erosion would be higher than the existing conditions. With fugitive dust controls but without vegetation re-establishment, the net decrease in fugitive dust emissions of PM₁₀ and PM_{2.5} from wind erosion would be 635 tons and 95 tons, respectively, compared to existing conditions. Fugitive dust controls within the solar site would likely include application of dust palliatives as approved by the BLM. The Dust Control and Air Quality Plan required by NDEP, and the Western Solar Plan PDFs for the O&M phase of the Project would identify measures for reducing dust, with monitoring to ensure off-site impacts do not occur.

The facility is also incentivized to limit fugitive dust on site as dust can dramatically affect the energy output of solar cells. Studies in the U.S. have found losses of 5 percent to 23 percent, depending on the type of dust and angle of the solar panel surface (Maghami et al. 2016). In addition to panel cleaning, dust controls (e.g., watering, applying regulation-compliant palliatives) are commonly used throughout active solar fields to minimize output losses. The Applicant would also implement Western Solar Plan PDF AQC 3-1, which outlines compliance and monitoring requirements during operations and CRMP SOP 1, which requires limiting soil disturbance. Western Solar Plan PDF AQC 3-1 dictates that areas that have been graded, scraped, bladed, compacted, or denuded of vegetation must be monitored and treated. The Dust Control and Air Quality Plan would address methods for implementing this requirement. If during high wind events (i.e., sustained winds over 25 mph), dust over the solar site is visibly greater than surrounding areas, or if valid complaints are received, treatment would be required. Compliance methods include reapplying palliatives or water as necessary for effective fugitive dust management and ensuring compliance of all combustion sources with State emission standards (e.g., best available control technology requirements). Fugitive dust impacts during O&M would be reduced as compared with the baseline conditions and thus would not be adverse.

Air emissions from fossil fuel facilities that could be offset by the Project were compared for California and Nevada. As a lower-emission power-generation source, the Project would likely reduce the overall composite emission rates associated with regional electrical generation. However, these benefits might accrue at locations far removed from the solar facilities and over a wide geographic area. To assess these benefits, emissions avoided were estimated on the assumption that the Project would generate 700 MWac of

electrical power (see Table 3.3-6 and Table 3.3-7). Based on the results, air quality impacts from the Project are expected to be beneficial versus adverse during the O&M phase.

GHG. A 700 MWac solar facility would generate approximately 1,704,549 MWh of electricity per year.² Using the average fossil fuel power-generation emissions factor for California and Nevada of 0.439 metric tons CO₂e per year (USEPA 2022), a similar sized fossil fuel power generation facility would generate 747,728 metric tons of CO₂e emissions. The 30-year (operational period of the facility) equivalent fossil fuel power-generation emissions would be 22,282,296 metric tons CO₂e. The Project, in contrast, would generate between an estimated 32,000 and 38,000 metric tons CO₂e over the 30-year life, as shown in Table 3.3-8. O&M would generate some emissions from testing and use of generators, but emissions would be minimal since use would only be for a few days per year. Desert landscapes and vegetation provide carbon sequestration and stock that would be lost from site development, but at the maximum level, that loss would not be considerable.

Project O&M would offset a significant quantity of emissions from fossil fuel power generation. The offset amount would be significantly higher than the emissions generated. The Project would have beneficial impacts to GHG emissions compared to non-renewable energy generation.

Decommissioning Impacts

Air Quality. Decommissioning activities would be similar to construction activities but assumed to occur on a more limited scale and over a shorter duration. The potential effects on ambient air quality would be correspondingly smaller than those from construction activities. Associated effects on ambient air quality would be temporary and not adverse.

The Project would implement Western Solar Plan PDF AQC 4-1, which states that reclamation of the site would incorporate the PDFs listed under Western Solar Plan AQC 2-1 to reduce the likelihood of air quality impacts associated with decommissioning. An adverse effect on local air quality from fugitive dust emissions during decommissioning is unlikely but could occur. Following decommissioning, areas of bare soil could continue to contribute to fugitive dust emissions for many years. The Site Restoration and Revegetation Plan and the Decommissioning and Site Reclamation Plan would include restoration and revegetation requirements to meet site performance standards for mitigation. Implementation of these plans would restore areas to pre-construction conditions, but it may take decades to a century or more. Since the area would be de-compacted to facilitate restoration, fugitive dust could be locally increased as compared with baseline conditions; however, the Site Restoration and Revegetation Plan and Decommissioning and Site Reclamation Plan would mandate methods of soil stabilization during the restoration process. The remote location of the site and limited vehicle traffic, as well as the stabilization measures, would limit the effects of dust generated and, thus, impacts are not anticipated to be adverse.

GHG. Decommissioning and reclamation activities would be similar to construction activities but occur on a more limited scale and with shorter duration. Potential effects on climate change would be correspondingly smaller than those from construction activities. Decommissioning activities would last for a shorter period. The GHG emissions generated during decommissioning would be offset by the beneficial effects achieved throughout the lifetime of the Project.

² Refer to Section 2.5.2 for a description of the methodology to determine MWh of electricity per year.

Table 3.3-6 Operations Emissions Offset (tons per year) Without Controls

Emissions source	VOCs	SO ₂	CO	NOx	PM ₁₀	PM _{2.5}
Worker vehicles	0.04	<0.01	0.35	0.01	0.07	0.01
Pickup trucks	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
Onsite equipment	0.01	0.01	0.03	0.01	0.01	0.01
Pumps & generators (trucking/well option)	<0.01 / 0.04	0.02 / 0.40	0.03 / 0.57	0.03 / 0.62	<0.01 / 0.03	<0.01 / 0.03
Water trucks (trucking/well option)	0.01/ 0.00	<0.01 / 0.00	0.13 / 0.00	0.14 / 0.00	0.06 / 0.00	0.01 / 0.00
Net fugitive dust	N/a	N/a	N/a	N/a	2,475.21	371.28
Total	0.06 / 0.09	0.03 / 0.41	0.57 / 1.01	0.19 / 0.50	2,475.35 / 2,475.34	371.31 / 371.34
Total equivalent emissions generated for 700 MW non-renewable energy power generation	N/a	68.18	N/a	374.57	N/a	N/a
Emissions offset (trucking/well option)	0.06 / 0.09	68.15 / 67.77	0.57 / 1.01	374.38 / 374.07	2,475.35 / 2,475.34	371.31 / 371/34

Note: N/a indicates that information is not available or not applicable.

Table 3.3-7 Operations Emissions Offset (tons per year) With Controls

Emissions source	VOCs	SO ₂	CO	NOx	PM ₁₀	PM _{2.5}
Worker vehicles	0.04	<0.01	0.35	0.01	0.07	0.01
Pickup trucks	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
Onsite equipment	0.01	0.01	0.03	0.01	0.01	0.01
Pumps & generators (trucking/well option)	<0.01 / 0.04	0.02 / 0.40	0.03 / 0.57	0.03 / 0.62	<0.01 / 0.03	<0.01 / 0.03
Water trucks (trucking/well option)	0.01 / 0.00	<0.01 / 0.00	0.13 / 0.00	0.14 / 0.00	0.06 / 0.00	0.01 / 0.00

Emissions source	VOCs	SO ₂	CO	NOx	PM ₁₀	PM _{2.5}
Net fugitive dust	N/a	N/a	N/a	N/a	-634.86	-95.23
Total	0.06 / 0.09	0.03 / 0.41	0.57 / 1.01	0.19 / 0.50	-634.74 / -634.75	-95.20 / -95.18
Total equivalent emissions generated for 700 MW non-renewable energy power generation	N/a	68.18	N/a	374.57	N/a	N/a
Emissions offset (trucking/well option)	0.06 / 0.09	68.15 / 67.77	0.57 / 1.01	374.38 / 374.07	-634.74 / -634.75	-95.20 / -95.18

Note: N/a indicates that information is not available or is not applicable.

Table 3.3-8 Operational Emissions Offset Over the Life of the Project (CO₂e Metric Tons)

Emissions source	Project emissions (CO ₂ e metric tons)
Annual amortized construction emissions (30-year timeframe)	562
Substation	270
Worker trips	120
Offroad equipment/pickup trucks	34
Pumps/generators (trucking/well option)	5/106
Water trucks (trucking/well option)	244/0
Total annual proposed action (trucking/well option)	1,236/1,093
Total 30-year proposed action (trucking/well option)	37,067/32,777
Total equivalent emissions generated for 700 MW non-renewable energy power generation over life of the project (29.8 years)	-22,282,296
Loss of carbon sequestration 1 (30 years)	63,048–993,001
Emissions offset during Project O&M (trucking option)	-22,186,471 to -21,256,518
Emissions offset during Project O&M (Well Option)	-22,182,181 to -21,252,228

Note: Annual carbon sequestration rates vary, depending on the study, from 0.16 MT carbon/acre/year to 2.52 MT carbon/acre/year. One ton of carbon is equivalent to 3.67 tons of CO₂ (Allen, Jenerette, and Santiago 2023). A loss period of 30 years is assumed.

Cumulative Impacts

Past and present actions, including existing land development, have contributed to the existing air quality conditions in the analysis area. Construction-related ground disturbance projected for other projects in the analysis area between 2025 and 2026 would likely be limited to the proposed Greenlink West Transmission Project (Greenlink West) and, potentially, expansion activities at the Pumpkin Hollow Copper Mine. The contribution to cumulative impacts from the Project would constitute an incremental increase in air pollutants within the analysis area. Other solar projects would be implemented at separate times or would be geographically further from the Project and, therefore, the construction impacts to air quality are not expected to overlap with the effects of the Project to result in a cumulative effect.

Greenlink West would be constructed adjacent to the Project's gen-tie, and localized dust emissions could occur. The annual construction emissions in tons for the Project for 2025 are shown in Table 3.3-9 along with estimated annual emissions for Greenlink West (BLM 2023). The emissions estimated for Greenlink West are for the entire 472 miles, of which approximately 18 miles would overlap with the Project. The local contribution to cumulative effects from Greenlink West would be minor and would not be expected to result in adverse impacts to air quality if work were to occur concurrently. Similar dust suppression measures would be applied for Greenlink West as for the Project, which would minimize the potential for cumulatively adverse impacts to air quality from dust emissions.

Table 3.3-9 Annual Construction Emissions (tons) with Controls

Emissions source	VOC (metric tons)	CO (metric tons)	NOx (metric tons)	SO ₂ (metric tons)	PM ₁₀ (metric tons)	PM _{2.5} (metric tons)
Project (2025)	11.5	42.3	66.5	5.84	163	22.7
Greenlink West (annual), for 18 miles	0.3	2.1	3.4	0.008	0.3	0.05

The Pumpkin Hollow Copper Mine expansion includes pit mining, which involves a large amount of ground disturbance and could produce significant emissions. The timing of work and emissions are not currently known and, thus, cumulatively significant air emissions cannot be ruled out. It is assumed that the mining operation, which is located on private land, would be subject to the NDEP air quality standards and would require dust control to also avoid impacts in conflict with air quality standards. The Project would include Western Solar Plan PDFs and control measures to minimize the Project's contribution to an otherwise adverse cumulative air quality impact.

Other projects, including other solar developments near the Fort Churchill substation, could be constructed during the O&M phase of the Project. These projects would generate emissions similar to those described for the Project; however, the Project would result in minimal emissions during O&M and, in fact, in offsetting emissions would not result in net adverse cumulative effects. Decommissioning of the Project would not occur at the same time as any other currently foreseeable projects. There would be no adverse cumulative impacts from decommissioning.

Cumulative GHG emissions from Greenlink West and other solar projects would be similar to the Project and would be beneficial over the life of those projects. The Pumpkin Hollow Copper Mine expansion may result in significant emissions of GHGs; however, the Project, as a renewable energy project, would not contribute to an otherwise significant cumulative effect.

3.3.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Air Quality

Under Alternative 1, the maximum ambient concentrations of criteria pollutants would occur at the gentle line and access road during construction, as with the Proposed Action. Resultant ambient pollutant concentrations would be very similar to those shown for the Proposed Action in Table 3.3-2 and Table 3.3-3. This alternative would result in increased duration of impacts since construction would take approximately 2 months longer; however, annual emissions estimates would not increase (i.e., duration, but not intensity, of construction would change). Emissions would not exceed Nevada air quality standards or NAAQS with controls, application of Western Solar Plan PDFs AQC 1-1 and AQC 2-1, and application of the CRMP SOPs. With fugitive dust controls, the net (decrease as a result of Alternative 1) fugitive dust emissions of PM₁₀ and PM_{2.5} from wind erosion would be a reduction of 953 tons and 143 tons, respectively, compared to the existing condition and a net reduction of 318 tons and 48 tons, respectively, compared with the Proposed Action during construction, since this alternative would result in maintaining as much as 64 percent of the on-site vegetation during construction and O&M across the Project area.

Although particulate matter and fugitive dust impacts would likely be reduced from the decreased level of maximum disturbance and the type of disturbance during construction, Action Alternative 1 could potentially result in an increase (compared to the Proposed Action) in fugitive dust during O&M. Areas of maintained vegetation would not be subject to soils compaction and, thus, may have greater dust emissions (similar to the baseline conditions) during rare high wind events than for the Proposed Action. Disturbed, graded areas would be treated with soils stabilization and, thus, dust emissions are still expected to be less than baseline conditions. Adverse impacts to air quality are not anticipated under this alternative. Decommissioning impacts would be similar to those for the Proposed Action. Less reclamation work would be needed under this alternative to return the solar site to its pre-construction condition since as much as 64 percent of the original application area's vegetation and surface topography may be maintained as compared with 36 percent for the Proposed Action. Impacts to air quality are not expected to be adverse.

Cumulative impacts would be similar to those described for the Proposed Action, and the Project would not contribute to significant adverse cumulative impacts to air quality.

GHG

GHG emissions impacts would be the same as for the Proposed Action. The Project would have similar impacts during construction, which would be offset by the Project O&M phase as a renewable energy project. Under this alternative, the Project would have the same total electrical power output as the Proposed Action, thus conferring the same benefits. Carbon sequestration losses would be reduced since vegetation and soil topography would be maintained to a greater extent. The Project under this alternative would not contribute to significant adverse cumulative impact to GHG emissions and climate change.

3.3.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Air Quality

Alternative 2, utilizing supplemental access routes, would result in a change of location of vehicle exhaust and dust emissions but would not change the total emissions as compared with the Proposed Action. Emissions would not exceed Nevada state air quality standards and NAAQS with controls, application of Western Solar Plan PDFs AQC 1-1 and AQC 2-1, and the CRMP SOPs. Since total emissions would not change, the air quality impacts during construction, O&M, and decommissioning and cumulative impacts would be the same as for the Proposed Action, and a net change in adverse impacts is not anticipated. Supplemental access route roads are unpaved and would not change the Project's overall vehicle trips and miles traveled. The result would be reduced dust generation in a given location with dust generation created instead along the supplemental access routes. Mitigation measures such as implementing speed

limits and application of dust palliatives would minimize dust emissions along supplemental access routes.

GHG

GHG emissions impacts would be the same as for the Proposed Action since, under this alternative, construction of the solar site and gen-tie alignment would not change. Use of supplemental access routes would not increase travel times or vehicle trips; thus, GHG emissions are anticipated to be similar to those for the Proposed Action. Adverse effects would not occur, and the net beneficial impacts would be the same as for the Proposed Action.

3.3.4.5 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Air Quality

Under Alternative 3, the 24.1-mile-long gen-tie would be shortened to 0.54 mile, and a switching station would be added under Greenlink West. Emissions associated with the construction of the gen-tie and access along the gen-tie would be reduced as compared with the Proposed Action given the reduced ground disturbance and reduction in vehicle miles traveled. Overall emissions would therefore be reduced and would not exceed NAAQS or Nevada state air quality standards with controls, application of the Western Solar Plan PDFs AQC 1-1 and AQC 2-1, and the CRMP SOPs. The primary benefit of Action Alternative 3 would be elimination of impacts from dust emissions to sensitive receptors north of US 95A and near the Mason Valley.

During O&M, vehicle miles traveled to maintain the gen-tie and switching station would be reduced along unpaved roads, reducing fugitive dust emissions as compared with the Proposed Action. Overall, emissions during O&M would be reduced compared with the Proposed Action and would not be adverse. Net impacts to air quality would also be beneficial, like for the Proposed Action. Decommissioning would have similar effects as described for the Proposed Action but would likewise be reduced since the area of disturbance associated with the gen-tie alignment would be reduced. Impacts to air quality are not expected to be adverse. Cumulative impacts would be similar to those described for the Proposed Action, and the Project would not contribute to significant adverse cumulative effects.

GHG

GHG emissions impacts would be similar to those for the Proposed Action but slightly reduced since, under this alternative, the solar site would not change but the gen-tie construction emissions would be reduced. Adverse effects would not occur, and the same net beneficial impacts would be anticipated.

3.3.4.6 No Action Alternative

Under the No Action alternative, the solar site, gen-tie line, and substation would not be developed. No soil or vegetation disturbance would occur, and no impacts to air quality would occur. Climate change would continue as defined by current trends and no renewable energy alternative to carbon-intensive fossil fuels would be provided. No adverse effects would occur.

3.3.4.7 Relevant Required Western Solar Plan Programmatic Design Features, the CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Western Solar Plan Programmatic Design Features

PDFs from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to air quality:

- AQC 1-1, 2-1, 3-1, and 4-1

The CRMP Standard Operating Procedures

SOPs from the CRMP (BLM 2001) are listed in Appendix B. The following relevant SOPs would minimize impacts to air quality:

- Soil, Watershed, and Air SOPs 1, 2, and 4

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction, operation and maintenance, and decommissioning phases to minimize impacts to air quality:

- Dust Control and Air Quality Plan (Draft is available on the Project website)
- Site Restoration and Revegetation Plan (Draft available on the Project website)
- Decommissioning and Site Reclamation Plan

The Project would comply with the following mitigation measures to minimize air quality emissions:

MM AIR-1: Emissions Controls

Air quality protection measures that shall be implemented to reduce emissions include:

- Develop and implement a carpooling program or other program per MM TR-1 to minimize employee trips to the Project site.
- Install a gravel apron to reduce mud/dirt trackout from unpaved truck exit routes.
- Construct three-sided enclosures for storage piles, where needed to reduce dust.
- Enforce a posted speed limit (e.g., 25 mph [40 km/hour]) within the access road to minimize airborne fugitive dust.
- Limit grading and travel on unpaved access road on days with an Air Quality Index forecast of greater than 100 for particulates for the Project area.³

The BLM has allowed the use of several dust palliatives on other projects. If dust palliatives are used in place of water for the Project, the total amount of water needed during construction would be reduced. The Applicant may opt to use such palliatives, as authorized by the BLM for the Project. The soil binder/dust palliatives that are proposed for the Project, and which the BLM previously has allowed are:

- Road Bond 1000
- For roads and heavy traffic areas: Soil Sement
- For non-traffic areas on finer soils: Formulated Soil Binder FSB 1000
- Alternatives as approved by the BLM

MM AIR-2: Dust Control and Stabilization

A Dust Control and Air Quality Plan for Project construction and O&M shall be prepared, which identifies the methods of reducing dust while demonstrating off-site impacts of the methods used would not occur. The Dust Control Plan shall also identify upgrading portions of the Project access road and gen-tie access roads to an all-purpose surface where particulate emissions are highest to greatly reduce emissions, if feasible.

3.3.4.8 Irreversible or Irretrievable Impacts and Residual Effects

Emissions of criteria air pollutants associated with construction activities would result in short-term increases in the concentrations of pollutants in the affected airshed. Sources of air pollution associated with long-term operations would increase as a result of substation and solar facility maintenance, but at a much lower level than during the construction phase (<1 percent of the impacted counties' total emission inventory for all evaluated pollutants). Localized increases in the concentrations of air pollutants would persist during the O&M of the Project but would dissipate relatively quickly following the Project decommissioning. Therefore, there would be no irreversible or irretrievable impacts to air quality in the

³ An Air Quality Index value of 100 corresponds to the ambient air quality standard for the pollutant, which is the level USEPA has set to protect public health. Air Quality Index values at or below 100 are commonly satisfactory for public health.

area. Residual impacts include those that remain after application of mitigation. Residual impacts would include the generation of some limited dust and air pollutants, but all emissions are expected to be below standards for all alternatives.

3.4 Soils

3.4.1 Introduction

This section is based on information provided in the Preliminary Geotechnical Investigation Report for the Libra Solar Project (Westwood 2023b), as well as soil data and information produced by the National Cooperative Soil Survey (NRCS n.d.). The BLM has no specific regulatory authority that addresses soil protection. However, soils are linked to the Clean Water Act and Clean Air Act through dust emissions, and soil conservation is specifically cited in FLPMA.

3.4.2 Analysis Area

The analysis area for soils is limited to the Project site, gen-tie lines, and access road and adjacent areas. This geographic extent is appropriate because effects of the Project's construction and O&M may result in erosion and soil losses that could impact the immediate area and areas adjacent the Project site and off-site components. The analysis area is used to provide context for current conditions and, ultimately, for the direct, indirect, and cumulative impacts related to loss of soil resources or soil productivity.

3.4.3 Affected Environment

3.4.3.1 Soil Types

The Libra Solar Project is located within the Great Basin section of the Basin and Range Physiographic Province (Fenneman and Johnson 1946). The Basin and Range province is characterized by steep, protruding mountain ranges separated by flat basins (NPS 2020a). The Great Basin Desert is a temperate desert with hot, dry summers and snowy winters, and drastic elevation changes (NPS 2021b). The valleys are dominated by sagebrush and shadscale vegetation.

According to the Geologic Map of Nevada (J. H. Stewart and Carlson 1978) the site is predominately mapped within pediment deposits, alluvial plain, and undifferentiated alluvial deposits. These deposits are described as poorly sorted, boulders, and muddy, uncemented gravel, with weakly developed desert pavement at the surface. The Wassuk group is also mapped within the Project boundary, which is described as weakly cemented fine silty sandstone to sandy siltstone. Surrounding units in the Wassuk Range are mainly quartz and volcaniclastic sediment. The Web Soil Survey data indicates a depth to duripan restrictive layer between 9 and 18 inches (25 cm to 46 cm) below ground surface (bgs) throughout the majority of the Project solar site (NCSS 2022b). "Duripan" is described as cemented silica creating hardpan soil. Duripans occur mostly in arid or semiarid climates. Soils with duripans are often geographically associated with areas of volcanic activity. Volcanic glass weathers rapidly, providing an ample supply of soluble silica to cement the underlying soil. Duripan layers restrict root growth. Soil borings found that hardpan or duripan was encountered between 3.5 and 15 feet bgs, represented by a pink and white calcareous cementation layer (Westwood 2023b)

The solar site is comprised of two primary soil units:

- **Deefan-Rawe-Bluewing association** (approximately 63 percent of the site): Classified as clayey gravel (GC), silty gravel (GM), gravel with silt (GW-GM, GP-GM) and gravel (GW, GP) with a cemented layer between 10 to 26 inches. Minor sandy units are also noted. This unit is derived from mixed alluvium.
- **Smedley-Annaw-Izo association** (approximately 21 percent of the site): Classified as silty gravel (GM), and gravel with silt (GW-GM, GP-GM) with a cemented layer between 15 to 33 inches. Minor sandy units are also noted. This unit is derived from mixed alluvium.

The gen-tie crosses numerous soil units along its 24.1-mile length, most in pediment and alluvial deposits, but it also crosses numerous alluvial flats and stream terraces in the north, closer to the Fort Churchill substation and in proximity to the Mason Valley WMA and the Walker River. The Project access road crosses several soil units, with most being pediment and alluvial deposits like the solar site, including the Cleaver association (NCSS 2022a). Maps showing all of the soils units are provided in the Preliminary Geotechnical Investigation Report for the Libra Solar Project (Westwood 2023b).

3.4.3.2 Soils Characteristics

Water and Wind Erosion

The soil erodibility factor (known as the K factor) is used to quantify a soil's susceptibility to water erosion in two erosion models: the universal soil loss equation (USLE) and the revised universal soil loss equation (Palacky 1988). K factor values range from 0.02 (least erodible soils) to 0.7 (most erodible soils). The shallow soils found on the Project solar site have K factors ranging from 0.10 to 0.20, and thus have low susceptibility to erosion (NCSS 2022c).

The purpose of wind erodibility groups (WEGs) is to predict a soil type's susceptibility to wind erosion, which varies according to soil texture, organic matter content, soil carbonate, rock fragment content, and mineralogy. WEG values are assigned to soil map units within the SSURGO system and range from a value of 1 to 8: high wind erosion susceptibility (WEG 1 or 2), moderate wind erosion susceptibility (WEG 3, 4), slight wind erosion susceptibility (WEG 5, 6, or 7), and no susceptibility to wind erosion (WEG 8). The Project solar site has WEGs in the 5 and 6 range and, thus, have slight wind erodibility potential. The gen-tie alignment area soil types vary widely, with wind erosion potential ranging from 1 to 8. The access road, like the solar site, has mostly low to moderate erosion potential, with WEGs in the range of 5 to 6, but at its more western extent near Yerington, pockets of high soil susceptible to wind erosion are found with a WEG of 1 (NCSS 2022e).

Soil Corrosion Potential

As reported in the Preliminary Geotechnical Investigation Report (Westwood 2023b), chemical constituent test results indicated that the site has soil pH ranging from 7.0 to 7.4, and contains up to 8,421 mg/kg of soluble sulfates, and up to 2,398 mg/kg soluble chlorides. These values, along with other soil properties such as moisture content, soil type, and electrical resistivity, indicate that the subsurface conditions are moderately corrosive to steel piles (Palacky 1988), with sulfate levels that are corrosive to concrete.

Soil Productivity (T factor, Soil Loss Tolerance)

An important factor in the consideration of soil productivity (how well soils support biotic growth) are thresholds for soil loss due to erosion. The T factor is defined as the soil loss tolerance (as measured in tons per acre), which is the maximum amount of soil erosion at which the quality of a soil as a medium for plant growth can be maintained. Erosion classes range on a scale from 1 to 5, with the 5 being the most resilient to future erosional losses of soil and 1 being the least resilient. For the purposes of this analysis, T factor classes of 1 to 2 are considered to have low soil loss tolerance (i.e., highly susceptibility to erosion impacts and loss of soil productivity). The Project solar site's primary soil composition units have the following T factors: Deefan, 1; Rawe, 3; Bluewing, 5; Smedley, 1; Izo, 5; and Annaw, 2. The data suggests that while variable, much of the solar site has a low soil loss tolerance (NCSS 2022d). The erosion potential is low to moderate, but if the soils do experience erosion, soil productivity is affected. Most of the access road areas have a T factor of 1 as well. The gen-tie alignment crosses many soil units, but most have higher T factor values, indicating higher resilience related to soil loss and soil productivity.

None of the soils on the solar site are identified as supporting Prime Farmland. Areas of the gen-tie may support agricultural uses and farmland; however, the gen-tie does not cross any active areas of farming.

3.4.4 Environmental Consequences

3.4.4.1 Methods

A qualitative analysis was completed to assess the impacts of the Project site preparation methods on soil characteristics for the Proposed Action and each action alternative. The analysis addresses water and wind erosion of soils, soil corrosion and impacts on the Project structures, and impacts related to loss of soil productivity.

3.4.4.2 Proposed Action

Construction, Operation and Maintenance, and Decommissioning

Wind and Water Erosion of Soils. The Proposed Action components would result in temporary and permanent disturbance of soils. Soils in the Project area (including the solar site, access road, and gen-tie) have the potential to erode from both wind and heavy rain or water run-off. The Proposed Action includes traditional construction methods, which would result in surface and topsoil disturbance of approximately 64 percent of the application area (3,306 acres), as well as 104 acres along the gen-tie, and 10 acres along the access road. The Project area has low to moderate wind and water erosion potential, but pockets of the solar site, a small section of the access road, and some areas along the gen-tie alignment have high wind erosion potential, which would be exacerbated by the disturbance from construction.

Increased erosion on the Project site from stormwater overland flows could result in increased deposition of fine-grained sediments into the surrounding washes, which would likely flow downstream and off site before settling out of the washes. Because no uses such as agriculture or built structures are located downstream for 5 miles or more, periodic increases in fine-grained sediment loads and deposition are not expected to have adverse effects. The washes in the region move large quantities of all sizes of sediment as part of the natural desert processes, changing course and depositing soil during large storm events. Note that Section 3.5: *Water Resources* addresses changes in the volumes of water runoff.

A SWPPP is required as part of the BLM ROW grant and would be prepared and implemented during construction. It would include installation of Project-specific erosion control BMPs (as identified in the SWPPP). Western Solar Plan PDF SR2-1 requires BMPs to minimize soil erosion (BLM and DOE 2012, app. A). The CRMP SOPs 4 and 7 require rehabilitation and restoration of disturbed areas to also minimize soil erosion (BLM 2001).

Temporary disturbance areas (approximately 184 acres) include temporary workspaces, yards, and staging areas that may be used for construction. Temporary areas of disturbance would be restored in accordance with the BLM-approved Site Restoration and Revegetation Plan following the completion of primary construction activities. Permanent disturbance is associated with all long-term Project components needed for operation and maintenance of the Project solar site and associated components throughout the 30-year lifespan of the Project, including the solar arrays, BESS, roads and access routes, distribution power, substations, gen-tie and transmission infrastructure, and permanent fencing. These areas would be reclaimed after the Project's 30-year lifespan, and reclamation would occur in accordance with the BLM-approved Decommissioning and Site Reclamation Plan. Part of the Site Restoration and Revegetation Plan would include using the salvaged and managed topsoil, as required by Western Solar Plan PDF SR2-1 (BLM and DOE 2012, app. A).

Wind erosion could also occur across bare soils, which is also addressed in Section 3.3 *Air Quality and Climate Change*. Appropriate dust abatement measures would be identified in the Dust Control and Air Quality Plan, to be implemented during construction and operation, in compliance with NDEP requirements. These measures would include BMPs such as limiting vehicle speeds, watering of active areas, watering of stockpiles, watering on roadways, and track-out control at site exits. Dust palliatives and soil stabilizers would also be used to reduce the potential for wind erosion on the solar site. With the preparation of a SWPPP and the Dust Control and Air Quality Plan along with the implementation of Western Solar Plan PDFs, direct adverse effects from soil erosion caused by construction would be minimized. An additional mitigation measure, MM SOILS-1, would require that the Applicant implement phasing of disturbance in order to minimize the amount of area of destabilized soils at a time. Phasing

could include ground disturbance and development of roads, pads, and infrastructure in 1,000-acre units at a time. The areas would likely be developed to the point that array posts are installed, and then the ground stabilized, before opening the next 1,000 acres of development. This measure would reduce the amount of soils subject to wind and water erosion at a time.

Corrosivity and Soil Hazards. Direct effects caused by corrosive and unstable soils could occur during O&M if foundations for the arrays and other equipment are not appropriately designed, which could result in failure of the components and additional effects to various environmental parameters from conducting extensive repairs. MM SOILS-2 requires a design-level geotechnical evaluation and implementation of recommendations to manage corrosive soils and cemented soils, as well as minor areas of slope instability (e.g., near major drainages) to be conducted prior to construction, with recommendations incorporated into the Project's final design. Direct effects caused by unstable soils during O&M would be minimized by implementing the recommendations of the design-level geotechnical evaluation.

The solar site includes a duripan horizon of cemented silica a few feet below the surface, which could cause construction difficulties. In order to ensure that piles are appropriately designed so as not to be damaged or impacted by the layer, MM SOILS-2 requires that the design-level geotechnical evaluation also address the best foundation methods given the hardpan layer as well as pile testing prior to construction. Implementation of this measure would minimize effects that could occur should inappropriate methods be prescribed and that could otherwise result in damage to the facility.

Soil Productivity. Construction activities would affect soil productivity through temporary and permanent disturbance of the Project site (including the solar site, gen-tie, and access road). The soils on the solar site tend to have a low erosion tolerance and lose the ability to support vegetation, if eroded. Discing and grading would have similar effects to the soil productivity. The Project under the Proposed Action would likely cause a loss of soil productivity on over 3,306 acres of land for the solar site, plus an additional 104 acres for the gen-tie and 10 acres for the access road, which may take decades to a century or more to be restored after decommissioning of the facilities. This effect would be adverse since the soils on the Project solar site provide vegetation and forage for wildlife and livestock that would be lost for a long time. Methods to minimize effects include implementation of the Site Restoration and Revegetation Plan and, after the lifespan of the Project, a Decommissioning and Site Reclamation Plan. MM SOILS-3 would require that topsoil, including desert pavement in rare instances where it is well developed, be properly salvaged and reused on site where feasible, and not mixed with subsoil. Topsoil includes the native seedbank, fertile islands, soil nutrients, organic matter and microbial communities needed for soil productivity. MM SOILS-3 along with implementation of restoration would reduce effects, but effects would remain adverse. Once soil disturbance has occurred, restoring productivity would be difficult for a long time (i.e., decades to a century or longer).

Cumulative Impacts

The total acreage of soils impacts from cumulative projects could be substantial, exceeding 15,000 to 20,000 acres including the Project, transmission facilities, additional solar projects, and the Pumpkin Hollow Copper Mine Open Pit Development Project (expansion project). Impacts from cumulative projects could contribute to adverse effects (e.g., soil erosion and loss of topsoil). Exposure of bare soil would increase erosion and sedimentation from wind and water across a larger area along the east side of the Mason Valley. All cumulative construction projects that disturb more than 1 acre of land would be required to comply with the Construction Stormwater General Permit, requiring preparation and implementation of a SWPPP. Erosion control BMPs in the SWPPP would minimize erosion, thus reducing cumulative effects.

Each project would also contribute to the loss of soil productivity and, thus, could contribute to an adverse effect on soil productivity in the region. The Project would also contribute to this effect. Measures to conserve topsoil and implement restoration would reduce effects, but the Project may still contribute to an overall adverse impact on loss of soil productivity.

3.4.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction, Operation and Maintenance, and Decommissioning Impacts

Under this alternative, the native soil impacts from discing and/or grading would be reduced from approximately 64 percent of the application area to approximately 35 percent in total. Soil erosion from wind and water could still occur but would be reduced. The same Western Solar Plan PDFs, the CRMP SOPs, and MMs as identified for the Proposed Action would be applicable to reduce and minimize adverse effects to soils. The primary advantage of this alternative would be that soil productivity impacts would be reduced as compared with the Proposed Action, resulting in approximately 1,800 acres of soil productivity loss as compared with an estimated 3,420 acres under the Proposed Action. Impacts would be reduced through application of MMs to salvage and reuse topsoil as well as through restoration efforts.

Cumulative Impacts

Cumulative impacts would be similar to those described for the Proposed Action in terms of the potential for an overall cumulative impact to soils in the region, particularly from the loss of soil productivity. The Project under this alternative would still contribute to an overall loss of productivity, but the contribution would be reduced as compared with that of the Proposed Action.

3.4.4.4 Alternative 2 – Alternative Supplemental Access During Construction

This alternative is limited to the use of supplemental access routes during construction. The routes would serve to reduce the concentration of construction traffic on East Walker Road, in particular. Under Alternative 2, no new ground disturbance or upgrades to the roads are anticipated and, thus, no new impacts to soils would occur beyond those described for the Proposed Action. Construction, O&M, and decommissioning of the primary access road, the solar site, and the gen-tie would be the same as for the Proposed Action, with the same measures (i.e., MM SOILS-1, MM SOILS-2, and MM SOILS-3, Western Solar Plan PDF SR2-1, and the CRMP SOPs 4 and 7) required to reduce impacts. Cumulative impacts would also be the same as described for the Proposed Action.

3.4.4.5 Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West

Impacts under this alternative would be the same as for the Proposed Action; however, reducing the gen-tie alignment from 24.1 miles to a 0.54-mile-long spur with a new switching station under Greenlink West, immediately east of the solar site, would reduce overall soil disturbance. Disturbance for the gen-tie was estimated at 104 acres. Under this alternative, the gen-tie and switching station would impact 11.8 acres, a 92-acre decrease. Given the solar site comprises the majority of the soil impacts and would not change under this alternative, impacts would still be adverse as described for the Proposed Action. Western Solar Plan PDFs and MMs would also apply to reduce effects, but both Project impacts to soil productivity and cumulative contributions would be assumed to remain adverse, although reduced compared with the Proposed Action.

3.4.4.6 No Action Alternative

Under the No Action alternative, the BLM would not issue ROW grants or special use permits, and the Project would not be constructed. Surface disturbance would not occur, and soils resources would not be affected.

3.4.4.7 Relevant Required Western Solar Plan Programmatic Design Features, the CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Western Solar Plan Programmatic Design Features

Programmatic design features from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to soils:

- SR 2-1

The CRMP Standard Operating Procedures

SOPs from the CRMP (BLM 2001) are listed in Appendix B. The following SOPs would minimize impacts to soils:

- Soil, Watershed, and Air SOPs 4 and 7

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction, O&M, and decommissioning to minimize impacts to soils:

- Dust Control and Air Quality Plan (Draft is available on the Project website)
- Site Restoration and Revegetation Plan (Draft available on the Project website)
- Decommissioning and Site Reclamation Plan

The Project would comply with the following mitigation measures to minimize adverse impacts on soils:

MM SOILS-1: Construction Phasing

(Applicable to the Proposed Action, Alternative 2, and Alternative 3) The Applicant shall incorporate phasing of the development during final design, in order to minimize the amount of area of un-stabilized soils at a time. Phasing would include ground disturbance and development of roads, pads, and infrastructure in not more than 1,000-acre areas at a time. The areas would be built to the point that array posts are installed, and then the ground stabilized, before opening the next 1,000 acres of development. Phasing shall be identified in the final design plans provided and approved by the BLM, prior to NTP.

MM SOILS-2: Design Level Geotechnical Investigation

A design level geotechnical investigation shall be prepared prior to construction. The investigation shall address soil hazards as well as design of posts and foundations for corrosivity and hardpan soil horizons. The recommendations of the design-level geotechnical investigation shall be implemented and provided in the final design plans provided and approved by the BLM, prior to NTP.

MM SOILS-3: Soil Preservation and Topsoil Salvage

The following measures shall be implemented to preserve where possible and salvage topsoil:

- (1) Determine the extent of the salvage operation. Excavate the topsoil carefully using machinery like backhoes or excavators, ensuring minimal disturbance to the underlying layers.
- (2) Create designated stockpile areas for each soil type identified during the site assessment. Separate the salvaged topsoil into distinct piles based on their properties and characteristics. This shall enable better management and targeted use of the soils later.
- (3) Store the sorted topsoil in a well-organized manner, using appropriate measures to protect it from erosion, wind, and excessive moisture. Covering the stockpiles with tarps or using windbreaks can help maintain soil quality and prevent loss through wind erosion.
- (4) When using for reclamation, follow best practices for soil preparation, such as incorporating organic matter or soil amendments, as necessary.

3.4.4.8 Irreversible or Irretrievable Impacts and Residual Effects

Soil impacts associated with the Project are related to long-term loss of productivity and losses from wind and water erosion. Under all alternatives, some degree of soil productivity would be lost for up to 100 or more years, but given implementation of the Decommissioning and Reclamation Plan, soil productivity would not be irretrievably lost. Even after application of mitigation, some erosion is anticipated as a residual effect, as is the loss of soil productivity.

3.5 Cultural Resources

3.5.1 Introduction

Cultural resources include prehistoric and historic-era archaeological sites, historic buildings, and structures (architectural), as well as the locations of significant historical events. Cultural resources are physical features (both human-made and natural) associated with past human activities or past and extant cultures that are, in most cases, finite, unique, fragile, and non-renewable.

Under NEPA, impacts on all cultural resources are considered regardless of their eligibility for inclusion in the National Register of Historic Places (NRHP) or local historical designation. Cultural resources are categorized as one of the following types: prehistoric archaeological resources; ethnographic resources; or historic-period archaeological and built-environment resources. Cultural resources also include sacred sites and other places of traditional cultural importance, including traditional cultural properties (TCPs), that are associated with the cultural practices or beliefs of a living community. Cultural resources are evaluated for their eligibility for the NRHP under Title 54 U.S. Code (USC) section 300101 et. seq., commonly known as the National Historic Preservation Act of 1966, as amended (NHPA), and Title 54 USC section 306108, commonly known as Section 106 of the NHPA. NRHP-eligible cultural resources are also called historic properties.

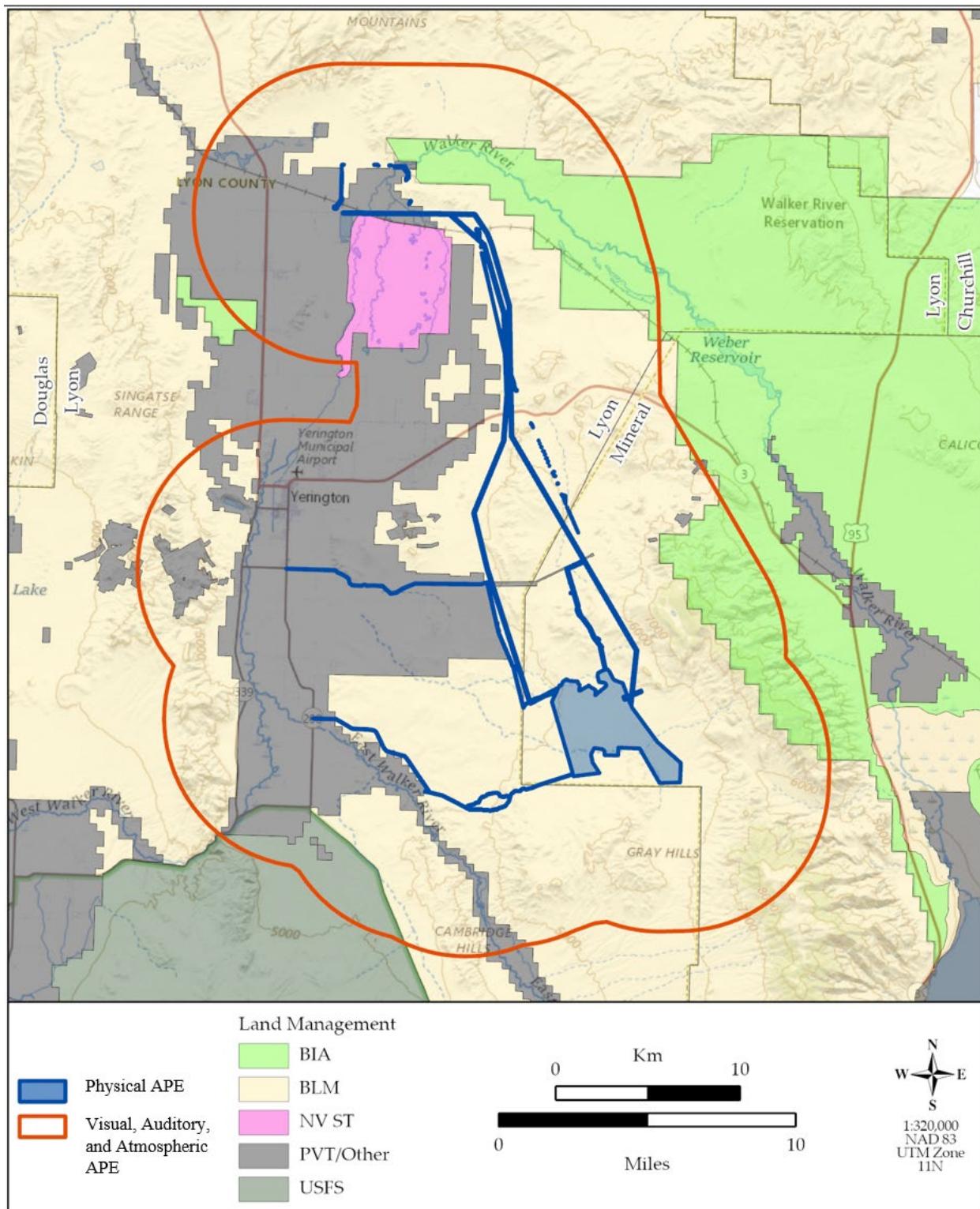
Under Section 106 of the National Historic Preservation Act, compliance with NEPA necessitates a thorough assessment of potential impacts on cultural resources, including consultation with relevant parties to identify and mitigate adverse effects on historic properties. The BLM has chosen to fulfill its obligations under Section 106 of the NHPA for the Project by using the process outlined in 36 CFR section 800.8(c), known as "Substitution," rather than the traditional Section 106 review process, for this Project. "Substitution" allows federal agencies' officials to "use the process and documentation required for the preparation of an Environmental Assessment/Finding of No Significant Impact or an EIS/ROD to comply with Section 106 in lieu of procedures set forth in 36 CFR 800.3 through 800.6" (36 CFR § 800.8(c)(1)). The agency official must notify the Nevada State Historic Preservation Office (SHPO)/Tribal Historic Preservation Office and the ACHP in advance of its intentions. The BLM sent notification of its intent to use Substitution to the SHPO, ACHP, and Native American Tribes on April 14, 2023. More information on the regulatory requirements of the Substitution process, and how this Project complies, are provided in Appendix D.

3.5.2 Analysis Area

As defined under Section 106 of the NHPA, the area of potential effects (APE) is a geographic area or areas within which impacts from an action may affect historic properties (36 CFR 800.16(d); 36 CFR 800.4(a)(1)). The BLM, as the lead agency for Section 106 compliance, defined the APE in consultation with the SHPO and other parties.

The analysis area considered two types of APEs, the direct APE and the visual, auditory, and atmospheric (VAA) APE, as shown in Figure 3.5-1. The direct APE conforms with the Project area while the VAA APE is defined as the Project area plus a 5-mile area extending from the Project area. The VAA APE was defined consistent with IM NV-2021-006 and the guide for Defining a Visual Area of Potential Effects to Historic Properties on BLM Lands in Nevada. The 5-mile VAA APE corresponds visually with the established "foreground and foreground/middleground" area. While it is possible that the Project may be visible beyond 5 miles, its visibility beyond 5 miles has been determined not to be an intrusion that could affect historic properties or other cultural resources. This analysis area accounts for potential physical; VAA; as well as cumulative impacts from implementation of the Project. The direct APE encompasses approximately 6,924 acres; the VAA APE is approximately 317,200 acres.

Figure 3.5-1 Proposed Area of Potential Effects (APE)



Note: The direct APE as shown in this figure includes previous versions of the gen-tie alignment and a northern access road option. The APE was established, and surveys conducted prior to realignment and preliminary design moved the gen-tie to its current position. The realignment was subsequently surveyed.

3.5.3 Affected Environment

3.5.3.1 Cultural Setting

Prehistoric Period

Evidence of human occupation first appears in the record in the Great Basin starting around 11,000 years before common era (BCE). Early occupants were hunter gatherers who formed small populations of highly mobile foragers during the end of the Pleistocene. In addition to hunting, Paleoindian/Paleoarchaic groups in the Great Basin pursued a broad subsistence strategy consisting of waterfowl, lagomorphs, and plant foods (Beck and Jones 1997). Pluvial lakes dried up from around 6,500 BCE to 3,000 BCE and sustenance shifted to seeds and other plants, as evidenced by ground stone artifacts. A cooler wet climate prevailed from 3,000 BCE through 500 common era (CE), reestablishing pluvial lakes. Larger mammals, especially mountain sheep, appear to be the preferred game choice in upland settings, although deer, rabbit, and, occasionally, bison were taken (Aikens and Madsen 1986). From 500 to 1400 CE, human populations in the central and western Great Basin, which includes the Project area, practiced a continuation of adaptive strategies from earlier periods. Throughout the archaic period and into the historic period, the regional archaeological record in the western Great Basin reflects variations in hunter-gatherer adaptations. The late prehistoric period is characterized by human use of small triangular arrow points (e.g., desert side-notched, cottonwood triangular) and brownware pottery, called Intermountain Brownware. By the time of contact with non-Indigenous cultures, the present ethnographically known Numic-speaking bands were well established in the western Great Basin, including in the Project region.

Ethnographic and Ethnohistoric

The Project is within a greater region that includes the Newe (Western Shoshone) to the east, the Numa (or Northern Paiute) within the Project area, and the Wa She Shu (Washoe) to the west.

The Newe (or Western Shoshone) territory traditionally covered a large swath of land from Death Valley, California, to the south, up to Idaho and Utah in the north-northeast, and including much of central Nevada (ITCN 1976). Newe bands were flexible in membership and distribution. In central Nevada, the No-ga'ie near Duckwater and Pi-at-tui'ab-be in Big Smoky Valley were documented by Powell and Ingalls in 1873 as Newe bands with ties to south-central Nevada (Bengston 2003; ITCN 1976). Julian Steward's work with Western Shoshone reported additional bands in Beatty (Ogwe-pi), the Belted Range, and Lida, Clayton, and Death Valleys (Steward 1938).

The Numa (or Northern Paiute) traditionally occupied the western third of the Great Basin region stretching from the Owens Valley in California through Nevada and into southern Oregon and Idaho (ITCN 1976b; Bengston 2003). The Numa language and traditions share many commonalities with the Newe and Nuwuvi to the east but are distinct from the Washoe and California groups to the west. Similar to all Great Basin groups, the Numa territory was composed of many overlapping and spatially fluid homelands occupied by bands of varying size and composition. There were at least six distinct bands in the southern portions of Numa territory, including the Kootzagwae of Mono Lake, Pagewae and Agiawae of Walker Lake and lands east, Taboosewae of Mason and Smith Valleys, Toewae of the Carson Sink, and Kooeyooewae of Pyramid Lake (Stewart 1939; Johnson 1975; ITCN 1976b).

The Wa She Shu (or Washoe) inhabited and continue to reside in the area along the eastern Sierra Front to the west, the Pine Nut and Virginia ranges to the east, Honey Lake in the north, and Sonora Pass in the south. Early occupation of the region by the Washoe is supported ethnographically and oral traditions tell that the Washoe did not travel to this place, but rather have always been there. Linguistic studies show that the Washoe language is drastically distinct from that of their neighbors (ITCN 1976c).

Historic Period

Nevada's historic period began in the 1700s when Spanish explorers passed through present-day southern Nevada searching for a route to connect settlements in New Mexico with those in California. Exploration of central Nevada did not begin in earnest until 1826, when Spanish authorities opened the territory to fur trapping. The Spanish province of Alta California, which included present-day Utah and Nevada, belonged to Spain until 1822, then to Mexico, but was ceded to the U.S. in 1848 at the end of the Mexican

American War. In 1849, the discovery of gold near Sutter's Mill, California, spurred westward migration. In 1849 alone, the California Trail saw as many as 25,000 travelers. Emigrants did not typically pass through the central portions of Nevada until the 1860s (McBride 2002).

The Comstock strike of 1859 changed perceptions of Nevada from “pass through” country to a region of economic potential (De Quille 1877; McBride 2002). Miners who initially failed to strike it rich in California came to the Comstock area near the Carson Valley to work the strike. Soon thereafter, the Reese River District of central Nevada began to attract interest. In 1864, Nevada was admitted to the Union as the 36th state. During the late nineteenth and early twentieth centuries, mining continued to develop throughout western Nevada, necessitating the growth of railroad networks in the region. The four major railroads in the area were the Tonopah & Goldfield Railroad, the Las Vegas & Tonopah Railroad, the Tonopah & Tidewater Railroad, and the Bullfrog Goldfield Railroad. Towns such as Yerington, Hawthorne, Luning, and Mina, either already existed or cropped up along the railroads and were initially associated with mining and/or railroad stations. Many of these towns persisted through the mid-twentieth century and some remain inhabited today. As mining and railroad growth halted throughout the region during the mid-twentieth century, towns fostered and relied on other industries such as agriculture; military infrastructure and training; recreation and tourism; gambling; and hospitality, all of which became major sources of economic growth for communities in western Nevada. The closest populated area to the solar site, the city of Yerington, started as a trading post in 1871 and was originally named Pizen Switch. The town was renamed Greenfield, and then “Yerington,” for Henry M. Yerington, superintendent of the Virginia & Truckee Railroad from 1868 to 1910, in a failed attempt to woo him into bringing a rail spur to the town. Over the years, the area’s focus turned to farming as well as copper mining. The Anaconda Copper Company extracted 360 million tons of copper from its open pit mine between 1952 and 1978 (Travel Nevada, n.d.).

3.5.3.2 Survey Methods

Direct APE

In order to establish the affected environment and determine existing cultural resources (including historic properties) that could be physically impacted by the Project, a Class I cultural resources inventory and report and a Class III cultural resources survey and report were completed (Stoner and Catacora 2023). All background research and fieldwork were completed by ASM Affiliates in accordance with the Secretary of the Interior’s Guidelines for Archaeology and Historic Preservation, the standards found within BLM Manual 8110, and the BLM Nevada State Office’s Guidelines and Standards for Archaeological Inventory (Sixth Edition).

The Class I cultural resources inventory, conducted prior to the Class III intensive survey, identified numerous archaeological and historical sites within the direct APE. Data sources for the research included the Nevada Cultural Resources Information System (NVCRIS) database; files from the BLM CCDO; historic General Land Office (GLO) and U.S. Geological Survey (USGS) maps; the NRHP database; and published and unpublished tribal ethnographic overviews and TCP studies.

A Class III cultural resources inventory was required for the direct APE for the Proposed Action and alternatives that were carried forward into detailed analysis. The Class III survey was performed by ASM Affiliates in 2022 and 2023. If portions of the direct APE were surveyed for cultural resources by a qualified professional in the last 20 years to Class III standards, those areas were not resurveyed. All previously recorded sites in those areas were revisited and updated, as necessary. An approximately 1,000-foot section of the gen-tie on Nevada Department of Wildlife (NDOW) property near the Fort Churchill substation was not surveyed due to access, but it has been reportedly surveyed for Greenlink West (BLM 2023).

Cultural resources identified during the Class III inventory were evaluated for eligibility for listing in the NRHP by ASM and the BLM, within an appropriate historic context, using the four criteria of significance and the seven aspects of integrity. In order to be eligible for listing in the NRHP, a cultural resource must possess both historic significance and sufficient integrity to convey that significance (36 CFR § 60.4). Significance must be demonstrated under one or more of the following four criteria: A)

associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or D) have yielded, or may be likely to yield, information important in prehistory or history. Cultural resources that are significant under the criteria must also retain sufficient integrity to be eligible for listing in the NRHP. The seven aspects of integrity include location, design, setting, materials, workmanship, feeling, and association.

Visual, Auditory, and Atmospheric APE

A records search and literature review (Class I Inventory) of the VAA APE was also conducted by ASM. A visibility analysis was performed using ArcGIS Spatial Analyst to identify all areas that would be visible from the Project out to a distance of 5 miles. The visibility analysis identified where the Project would be visible if there were no vegetation or structures to screen the Project components (i.e., bare earth analysis).

Historic properties identified in the records search that a) were within the VAA APE, b) had potential visibility based on the visibility analysis, and c) where visual, auditory, or atmospheric changes could impact the integrity of the resource, were subject to visual field inspections and assessment. Visited historic properties were photographed from selected sensitive-viewer observation points, which were identified within the historic property or at the boundary of the historic property. The photographs were used to prepare visual simulations and to complete BLM visual assessment forms to aid in the analysis of effects (Stoner and Catacora 2023a).

3.5.3.3 Resources Found

Cultural Resources within the Direct APE

ASM documented 80 previously unrecorded sites within the direct APE and revisited/re-evaluated six previously recorded sites. Of these 86 sites, 72 are historic-era sites, nine are prehistoric era sites, and four are multi-component sites (Stoner and Catacora 2023). The nine pre-historic sites are all lithic scatters. The 72 historic-era sites focus mainly on prospecting and mining, transportation and infrastructure resources including roads, railroads, and transmission lines, unassociated historic refuse deposits, a ranching-related well and trough, and cadastral markers (Stoner and Catacora 2023, 2023a, and 2023b).

The BLM has determined that seven of the 86 sites within the direct APE are eligible for listing in the NRHP (i.e., are historic properties) and is seeking SHPO's concurrence. The following table identifies the seven historic properties by category and type of site. The remaining sites have been recommended as not eligible for listing in the NRHP. The SHPO is also being requested to provide concurrence on the "not eligible" determinations.

Table 3.5-1: Libra Solar Project Historic Properties within the Direct APE

Site number	Site description	NRHP determination	SHPO concurrence
26LY3165	Reese River Wagon Road	Eligible under Criterion A	Pending
S3327	Southern Pacific Railroad	Eligible under Criterion A	Pending
S3328	US Highway 95A [US95A]	Eligible under Criterion A	Pending
26LY1450	Wabuska Drain Segments	Eligible under Criterion A	

Site number	Site description	NRHP determination	SHPO concurrence
26LY3287	Multi-component artifact scatter with features	Eligible under Criterion D	Pending
LY3288	Paleoindian lithic scatter	Eligible under Criterion D	Pending
LY3289	Paleoindian lithic scatter	Eligible under Criterion D	Pending

Resources within the VAA APE

The VAA APE included the area within 5 miles of the proposed Project. The records search and literature review of the VAA APE identified 706 cultural resources within 5 miles of the proposed Project, including resources also within the direct APE. Of the sites within the VAA APE, 39 resources were previously determined eligible for the NRHP under Criterion A, B, C and/or D. Sixteen of these 39 historic properties were found to not have VAA components (i.e., setting components) that support their eligibility determinations or listing and thus are not considered further in the VAA analysis. Between March 20 and 31, 2023, ASM conducted field visits of the remaining 23 historic properties to assess if they have line-of-site viewsheds of the Project that would be affected or may have setting components contributing to their site eligibility. Eighteen of the 23 historic properties visited by ASM were found to have either no direct line-of-sight to the Project area or do not have setting components that support their eligibility. These 18 historic properties were not considered further in the VAA analysis.

The remaining six historic properties, summarized in Table 3.5-2 3.5-2, are in the foreground/middleground zones of the VAA APE and have setting components that support their eligibility, and thus are the six resources considered for potential VAA impacts in Section 3.5.4.

Table 3.5-2: Libra Solar Project NRHP- Eligible Sites within the VAA Area that could be Affected by the Project

Site number	Site description	NRHP Status
26LY1450	Wabuska Drain	Eligible under Criterion A
26LY2088	Y Hill	Eligible under Criterion A
26LY2887/D357	Sagecrest Drive-In Historic District	Eligible under Criteria A, C and D
26LY3165	Reese River Road, Refuse Scatter, and mining features	Eligible under Criterion A
S3327	Southern Pacific Railroad	Eligible under Criterion A
S3328	US Highway 95A [US95A]	Eligible under Criterion A

Four of the historic properties considered in the VAA APE are also in the direct APE, including Reese River Wagon Road (26LY3165), the Wabuska Drain (26LY1450), Southern Pacific Railroad (S3327), and US95A (S3328). The Wabuska Drain, Southern Pacific Railroad, and US95A have modernized features. The Reese River Wagon Road site (26LY3165) consists of two segments of the historic wagon road that were an important element of the local transportation network in the nineteenth and early twentieth centuries, with a period of significance between 1859 and 1972. Y Hill (26LY2088) is the historic-era town marker for Yerington and consists of the “Y” geoglyph with an historic-era refuse

scatter. The “Y” geoglyph overlooks the town and was created in the 1930s. It represents a pattern of development in the town of Yerington’s identity, falling within the period of significance of 1860 to 1935. 26LY2887/D357 (Sagecrest Drive-In Historic District) is a drive-in theater that opened between 1952 and 1953 as the “Sagecrest Drive-In” and was in operation until 1995, retaining much of its historic integrity and its core structural components including a screen, ticket booth, and projection booth/concession stand. These two historic properties, along with the Reese River Wagon Road, include the integrity of the rural county settings in their eligibility contributions.

3.5.3.4 Traditional Cultural Properties

To date, no TCPs have been identified. The BLM sought input about potential TCPs from Tribes that may be affected by the Project through issuance of consultation letters under Section 106 consultation and through two workshops held with the Tribes as part of government-to-government consultation in June and July 2023.

3.5.4 Environmental Consequences

3.5.4.1 Methods

Considerations

As defined under 36 CFR section 800.5(a)(1) (Criteria of Adverse Effect), an adverse effect occurs when a federal undertaking directly or indirectly alters any characteristics of a historic property that qualify it for NRHP listing. An adverse effect on a historic property is not limited to physical destruction or damage but may also include relocation of the property, changes in the character of the setting of the property, and the introduction of VAA intrusions that alter the integrity of its setting. Impacts from a federal undertaking that result in an adverse effect on a historic property may also include reasonably foreseeable effects caused by the undertaking that may occur later in time (i.e., cumulative impacts).

Cultural resources that are not eligible for listing in the NRHP warrant no further consideration under the NHPA.

Physical Effects

A Project that could cause the direct physical alteration of character-defining features of a historic property could result in diminished aspects of integrity (i.e., location, design, setting, materials, workmanship, feeling, and association). The impact is assessed according to the extent that the degree of physical alteration would constitute an adverse effect to the eligibility of the historic property under Section 106 of the NHPA (BLM Nevada and the Nevada SHPO 2012, chap. V). The seven historic properties in the direct APE were assessed for potential for damage or loss from Project construction and O&M, in order to characterize effects.

VAA Effects

VAA effects result from changes to the scenic quality and/or value of the cultural resources from modifications to the surrounding landscape. Where the setting is important, it must be determined if the proposed project would cause a VAA intrusion sufficient enough to diminish the characteristics of setting that make the property eligible. Where it does not contribute to the eligibility of the property, the effects to that setting are not important considerations. Historic properties that are only important for their information potential (i.e., those that qualify under Criterion D) are not eligible for their setting and therefore are not affected by visual, auditory, or atmospheric impacts. Therefore, only historic properties within the VAA APE that qualify under Criteria A, B, or C are analyzed for VAA impacts.

In order to assess affects, the visual simulations and visual assessment forms were used to understand the degree of contrast and contextual changes to setting that the Project could have on the six identified historic properties with potential for VAA impacts. Where a historic property is sensitive to the rural setting or context and the Project would have moderate or strong contrast and thus be a noticeable element in the view from that resource, an adverse effect to the resource would occur.

3.5.4.2 Proposed Action

Construction and O&M Impacts

Physical Impacts to NRHP-Eligible Resources. Construction activities could have physical impacts on NRHP-eligible resources through direct contact with the historic property that could cause damage or loss of the resource. The three known prehistoric NRHP-eligible resources (26LY3287 [multi-component artifact scatter with features], LY3288 [Paleoindian lithic scatter], and LY3289 [Paleoindian lithic scatter]) can all be avoided. These three historic properties have no Project facility development or ground disturbance proposed in their vicinity. However, without the area clearly being identified for avoidance, construction activity could occur in the area and damage or destroy the historic properties. MM CR-1 requires that an Environmental Exclusion Area (EEA) and at least 500-foot buffer be established around the three prehistoric Paleoindian lithic scatter historic properties. The measure also requires that the EEA be completely removed from the Project footprint in the final engineering and design plans prior to construction, resulting in redefinition of the development area boundary and fence lines. The measure would prohibit occupancy outside the established Project boundary. The implementation of the measure would thus ensure avoidance of any direct, adverse physical effects on these three NRHP-eligible resources during both construction and O&M. During O&M, no new ground disturbance would occur, and these historic properties would continue to be fully avoided.

Project construction and O&M would result in an adverse physical effect to one of the historic period and built environment historic properties, Reese River Wagon Road (26LY3165), due to the proposed widening and surfacing work on the road that would modernize the road and thus alter a defining component of the historic property. This impact would be mitigated through implementation of MM CR-2, which includes archival and documentary research, oral history interviews, and photo documentation to develop a historic context suitable for the development of an interpretive site with signage focusing on the transportation theme associate with the historic road. Project construction and O&M would not have any potential for physical impacts on the other three historic period and built environment NRHP-eligible resources within the direct APE (i.e., Wabuska Drain, Southern Pacific Railroad, and US95A). The gentile crosses these resources but would not result in any physical alteration of them.

Potential adverse physical effects on known or previously undiscovered cultural resources could occur from theft or vandalism during construction and O&M. Construction would likely deter the normal recreational activity by the general public that currently occurs in the Project area; however, an average of 400 construction workers could be on the construction site at a time. Construction of the Project could also unearth, expose, or disturb previously unknown subsurface archaeological, historic, or Native American resources eligible for listing in the NRHP, or otherwise important cultural resources that may not have been apparent on the surface during the survey. Damage or loss of these types of resource could result in an adverse physical effect. The Applicant would comply with the Solar PEIS PDFs CR1-1 and CR1-2, which require coordination with the BLM to minimize physical impacts to NRHP-eligible resources, including consultation with other federal, tribal, state, and local agencies. The measures also require implementing appropriate training/educational programs for the solar company workers, including the construction workforce. PDF CR1-2 requires appropriate avoidance and protection measures for any unexpected discovery of cultural resources during construction and, potentially, archaeological monitoring, which would be accomplished through the development of an Inadvertent Discoveries Plan. The implementation of Solar PEIS PDFs CR1-1 and CR1-2 would minimize potential impacts to previously undiscovered cultural resources during construction.

During O&M, effects on cultural resources (including historic properties) from theft or vandalism caused by increased public access are not expected since the solar site would be fenced and secured. The Project would not provide new public access to the areas known to contain archaeological resources. Effects from increased erosion that could expose, transport, weather, and rebury archaeological, historic, or Native American resources are also not expected. Stormwater flow volume and runoff rates downstream of the Project site would not increase following construction of the Project to an extent that it would result in additional erosion beyond baseline conditions. Graded areas within the solar site would be sloped, with protections to prevent the creation of rills or gullies in accordance with the design-level geotechnical

evaluation, which is also necessary to protect the solar infrastructure (see Section 3.4: *Soils*). Areas of erosion would be addressed early through MM WR-3.

VAA Impacts to NRHP-Eligible Resources. As identified in Section 3.5.3.3, six historic properties are considered in the VAA impact analysis. These historic period and built environment resources are visible within 5 miles of the Project site and the integrity of the historic setting is a key component of the resources' NRHP-eligibility. The following discussion addresses the potential for adverse auditory and atmospheric impacts, as well as visual impacts to the integrity of the setting for these resources from construction and O&M of the Project.

Two of the historic properties within the VAA APE (Y Hill and the Sagecrest Drive-In) are beyond a distance where auditory effects caused by the Project could occur (generally 75 feet). Wabuska Drain, U.S.95A, and the Southern Pacific Railroad would be crossed by Project construction; however, auditory impacts would not be adverse since noise impacts from construction would be temporary and elevated noise is already associated with these resources. Adverse auditory effects to NRHP-eligible resources would not occur.

Air quality in the area appears to be fairly good. The Project is designed to generate clean energy and as such would not substantially change the air quality. Construction of the Project would temporarily increase pollutants, including dust and emissions from equipment during construction. This increase would be localized to the area of the APE and occur during the construction of the Project only.

Atmospheric effects from the proposed construction methodology are thus assumed to be negligible and atmospheric impacts would not occur during O&M. Adverse atmospheric impacts to the historic properties would not occur.

While no adverse auditory or atmospheric impacts would occur to the six NRHP-eligible historic properties, visual impacts could occur. The Project construction and O&M could have an adverse visual impact on the Southern Pacific Railroad (S3327), U.S. 95A (S3328), and the Wabuska Drain (26LY1450) (built environment historic resources). The Project's gen-tie would be built over these sites, changing the visual context and character of the sites by adding a new, visible modern element. Adverse visual effects would also occur to Y Hill (26LY2088), Sagecrest Drive-In (26LY2887), and the Reese River Wagon Road. For each of these three resources, the rural setting is an important element of their eligibility. Retaining good integrity of setting would mean the surrounding areas remain rural and undeveloped. The Project would be visible in the foreground/middleground from these resources and thus could alter the rural setting by introducing a modern element. The change in the integrity of the setting for these three historic properties would be considered an adverse effect. The following table summarize the visual impacts to each of the six NRHP-eligible resources within the VAA APE.

Table 3.5-3: Analysis of Effects to Historic Properties in the VAA Analysis

Site number	Site description	NRHP Status	Summary of Visual Effect	Finding of Effect
26LY2088	Y Hill (Historic Era Geoglyph)	Eligible under Criterion A	Resource is within the foreground zone, 1.05 mi. from the closest Project component. Moderate contrast levels.	Adverse Effect
26LY2887/D357	Sagecrest Drive-In Historic District	Eligible under Criteria A, C and D	Resource is within the foreground/middleground zone, 3.5 miles from the closest Project component. Moderate contrast levels could occur.	Adverse Effect
26LY3165	Reese River Road, Refuse Scatter, and	Eligible under Criterion A	Resource is partially intersected by the Project's block installation areas and in the foreground and middleground	Adverse Effect

Site number	Site description	NRHP Status	Summary of Visual Effect	Finding of Effect
	mining features		visual zones. Moderate to strong contrast levels could occur.	
S3327	Southern Pacific Railroad	Eligible under Criterion A	Resource is intersected by gen-tie.	Adverse Effect
S3328	US Highway 95A	Eligible under Criterion A	Resource is intersected by gen-tie.	Adverse Effect
26LY1459	Wabuska Drain	Eligible under Criterion A	Resource is intersected by gen-tie.	Adverse Effect

MM CR-2 identifies the mitigation for reducing adverse visual effects to the integrity of setting for the six NRHP-eligible historic properties. Adverse effects would be mitigated by archival and documentary research, oral history interviews, and photo documentation to develop a historic context suitable for the development of an interpretive site with signage focusing on the themes of Community Development for the Sagebrush Drive in and Yerington “Y,” Transportation for the Reese River Wagon Road, US95A, and the Southern Pacific Railroad, and Agricultural related infrastructure and water for the Wabuska Drain. The measure is elaborated in the Draft Cultural Resources Mitigation Plan (Appendix D).

Other Cultural Resources. NEPA also requires consideration of impacts to other cultural resources that may not be eligible for listing in the NRHP. There are 74 additional resources found within the physical impact APE that could be adversely affected by the Project construction (and O&M). The PEIS PDFs CR1-1 and CR1-2 would reduce some impacts to these resources, but many may be damaged or destroyed during construction. These resources, however, are not expected to provide meaningful data and information and their loss would not result in a loss of information important to the historic record.

Decommissioning Impacts

Under the Proposed Action, decommissioning activities would entail removal of the solar arrays and associated facilities and reclamation of the site to pre-Project conditions (to the extent practicable). The seven eligible sites in the direct APE would be addressed prior to the construction phase. Solar PEIS PDF CR3-3, which requires the Applicant to confine soil-disturbance activities to previously disturbed areas, would be implemented during decommissioning. In order to ensure continued avoidance of the three prehistoric sites, MM CR-1 requires that the EEAs be re-established during decommissioning. No new physical impacts would occur to Reese River Wagon Road. Solar PEIS PDF CR1-2, would also be implemented, requiring appropriate training/educational programs for the solar company workers, including the construction workforce. Adverse effects would be avoided.

The six historic properties with their visual setting effected by construction and O&M would have a positive effect from planned decommissioning as their visual settings would revert to pre-Project conditions.

Cumulative Impacts

The loss of several resources from a particular ethnographic group or representing a particular time period could result in significant impacts with respect to the information those resources possess. Other projects in the region could affect resources with similar information about a particular tribe or prehistoric or historic timeframe, resulting in a cumulative effect. Several cumulative projects in the area could or did directly and indirectly affect cultural resources. Cumulative projects could affect previously unknown

cultural resources during construction, and the cumulative effect from the loss of these resources could be adverse.

Several cultural resources located in the APE were determined eligible for the NRHP, but under Criterion D only, and do not have visual components associated with their eligibility contributions. The Project could potentially adversely affect seven historic-period sites but would avoid the three prehistoric archaeological sites.

Greenlink West would otherwise affect six of the historic-period resources in the same manner as the Proposed Action, including Y Hill, Sagecrest Drive-In, Reese River Road, U.S. 95A, Wabuska Drain, and the Southern Pacific Railroad. Should adverse effects occur from the Project, they would be cumulative but mitigable through the Cultural Resources Mitigation Plan, under MM CR-2. The Project could also physically affect previously unknown resources, which along with impacts from other projects, could be considered an adverse cumulative effect. The Applicant would comply with the Solar PEIS PDFs CR1-1 and CR 1-2, which require coordination with the BLM to minimize cultural resources impacts, including consultation with other federal, tribal, state, and local agencies. The other cumulative solar projects on BLM land, as well as Greenlink West and the proposed Greenlink North Transmission Project, would be required to implement similar measures to reduce potential impacts to cultural resources. With the implementation of MM CR-1 and Solar PEIS PDFs CR1-1 and CR1-2, the Project's contribution to any adverse cumulative effect on cultural resources would be minimal.

3.5.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Impacts to cultural resources from construction and O&M activities under Alternative 1 would be similar to those described above under the Proposed Action because the locations of ground disturbance would be generally the same. Alternative 1 would limit traditional construction methods (i.e., disc and roll and grading) to approximately 20 percent of the solar array blocks, which would decrease the acreage of surface and subsurface disturbance. This reduction in disturbance would reduce the potential for impacts related to discovery of and damage to unknown subsurface archaeological, historical, or Native American tribal cultural resources eligible for listing in the NRHP. The impacts to the historic properties within the direct APE would be the same as for the Proposed Action, with avoidance of the three prehistoric sites through Project MM CR-1, and implementation of the Cultural Resources Mitigation Plan under MM CR-2 to address the physical impacts to Reese River Wagon Road. No physical effects would occur to the other three historic properties in the direct APE (Wabuska Drain, US95A, or the Southern Pacific Railroad). VAA impacts to the six historic properties considered under the VAA analysis would also be the same as for the Proposed Action and would be mitigated through MM CR-2.

Decommissioning impacts would be the same as under the Proposed Action. The same Solar PEIS PDFs, the CRMP SOPs, MMs, and required management plans as identified for the Proposed Action would be implemented under Alternative 1 to minimize adverse effects. Cumulative impacts to cultural resources would be the same as for the Proposed Action, and the Project under this alternative is not expected to contribute to a significant cumulative effect with implementation of the measures.

3.5.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Utilizing supplemental access routes to the Project solar site would have the same impacts to cultural resources as the Proposed Action. The proposed construction area, workforce, and schedule would be the same. No new or greater impacts would occur from diverting some traffic along other routes to the Project solar site because the routes have already been disturbed and are in current use, and no new disturbance is proposed. The same PDFs, MMs, and required management plans would be implemented to reduce adverse effects as for the Proposed Action. Cumulative impacts to cultural resources would be the same as for the Proposed Action.

3.5.4.5 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Alternative 3 would eliminate construction of the proposed 24.1-mile gen-tie line to be replaced with a 0.54-mile-long gen-tie and switching station located under Greenlink West. The three prehistoric archaeological sites within the Project area would be subject to the same potential for impacts as under

the Proposed Action, but impacts would be avoided through MM CR-1. Reese River Wagon Road would also be subject to the same impacts as described for the Proposed Action and those impacts would be mitigated through MM CR-2. Impacts to previously undiscovered resources would also be similar to those under the Proposed Action and reduced through the Solar PEIS PDFs.

The Project's VAA impacts to historic significance of Y Hill, Sagecrest Drive-In, US95A, Wabuska Drain, and the Southern Pacific Railroad would be completely avoided by this alternative but would still occur as described for the Proposed Action for Reese River Wagon Road. Cumulative impacts to cultural resources would be the same as for the Proposed Action but somewhat reduced since the VAA impacts to Y Hill, Sagecrest Drive-In, US95A, Wabuska Drain, and the Southern Pacific Railroad would be avoided.

3.5.4.6 No Action Alternative

Under the No Action alternative, the solar field, gen-tie line, battery energy storage system, and associated linear facilities would not be developed. No ground disturbance would occur, and there would be no alterations to the landscape. Therefore, there would be no impacts to historic properties or unevaluated cultural resources that are sensitive to visual changes to setting. Existing conditions in the analysis area would continue.

3.5.4.7 Project Design Features and Mitigation Measures

3.5.4.8 Solar PEIS Project Design Features

PDFs from the Solar PEIS are listed in Appendix C. The Project would comply with the following PDFs to minimize impacts to cultural resources:

- CR1-1, 2-1, 3-1, 3-3

3.5.4.9 Plans Required and Mitigation Measures

The following required plans apply to cultural resources:

- Cultural Resources Mitigation Plan
- Inadvertent Discoveries Plan

The Project would implement the following mitigation measures to minimize adverse impacts on cultural resources:

MM CR-1: Prehistoric Site Environmental Exclusion Area (EEA). An Environmental Exclusion Area (EEA) and at least 500-foot buffer shall be established around the three NRHP-eligible prehistoric sites within the Project application area (26LY3287, LY3288, and LY3289). The EEA shall be completely removed from the Project footprint in the final engineering and design plans prior to construction, resulting in redefinition of the development area boundary and fence lines. The design engineers shall coordinate with the BLM or consulting archaeologist to verify full avoidance. Occupancy outside the established Project boundary shall be prohibited. EEA shall be re-established during decommissioning.

MM CR-2: Cultural Resources Mitigation Plan. A Cultural Resources Mitigation Plan shall be prepared that shall address the one historic property that could be adversely impacted through physical disturbance and VAA impacts (Reese River Wagon Road [26LY3165]), as well as the resources that could be affected only by visual, atmospheric, and auditory effect (i.e., Y Hill [26LY2088], Sagecrest Drive-In [26LY2887], US95A [S3328], Wabuska Drain [26LY1450], and the Southern Pacific Railroad [S3327]). The plan shall include measures that include archival and documentary research, oral history interviews, and photo documentation to develop a historic context suitable for the development of an interpretive site with signage focusing on the themes of Community Development for the Sagebrush Drive in and Yerington “Y,” Transportation for the Reese River Wagon Road, US Highway 95A, and the Southern Pacific Railroad, and Agricultural related infrastructure and water for the Wabuska Drain.

3.5.4.10 Irreversible and Irretrievable Impacts and Residual Effects

Irreversible or irretrievable impacts are those that cannot be reversed or recovered. Cultural resources are typically fragile and finite resources. The Project and all alternatives would avoid direct and indirect

impacts to the three prehistoric-period NRHP-eligible sites, with MM CR-1's avoidance provisions. The physical impacts to Reese River Wagon Road would be irreversible for the Proposed Action and all alternatives but VAA impacts to the Y-Hill, Sagecrest Drive-In, the Southern Pacific Railroad, US95A, and Wabuska Drain (under the Proposed Action and Alternatives 1 and 2) would be reversed when the gen-tie is decommissioned. Any significant damage or loss of previously undiscovered resources as well as the impacts to the cultural resources that are not eligible for listing in the NRHP would be irretrievably lost.

Residual impacts would include physical changes to the historic character of Reese River Wagon Road, and setting impacts to Y-Hill, Sagecrest Drive-In, the Southern Pacific Railroad, US95A, and Wabuska Drain (under the Proposed action and Alternatives 1 and 2) even with mitigation. Otherwise, residual impacts would not occur unless inadvertent damage to NRHP-eligible resources occurs during the Project construction or other phases. With the Solar PEIS PDFs, this scenario and resulting residual impacts are unlikely.

3.6 Native American Religious Concerns

3.6.1 Introduction

This section focuses on cultural and religious concerns that are specific to Native Americans or to which Native Americans bring a distinct perspective. Regulations, policies, and laws pertaining to Native American cultural and religious concerns include the American Indian Religious Freedom Act, the NAGPRA, and Executive Order 13007.

3.6.2 Analysis Area

The analysis area includes the area of disturbance for all Project components (including for the Proposed Action and alternatives), including the solar facility and all associated components, roads, collector lines, and the gen-tie line. It includes an area within 5 miles of the Project where the Project could influence Native American concerns.

3.6.3 Affected Environment

3.6.3.1 Federally Recognized Tribes

The Project is within a greater tribal region that includes the Newe (Western Shoshone) to the east, the Numa (or Northern Paiute) within the Project area, and the Wa She Shu (Washoe) to the west. The federally recognized Tribes that were contacted and provided an opportunity to comment or consult regarding this Draft EIS and for which government-to-government consultation is ongoing include the Bridgeport Indian Colony, Fallon Paiute-Shoshone Tribe, Reno-Sparks Indian Colony, Yerington Paiute Tribe, Walker River Paiute Tribe, Yomba Shoshone Tribe, Pyramid Lake Paiute Tribe, and Washoe Tribe of Nevada and California.

3.6.3.2 The Western Shoshone, Northern Paiute, and Washoe

Territorial Boundaries

The Numa (or Northern Paiute) is the primary ethnographic group in the Project area. They traditionally occupied the western third of the Great Basin region stretching from the Owens Valley in California through Nevada and into southern Oregon and Idaho (ITCN 1976; Bengston 2003). The Numa language and traditions share many commonalities with the Newe and Nuwvi to the east but are distinct from the Washoe and California groups to the west. Similar to all Great Basin groups, the Numa territory was composed of many overlapping and spatially fluid homelands occupied by bands of varying size and composition. At least six distinct bands were in the southern portions of Numa territory, including the Kootzagwae of Mono Lake, Pagwewae and Agiwae of Walker Lake and lands east, Taboosewae of Mason and Smith Valleys, Toewae of the Carson Sink, and Kooeyooewae of Pyramid Lake (ITCN 1976; Johnson 1975; Stewart 1939).

The Wa She Shu (or Washoe) inhabited and continue to reside in the area along the eastern Sierra Front to the west, the Pine Nut and Virginia ranges to the east, Honey Lake in the north, and Sonora Pass in the south. Early occupation of the region by the Washoe is supported ethnographically, and oral traditions tell that the Washoe did not travel to this place, but rather have always been there.

The Newe (or Western Shoshone) territory traditionally covered a large swath of land from Death Valley, California, to the south, up to Idaho and Utah in the north-northeast, and including much of central Nevada (ITCN 1976a). Newe bands were flexible in membership and distribution. In central Nevada, the No-ga'ie near Duckwater and Pi-at-tui'ab-be in Big Smoky Valley were documented by Powell and Ingalls in 1873 as Newe bands with ties to south-central Nevada (ITCN 1976a; Bengston 2003).

Culturally Important Resources

Overview. The Northern Paiute believe that power (*puha*) could reside in any natural object and that it habitually resides in natural phenomena such as the sun, moon, thunder, clouds, stars, and wind. Any individual could seek power for purposes such as hunting and gambling, but only shamans possessed enough to call on it to do good for others. Not all modern representatives of animal species were necessarily supernatural, but occasionally, such a special animal was encountered. A rich body of myth and legend, the former involving the activities of animal ancestors, set values and taught a moral and ethical code. Today, people remember parts of these old narratives and often mix them with various Christian beliefs (Advameg, Inc., n.d.).

Botanical Resources (Medicine). Less serious illness was formerly treated with home remedies made from over one hundred species of plants. Regional plants still provide a source of home remedies and traditional medicine.

Wildlife. Wildlife has spiritual, cultural, and economic values to the Native American Tribes in the region, including game and fish species.

Water. Water is an essential prerequisite for life in the arid areas of the Great Basin. Bodies of water hold spiritual significance to the Northern Paiute, as well as wetland areas, as wetlands were sources of food. The Project solar site would be developed primarily on alluvial fans at the base of the Wassuk Mountain Range. The gen-tie line would cross the Walker River near the Mason Valley WMA, which is an important area for waterfowl and other game species.

Geologic Features. Black Mountain is a place of Native American spiritual significance. It also includes extensive archaeological resources and is a National Conservation Area.

Archaeological Resources. Three prehistoric-era archaeological sites of Native American origin were identified during cultural resources surveys. See Section 3.5 *Cultural Resources* for more information.

Native American Concerns Identified through Consultation

The BLM began government to government consultation with potentially affected Tribes by requesting assistance in identifying any issues or concerns about the Project, including the identification of sacred sites and places of traditional religious and cultural significance that might be affected. Although no TCPs have been identified by Tribes or by research of available information, an area of Native American Religious Concern, the Pistone-Black Mountain NCA, is on Black Mountain above a segment of the gen-tie. The Black Mountain/Pistone Archaeological NCA encompasses significant petroglyph sites and numerous cultural artifacts including projectile points, rock features such as corals and hunting blinds, and habitation sites. The site is important to the Walker River and Yerington Paiute Tribes as well as other northern Paiute bands. During tribal consultation, the Black Mountain/Pistone Archaeological District was expressed to hold a special spiritual energy that should not be disturbed. Generally, archaeological site types that are important to Native American Tribes include settlement sites, storied rocks (rock writing sites), and sites with rock features.

Additional Native American concerns expressed during tribal consultation include energy being emitted under the gen-tie line that could be felt, often referred to as the “corona effect,” big game species passage around and under the gen-tie line being potentially impacted by the “corona effect,” and in general,

cumulative effects from the Project gen-tie and Greenlink West and other proposed solar projects in the region. The Walker River and Mason Valley WMA areas are within a State of Nevada hunting unit that was also expressed to be of importance to the Tribes for antelope and mule deer.

3.6.4 Environmental Consequences

3.6.4.1 Methods

The primary method to identify Native American Religious Concerns is tribal consultation and coordination. Government-to-government consultation between the BLM and federally recognized Native American Tribes is ongoing pursuant to the 1994 Government-to-Government Relations with Native American Tribal Governments Executive Memorandum and the BLM Manual 1780. The BLM began consultation by sending letters in early 2023 to invite Tribes as consulting agencies under NEPA for the Project. No Tribes requested to be consulting agencies; however, the consulting Tribes are still treated as such under NEPA, as the BLM has shared the preliminary project design, held specific meetings to gather input during planning, and kept open communication. The BLM has held two workshops with Native American Tribes, on June 26 and July 12, 2023 (see Chapter 4: Consultation and Coordination for more detailed information). Additional workshops and meetings will be held if requested by a Native American Tribe and tribal consultation would continue for the life of the Project. Additionally, the BLM has engaged with Native American Tribes through the NHPA Section 106 process, including consultation and a site visit for geotechnical fieldwork (see Section 3.5: *Cultural Resources* for more information on Section 106 consultation and coordination). Input received from the Tribes is incorporated into this analysis.

In addition to consultation efforts, historical context was developed based on the Class I cultural resources inventory to identify archaeological/historical sites, ethnographic overviews, and TCP studies. This effort identified places significant to Tribes as reported in ethnographic literature and provides a background and a historic setting for Native American religious concerns identified during this process.

3.6.4.2 Proposed Action

Construction and Operations and Maintenance Impacts

Overview. Impacts on Native American religious concerns can occur through the destruction or degradation of important plant, animal, and water resources and/or the destruction of habitat and creation of impediments to the movement of culturally important wildlife. Impacts can also occur through the destruction of culturally significant archaeological and historic resources, destruction of or disruption to TCPs, and alteration of significant spiritual geologic formations or geographic locations.

Botanical Resources. The Project area is vegetated primarily by a Great Basin Salt Desert Scrub community, best described as a *Sarcobatus baileyi* community, commonly referred to as Bailey's greasewood. Construction and O&M of the Project would disturb two vegetation types associated with Bailey's greasewood. Limited evidence exists to support use by Native American Indian groups, unlike the more common greasewood (*Sarcobatus vermiculatus*), whose flowers are edible and which has been used in weaving objects, in making scrapers, arrow points, digging sticks, and in other uses (National Park Service (NPS), n.d.). During consultations, Native American Tribes did not express any particular concern for loss of this habitat type, nor did they inform the BLM of any medicinal or important vegetation on the site. While construction and subsequent operation of the Project would render approximately 5,141 acres of lands inaccessible, the surrounding areas contain tens of thousands, if not hundreds of thousands, of acres of similar types of upland desert scrub habitat and vegetation.

Development of the access road and gen-tie would result in some additional losses of vegetation, totaling approximately 114 acres across over 7 miles of road and 24.1 miles of the gen-tie. These losses are not expected to have adverse effects because the Project site does not appear to support rare medicinal or food source plants that are unique.

Wildlife. The solar site would have some impacts to common wildlife due to the loss of habitat. Wildlife would likely be displaced to surrounding areas, where similar habitat is abundant. Concerns were raised

during meetings with the Tribes that the Project's gen-tie could generate noise that could deter big game from hunting areas near the Walker River, north of the Mason Valley WMA, which are important to the Walker River Paiute Tribe. Construction would generate some noise and disturbances that could occur during hunting seasons, which could push big game away from the immediate area of construction activity. The impacts would be short in duration (a few weeks at any given point) and localized. Hunting would not be adversely affected since the area of noise impact would be limited. During O&M, the gen-tie is not expected to deter big game species, such as pronghorn antelope, or change game behaviors in the vicinity of the gen-tie near the Walker River. Few studies have been undertaken to understand if transmission lines, due in particular to the noise they generate, are avoided by large game species such as mule deer and pronghorn. However, there have been anecdotal reports of pronghorns in the area, where there are existing transmission lines (e.g., the LADWP line). Given the gen-tie noise would drop-off to ambient levels within a few hundred feet, and the gen-tie siting near existing transmission lines, impacts to the hunting units are not expected to be adverse. The gen-tie access roads may also provide improved access for hunters into hunting territories, which could be a positive benefit.

Water. The Project solar site would be developed primarily on alluvial fans at the base of the Wassuk Mountain Range and would have limited impacts on water bodies, natural springs, and groundwater and thus would also have limited impacts on these values. The gen-tie line would cross several landforms including foothills of the Wassuk Range and wetlands around the Walker River. Wetlands and springs can hold a spiritual significance as sources of life and sustenance. The proposed gen-tie was sited to avoid the Mason Valley WMA wetland areas. The northern end of the gen-tie would cross the Walker River through a riparian area and over open water. The gen-tie line would span the open water and poles would be sited to minimize effects to riparian habitat. The CRMP Applicable to All SOP 10 requires implementation of measures to reduce the potential for pollution or siltation of the Walker River and surrounding areas. Adverse effects to water bodies and sources of water are therefore not expected. An analysis of groundwater impacts from groundwater pumping for use by the Project showed that no impacts to rivers, springs, or other groundwater users would occur (see Section 3.9: *Water Resources*).

Geologic Features and Archaeological Resources. Key tribal concerns included visibility of the gen-tie line as well as potential for workers to visit the Piston-Black Mountain NCA, increasing human presence and increasing the potential for damage to archaeological and spiritual resources. The visual effects analysis for cultural resources concluded that neither the Project solar site nor the gen-tie is readily visible from Black Mountain. The proposed gen-tie alignment is at least 2.5 miles west of Black Mountain and would be sited at the base of a dry lake valley between steep volcanic slopes. It would be below the skyline and not discernible at this distance. Noise would also dissipate quickly with distance and is not expected to have an effect on Black Mountain. The solar site would not be visible from Black Mountain due to intervening topography. While a trail leads up to Black Mountain from east of the solar site, the trail is extremely rugged and is not passable with passenger vehicles. It would require a long, strenuous uphill hike and thus is not expected to be visited with any frequency by workers.

Three pre-historic period lithic scatters and multi-component sites were identified within the solar site during surveys. These sites would be fully avoidable, and MM CR-1 would ensure no impacts through establishment of an EEA around these sites. An Inadvertent Discoveries Plan would also be developed to ensure that if any resources are encountered during construction, impacts to the resources would be minimized. Refer to Section 3.5: *Cultural Resources* for more information.

3.6.4.3 Decommissioning Impacts

The Applicant would limit reclamation and decommissioning activities to previously disturbed areas and existing access roads to the extent practicable. Consistent with a Decommissioning and Site Reclamation Plan and several PEIS PDFs and the CRMP SOPs, the Applicant would perform restoration and revegetation of the Project site. Impacts on Native American issues of concern would be reduced as perennial plants and animals would be allowed to return over time; however, it could take decades to a century or more given the level of disturbance associated with the Project.

3.6.4.4 Cumulative Impacts

Many developments in the area, including the Project, would involve vegetation removal or changes to the existing habitats, which could cumulatively affect populations of plant and game species important to Native Americans. Other proposed solar projects in the region are all located closer to tribal land and closer to the Mason Valley WMA and, thus, would have more direct impacts than the Project. While cumulative impacts could occur, given the location of the Project solar site and the limited habitat and wildlife effects from the gen-tie, the Project's contribution to a cumulative impact on important vegetation and game species would not be adverse. Impacts to Black Mountain and other archaeological resources could also be considered to be cumulatively significant. The Greenlink West proposed alignment is located at higher elevations east of the Project, closer to Black Mountain and, thus, would likely be more visible and audible than the Project's gen-tie, situated at the base of the mountain in a valley. The Project, due to its location and the fact that it would not be visible or audible from Black Mountain, would not contribute to cumulatively considerable impacts. The development of more extensive renewable energy, transmission, and mining along the east side of Mason Valley and Pumpkin Hollow, however, would have the potential to result in a cumulative transformation of a natural area to an industrialized area, which could have an adverse impact on ecological values tied to nature and the earth. The Project would contribute to this potentially adverse impact.

3.6.4.5 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction, O&M, decommissioning, and cumulative impacts from Alternative 1 would be largely the same as for the Proposed Action, except that more vegetation would be left in place under the solar array blocks. This approach would allow regrowth of plants during O&M and after decommissioning, reducing the long-term effects to habitats and ecological systems and values. The same Western Solar Plan PDFs, Project MMs, SOPs, and management plans as identified for the Proposed Action would apply. Implementation of these measures would ensure restoration as best as possible and avoidance of known pre-historic resources. Implementation of an Inadvertent Discoveries Plan would address any resources found during construction.

3.6.4.6 Alternative 2 – Alternative Supplemental Access During Construction

Construction, O&M, decommissioning, and cumulative impacts from Alternative 2 would be the same as for the Proposed Action. This alternative utilizes supplemental access during construction. This alternative would make no changes to the Project elements or how they are constructed. The same Western Solar Plan PDFs, Project MMs, SOPs, and management plans as identified for the Proposed Action would apply. Implementation of these measures would ensure restoration as best as possible and avoidance of known pre-historic resources. Implementation of an Inadvertent Discoveries Plan would address any resources found during construction.

3.6.4.7 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Alternative 3 would also have similar construction, O&M, decommissioning, and cumulative impacts as the Proposed Action for the access road and the solar site. The impacts from the gen-tie would be greatly reduced since this alternative would eliminate the 24.1-mile-long gen-tie under Black Mountain and through the Mason Valley WMA. Instead, a 0.54-mile-long gen-tie would connect the solar site to the Greenlink West line through a new switching station. The gen-tie and switching station would be built within the alluvial fan areas directly to the east of the solar site, within the existing dedicated energy corridor and below the mountains. The gen-tie and switch station would not be visible or audible from Black Mountain and, thus, are not expected to have direct or indirect physical effects. Cumulative impacts related to the gen-tie would thus also be greatly reduced.

3.6.4.8 No Action Alternative

Under the No Action alternative, the solar field, gen-tie line, BESS, and associated linear facilities would not be developed because the BLM would not issue the ROW grant. No ground disturbance would occur, and there would be no changes or alterations to the landscape. Therefore, there would be no impacts to Native American religious concerns. Existing conditions in the analysis area would continue.

3.6.4.9 Project Design Features and Mitigation Measures

3.6.4.10 Western Solar Plan Project Design Features

PDFs from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to Native American religious concerns:

- CR1-1, 2-1, 3-1, 3-3

3.6.4.11 Plans Required and Mitigation Measures

The following required plans apply to cultural resources:

- Cultural Resources Mitigation Plan (Draft available on the Project website)
- Inadvertent Discoveries Plan

The Project would implement MM CR-1 from Section 3.5 as well to minimize adverse impacts on cultural resources.

3.6.4.12 Irreversible and Irretrievable Impacts and Residual Effects

Irreversible or irretrievable impacts are those that cannot be reversed or recovered. The loss of habitat and the cumulative industrialization of the area would be an adverse effect but could be reversed after decommissioning although it could take centuries. Residual impacts would not occur unless inadvertent damage to Native American archaeological resources occurred during the Project construction or other phases. With the Western Solar Plan PDFs, this scenario and resulting impacts are unlikely.

3.7 Vegetation, Special Status Plants, and Noxious Weeds

3.7.1 Introduction

The following sections describe the existing native vegetation communities, special status plant species (including cacti), and invasive and noxious weeds that are present within the Project area. Field surveys were conducted in 2022 and 2023 to assess general vegetation characteristics, presence of special status plants, cacti density estimates, and invasive plant populations. The botanical resources survey followed the protocol described in the BLM Carson City District Office's guidance (BLM Handbook 6840). The methods and detailed results of these studies are documented in the Botanical Resources Report: Libra Solar Project (Phoenix 2022). Several regulations and laws apply to management of vegetation resources in the Project area, including the federal ESA, BLM Manual 6840 Sensitive Species Management, NAC chapter 527: Protection and Preservation of Timbered Lands, Trees and Flora, and Executive Order 13112 Invasive Species.

3.7.2 Analysis Area

The analysis area for vegetation communities comprises the entire Project site (which includes the solar site, gen-tie, and access road) plus a 100-foot buffer, which was surveyed for botanical resources and noxious weeds. For the cumulative effects analysis, the analysis area includes the Mason Valley and Wassuk Range.

3.7.3 Affected Environment

3.7.3.1 Topography and Climate

The Project is located within the Central Basin and Range ecoregion, which consists of northerly trending fault-block ranges and intervening drier basins. Valleys, lower slopes, and alluvial fans are either shrub- and grass-covered or shrub-covered. The Project site is situated along the lower part of a gently sloping bajada that extends up into the Wassuk Range, located approximately 6 miles to the east. The topography is flat, with areas of gently sloping terrain, alluvial floodplains, and small hills with an occasional bedrock outcropping. Numerous shallow washes and ephemeral drainages flow westward through the site.

Elevations across the site range from approximately 4,985 feet to 5,495 feet above mean sea level (amsl), with the highest elevations in the east and the lowest elevations in the west. The climate of the Central Basin and Range is characterized by arid conditions and dramatic daily and seasonal temperature fluctuations.

3.7.3.2 Vegetation Communities

The Project site has experienced some level of disturbance, with evidence of grazing, soil compaction, and OHV use. Numerous boreholes and spoils piles from exploratory mining between the 1920s and 1960s occur throughout the Project area, including on the solar site. Many of these borings are visible in aerial imagery. The southern portion of the solar site is bisected by a distribution power line and by Reese River Road and Old State Road 2C. Two-track unpaved roads occur throughout the site.

Vegetation is relatively sparse across the Project area, including the entirety of the solar site as well as areas adjacent to the access roads and within most of the gen-tie alignment. Some invasive plant species are present across the solar site. Natural vegetation communities consist primarily of Bailey's greasewood (*Sarcobatus baileyi*) shrubland alliance. Within this alliance, at least two associations were observed within the solar site: Bailey's greasewood – bud sagebrush – shadscale/James' galleta (*Sarcobatus baileyi* – *Picrothamnus desertorum* – *Atriplex confertifolia*/*Pleuraphis jamesii*) shrubland association (38.7 percent) and Baileys' greasewood – Nevada ephedra (*Sarcobatus baileyi* – *Ephedra nevadensis*) shrubland association (55 percent). Community associations within the Bailey's greasewood shrubland alliance are considered less common due to the limited distribution of Bailey's greasewood. Little information regarding the distribution and extent of these vegetation types is available. Numerous drainage features are present and contain desert wash communities vegetated by rubber rabbitbrush (*Ericameria nauseosa*) shrubland alliance (0.3 percent), fourwing saltbush (*Atriplex canescens*) shrubland alliance (1.8 percent), and North American Warm-Desert Xeric-Riparian Scrub (4.2 percent) (Peterson 2008). Vegetation communities are shown in Figure 3.7-1.

The gen-tie, for the majority of its length (approximately 20.6 out of 24.1 miles) is entirely within scrub/shrub vegetation land cover types, similar to the solar site. The 3.5-mile segment in closest proximity to the Fort Churchill substation is either within or immediately adjacent to woody wetland vegetation cover types associated with the Walker River. More detailed information on vegetation communities and species observed within the study area is found in the Botanical Resources Report: Libra Solar Project (Phoenix 2022).

3.7.3.3 Special Status Plants

Special status plant species include State or federally listed as threatened, endangered, proposed, or candidate species; BLM sensitive species; species protected under the NAC §527.010; and other at-risk taxa tracked by the Nevada Natural Heritage Program (NNHP). Removal or destruction of State-protected flora species requires a special permit from Nevada Division of Forestry (NRS § 527.270). The BLM also has a special policy regarding the salvage of cacti species.

Five special status plant species have been observed within the Proposed Project site. Four taxa of special status plants were identified within the solar site, including Lahontan beardtongue (*Penstemon palmeri* var. *macranthus*), Nevada oryctes (*Oryctes nevadensis*), sand cholla (*Grusonia pulchella*), and Tonopah milkvetch (*Astragalus pseudiodanthus*). Species statuses are listed in Table 3.7-1 and observed locations are shown in Figure 3.7-2. Apart from one individual of sand cholla, no special status species were found along the access road. Within the gen-tie alignment, approximately 250 individuals of sand cholla were identified, consolidated along the northern portion prior to the alignment turning west over the Mason Valley WMA; two individuals of Tonopah milkvetch were identified on sand dunes west of the Walker River, along the northern portion of the alignment; and approximately 3,500 individuals of Nevada suncup (*Eremothera nevadensis*) were found south of the Mineral County boundary and interspersed along the southern portion of the gen-tie to the solar site.

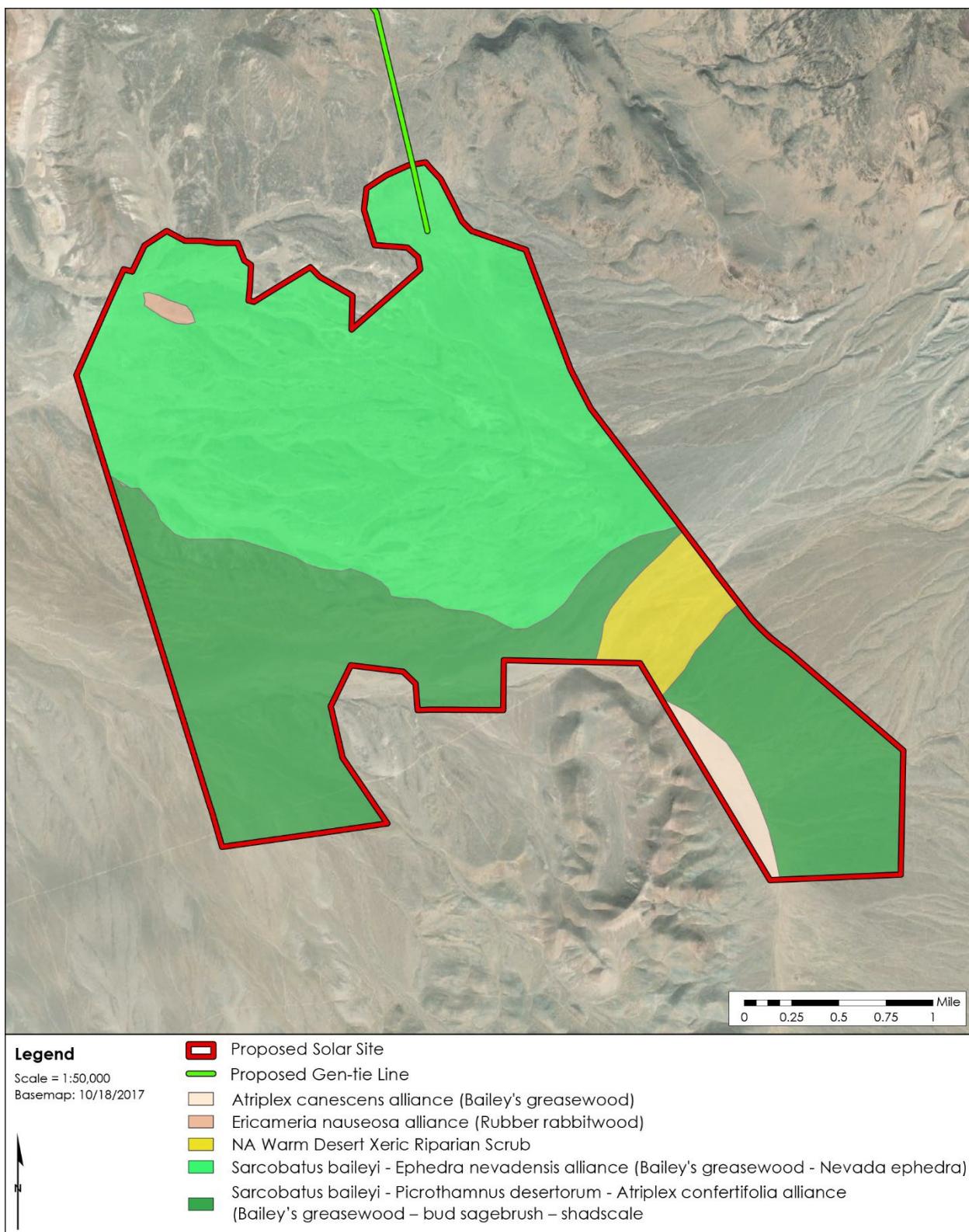
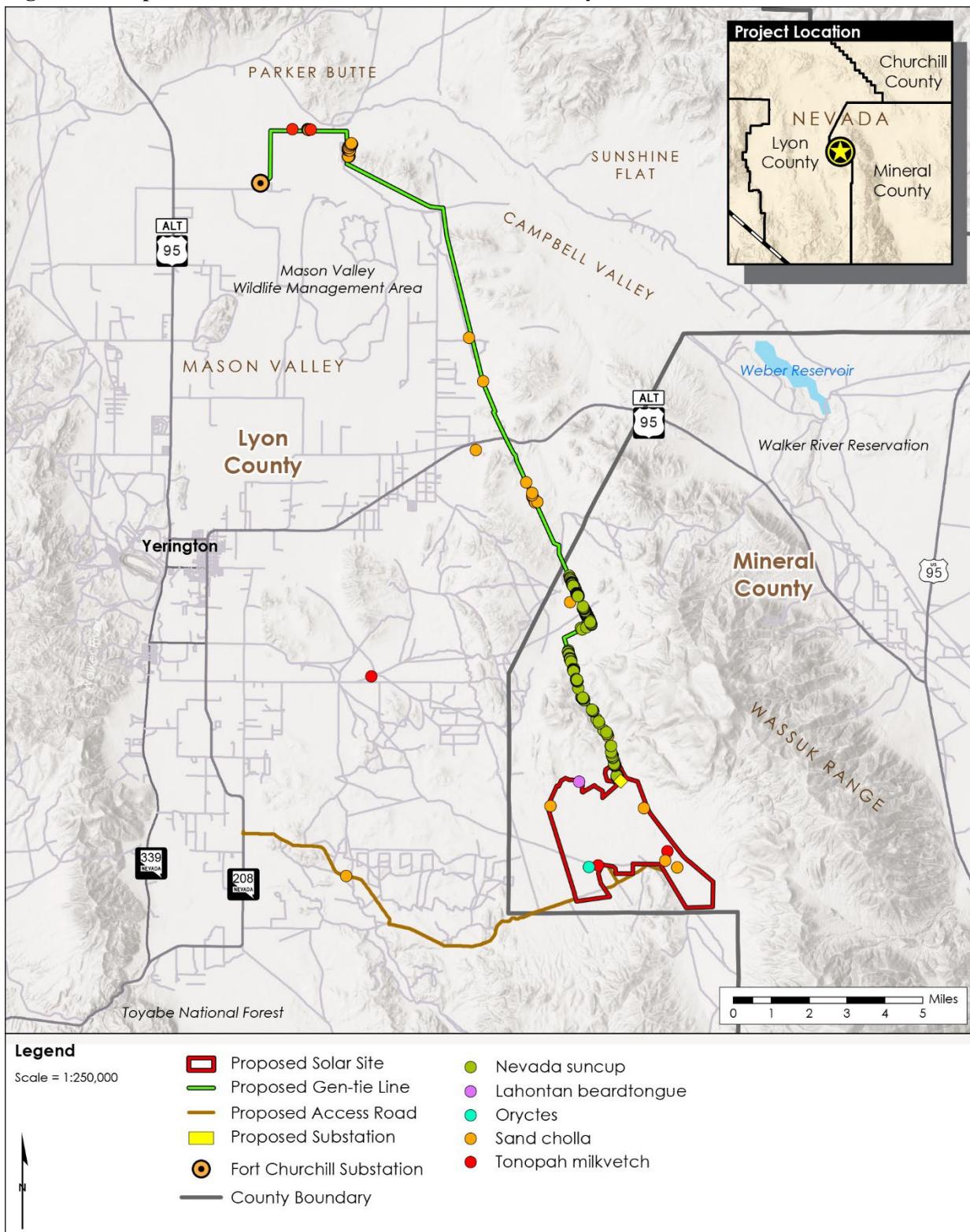
Figure 3.7-1 Vegetation Communities within in the Proposed Project Solar Site

Figure 3.7-2 Special Status Plant Locations within the Study Area



Source: (Phoenix 2023, Fig. 9)

Table 3.7-1 Special Status Plant Species Found within the Study Area

Species	Conservation status	Habitat	Location within the study area
Lahontan beardtongue (<i>Penstemon palmeri</i> var. <i>macranthus</i>)	BLM-S; G4G5T, S2	Diversity of habitats including washes, roadsides, and canyon floors, particularly on carbonate-containing substrates	Dry wash on northern boundary of the solar site
Nevada oryctes (<i>Oryctes nevadensis</i>)	BLM-S; G3S2S3	Found in deep and loose sandy habitats of stabilized dunes, washes, and valley flats	Southern end of the solar site in areas of deep alluvial sand
Sand cholla (<i>Grusonia pulchella</i>)	BLM-S, G3G4S3	Common desert scrub habitat types, including sandy to rocky flats and slopes	Scattered throughout the solar site and not concentrated in any one location
Tonopah milkvetch (<i>Astragalus pseudiodanthus</i>)	BLM-S; G3QS2	Found in deep sandy substrates in desert communities	Southern end of the solar site in areas of deep alluvial sand
Nevada suncup (<i>Eremothera nevadensis</i>)	BLM-S; G3S3	Found in vernally wet areas, on gravel, sandy, or clay soils, and it can somewhat tolerate alkali soils	Along the gen-tie alignment, just south of the Mineral County border

Notes:

BLM-S = Bureau of Land Management sensitive species

G = Global rank

T = Subspecific or variety taxonomic level (used in conjunction with G rank)

Q = Questionable taxonomy

S = State rank (state population of a species, subspecies, or variety)

1 = Critically imperiled; 2 = Imperiled; 3 = Vulnerable; 4 = Apparently Secure; 5 = Secure

A numeric range rank (e.g., S2S3 or S1S3) is used to indicate uncertainty about the exact status of a taxon.

Source: (Phoenix 2022; 2023)

All species observed are BLM sensitive species and are on the list of Nevada Division of Natural Heritage (NDNH) at-risk plant species. Taxa considered at risk and actively inventoried by NDNH commonly include those with federal or other Nevada agency status and those with global and/or state ranks of 1 to 3, indicating some level of imperilment. Sand cholla is also a protected cacti species under the BLM and NDOW. No State-protected flora has the potential to occur within the Project site. A complete list of all plant species identified during the surveys is included the Botanical Resources Report: Libra Solar Project (Phoenix 2022).

One other BLM sensitive species was evaluated for the potential to occur within the study area: Churchill Narrows buckwheat (*Eriogonum diatomaceum*). This species is considered critically imperiled in Nevada

(S1) by the NNHP. It occurs in specific locations within clay to silty diatomaceous deposits of the Coal Valley Formation, with a variable volcanic cobble overburden. These soils are not present in the study area, and no suitable habitat was identified during literature review or field surveys. This species is not expected to be present.

3.7.3.4 Cacti

Two species of cacti were documented during the belt transects: grizzlybear prickly pear (*Opuntia polyacantha* var. *erinacea*) and sand cholla (described above in 3.7.3.3 Special Status Plants). No species of yucca were seen during the belt transects or other botanical surveys as the Project site is too far north for yucca. The belt transects are used to extrapolate estimated densities and the total number of individuals expected based on actual counts observed. The majority of cacti noted during surveys were grizzlybear prickly pear, with an estimated total of 1,318 expected across the study area. Sand cholla were much less prevalent, at an estimated 35 of the total expected. All cactus sampled were less than 3 feet tall.

Along the gen-tie alignment, approximately 250 sand cholla were identified, as previously described. Approximately 25 grizzlybear prickly pear were observed. The results of the belt transect sampling for cacti are detailed in the Botanical Resources Report: Libra Solar Project (Phoenix 2022).

3.7.3.5 Invasive Species

Six invasive weed species were documented during the botanical survey of the Project solar site. Only one, perennial pepperweed (*Lepidium latifolium*), is listed as a noxious weed by the Nevada Department of Agriculture (NDA) (Category C). The other invasive weeds observed but not classified as noxious include cheatgrass (*Bromus tectorum*), red brome (*Bromus rubens*), halogeton (*Halogeton glomeratus*), prickly Russian thistle (*Salsola tragus*), and barbwire Russian thistle (*Salsola paulsenii*). These other species, although not listed by the NDA, are of concern due to their ability to invade and dominate areas of ground disturbance. Of particular concern are the two brome grasses: cheatgrass and red brome. The Project site was remarkably free of cheatgrass compared to adjacent areas, where it forms a dense understory. However, cheatgrass was the most commonly recorded invasive species (32 plants per acre), followed by barbwire Russian thistle (2.41 per acre). The other species observed had densities of less than 1 per acre.

No Category A noxious weeds were identified along the gen-tie. Halogeton, prickly Russian thistle, and cheatgrass were found throughout the gen-tie alignment. Some Saharan mustard (*Brassica tournefortii*), which is Category B noxious weed, was identified north US 95A. Perennial pepperweed (*Lepidium latifolium*) and tamarisk (*Tamarix*) (both Category C noxious weeds) were found near the Walker River and by the northwestern terminus of the gen-tie alignment. More information on invasive species is found in the Botanical Resources Report: Libra Solar Project (Phoenix 2022) and the Botanical Resources Addendum: Libra Solar Project (Phoenix 2023).

3.7.4 Environmental Consequences

3.7.4.1 Methods

Project impacts on vegetation are analyzed as either temporary or permanent. Temporary impacts would occur during Project construction and O&M. Some temporary impacts would be short-term and include areas of disturbance that can be reclaimed and revegetated following Project construction, within 3 to 5 years. Long-term temporary impacts include those that would not prevent recovery following Project completion but would remain throughout the duration of the Project's O&M phase, such as vegetation trimming or fugitive dust emissions. Permanent impacts would occur in areas that are paved or otherwise precluded from restoration to a pre-Project state for a decade or more. All ground-disturbing activity where plants are removed by the roots are considered a permanent impact. The definition of a permanent impact also reflects the slow recovery rates of plant communities in desert ecosystems.

Direct effects to vegetation include damage or mortality to individual plants and an overall reduction in the total number of plants as well as effects that result in the loss of total area, biodiversity, vigor, structure, and/or function of vegetative habitat. Indirect effects are those that occur not as immediate

effects of a Project-related action but are reasonably foreseeable consequences that would alter the characteristics or quality of a vegetative community due to changes in the surrounding conditions (e.g., spread of invasive species, changes in temperature, fugitive dust, herbicide drift).

3.7.4.2 Proposed Action

Construction Impacts

Native Vegetation Communities. Under the Proposed Action, disk and roll and grading methods that remove, crush, and bury vegetation would occur across most of the Project site to develop the solar panel arrays and other associated facilities. Vegetation would be permanently cleared from access roads as well as the footprints of concrete foundations for the inverter equipment, battery systems, substation, and O&M facilities. The gen-tie construction would require grading for the development of access roads and installation of tower foundations, with a total of 104 acres of permanent impacts. Improvements to Reese River Road would include widening from 15 to 24 feet and would permanently impact 10 acres of roadside vegetation. Other areas would be disturbed by temporary work areas, including laydown yards and conductor string locations along the gen-tie. In total, Project construction would cause the direct and permanent loss of up to 3,420 acres of native vegetation and the habitat that vegetation provides within the Project area. CRMP SOP 6 (SOPs Common to All) requires minimization of disturbance to the minimum amount needed; however, disturbance is still needed.

Grading, leveling, and disk and roll site preparation would remove vegetation (including root structures) and topsoil, resulting in high levels of soil compaction, and is expected to lead to permanent impacts to perennial vegetation, which could take decades to a century or more to recolonize the site even with restoration efforts (S. M. Grodsky and Hernandez 2020; S. R. Abella 2010). Anywhere soil disturbance is incorporated into site preparation, impacts to vegetation would occur and could persist well past the anticipated 30-year Project duration (Abella 2010; Chambers et al. 2013; Copeland and Butterfield 2017; Lovich and Ennen 2011; Lovich and Bainbridge 1999). Removal of native vegetation communities affects ecosystem functions such as wildlife cover, forage, migration corridors, species interactions, mycorrhizal associations, nutrient cycling, soil retention, and carbon sequestration (Beatty et al. 2017; Grodsky et. al 2020). Permanent vegetation loss would occur on up to 3,420 acres and is considered an adverse effect. Construction of the gen-tie would permanently disturb 104 acres of native vegetation, including shrubland vegetation but also some areas of riparian or woody wetland vegetation within the final 3.5-mile segment extending to the Fort Churchill substation (approximately 15 acres). Restoration of temporary disturbance areas would be implemented in accordance with the BLM-approved standards and requirements outlined in the Site Restoration and Revegetation Plan and in accordance with CRMP SOP 18 (SOPs Common to All).

Indirect impacts from construction of the Project are likely to include the potential for proliferation of existing and new invasive species within and outside of the Project area in adjacent undisturbed areas, which would result in a degradation of adjacent vegetation communities. Indirect impacts could also include generation of additional fugitive dust, which can impede photosynthesis and other metabolic processes of native plants, particularly along the access road. Increases in surface water runoff from the Project site could also affect hydrologic characteristics of these communities. The introduction of contaminants into these downstream habitats could result from accidental release of fuels or other substances, such as herbicides and dust palliatives, used in the Project area. Herbicides could drift off site and impact native plant communities or suppress restoration efforts after Project completion.

An Integrated Weed Management Plan would be implemented to control the spread of invasive species in the native plant communities of the Project area and adjacent areas. The plan would follow the Western Solar Plan PDFs, including PDF ER3-1, which requires implementation of principles of integrated pest management and includes biological controls to prevent the spread of invasive species per the 2015 Final PEA Integrated Weed Management Plan (BLM 2015); tired from the 2016 PEIS for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2016), the National Invasive Species Council's Management Plan (NISC 2016), and a PUP. Air, Soils, and Water SOP 7 also requires noxious weed control in upland and riparian areas. These measures would reduce potentially adverse

effects. Western Solar Plan PDFs SR2-1 and AQC2-1, as well as MM AQ-1, require soil stabilization measures to minimize air quality impacts from wind-blown dust on site, minimizing the off-site impacts. MM WR-3 would include bank stabilization and erosion repair. Surface-water run-off patterns would be managed through the use of detention basins to capture sediment and reduce off-site flow velocities, which would minimize the potential for off-site erosion. Current wash patterns may shift as a result of the Project, but current sediment loads are high due to existing limited cover. Contaminants would be contained through a SPCCP during and after construction to minimize the potential for off-site contamination that could impact vegetation communities, and only approved dust palliatives that are known to be habitat safe would be used.

Special Status Plant Species. A few populations or individuals of sensitive plant species are in areas proposed for disturbance. Some of these areas would result in unavoidable impacts, in particular those occurrences within the proposed solar site development areas. Several locations of sand cholla and one location of Tonopah milkvetch would be permanently lost through direct removal or crushing during disk and roll, grading, and other construction activities. However, the majority of occurrences of Tonopah milkvetch populations are located outside areas proposed for development or ground disturbance, so direct impacts to these populations would be avoided. Sand cholla was observed during belt transect surveys and is estimated at approximately 22 individuals within the solar site area of permanent disturbance. Based on the distribution throughout the solar site, it would be expected that the density of sand cholla would be similar in undisturbed areas outside the solar site. Direct impacts on occurrences and habitat of Tonopah milkvetch and sand cholla would be adverse but would not be expected to jeopardize the viability of either species in the region. Special status species could also be directly affected by the proposed access road improvements and construction of the gen-tie line. Only one individual of sand cholla that could be impacted was identified during surveys of the road, and no other species were located. However, construction of the gen-tie could impact additional sand cholla, two individuals of Tonopah milkvetch, and, potentially, a larger population of Nevada suncup. Direct impacts on occurrences and habitat of sand cholla and Nevada suncup within the gen-tie would be adverse but would not be expected to jeopardize the viability of either species in the region. Direct adverse effects on Lahontan beardtongue and Nevada oryctes are not anticipated since all observations are located outside areas proposed for disturbance. Indirect impacts to special status plants from construction of the solar site and gen-tie, as well as access road improvements and Project-related use, would include potential introduction, spread, and proliferation of invasive species. Herbicide drift and fugitive dust could also impact adjacent populations.

Project MM VG-2 would reduce impacts to rare plant populations, which includes pre-construction surveys for special status species; avoiding individuals or populations where possible in areas proposed for disturbance, particularly along the gen-tie alignment; seed collection of special status plants that cannot be avoided; restrictions on herbicide use within occupied habitat; and discussing avoidance of special status plants in a Worker Environmental Awareness Program (WEAP). Implementation of MM VG-2 would be required for any known locations of special status plant species or those discovered during pre-construction surveys, and restoration of temporary disturbance areas would be implemented in accordance with the BLM-approved standards and requirements outlined in the Site Restoration and Revegetation Plan, including using collected seeds of special status plants in restoration efforts. Seed sources used for restoration of temporary impact areas should be free of Palmer's penstemon in order to protect existing populations of Lahontan beardtongue within the Project site and vicinity. Western Solar Plan PDFs SR2-1 and AQC2-1 require soil stabilization measures to minimize impacts from wind-blown dust on nearby special status species individuals or populations. An Integrated Weed Management Plan would be implemented to minimize impacts to habitat occupied by special status species as a result of weed infestations. Additional requirements for inclusion in the Integrated Weed Management Plan are provided in MM VG-1 and include removal and monitoring of invasive species. The CRMP SOP 7 (Air, Soils, and Water) also requires noxious weed control in upland and riparian areas in coordination with other agencies. These measures would reduce potentially adverse effects; however, some disturbance to individuals or populations may be unavoidable and impacts would remain adverse.

Cacti. Project construction would have direct and indirect adverse effects on cacti. Approximately 3,420 acres of habitat for cacti would be permanently disturbed on the solar site, with an additional 104 acres for construction of the gen-tie. Access road improvements would include already disturbed areas, with approximately 10 acres proposed for new permanent disturbance from widening, which could contain some cacti. According to the results of the belt transect surveys, the estimated number of cactus potentially present across the solar site ROW is roughly 839. The majority of these cacti would be expected to be grizzlybear prickly pear; however, 22 individuals could likely be the BLM sensitive sand cholla, and other species of cacti may have gone undetected during surveys. Approximately 250 sand cholla and up to 25 grizzlybear prickly pear that could be impacted were identified along the gen-tie alignment.

Potential direct adverse impacts to cacti from the Project include mortality, morbidity, and disturbance to individuals or populations (S.M. Grodsky, Tanner, and Hernandez 2020). Indirect impacts from increased invasive species densities within the Project site and surrounding area could reduce growth and reproduction of cacti and increase the risk of fire, which cacti are not adapted to and cannot survive.

Cacti in areas of permanent disturbance where vegetation is removed (e.g., disk and roll site preparation, grading for roads and gen-tie lines, O&M buildings) would be salvaged and transplanted across the site or sold, in accordance with Project MM VG-1, the Site Restoration and Revegetation Plan, and the BLM regulations (e.g., SOP 18 [Common to All]). Of the approximately 839 or more cacti that may be encountered on the solar site, an estimated 65 percent would be permanently lost. With implementation of MM VG-1, cacti in temporary disturbance areas would be avoided or transplanted out of the way and then replanted at the site after construction. Some additional cacti would be lost for gen-tie and gen-tie access road construction, within the estimated 104 acres of disturbance, along with at least one sand cholla along the Project access road.

The cacti species found within the Project area are widespread, but they are long-lived and provide an important habitat for wildlife. The loss of up to 3,420 acres that contain cacti would be significant because even after Project decommissioning, these species would likely not occupy the site again for decades to a century or more (S. R. Abella 2010). Implementation of MM VG-1 includes measures that would reduce impacts and protect some cacti, such as by avoiding individuals where possible (particularly along the gen-tie) and salvaging and relocating healthy individuals outside of the impact areas. Prior to construction, the BLM would be provided with the number of cacti, by species, in permanent disturbance areas that would not be salvaged for replanting in temporary disturbance areas. The BLM Nevada IM No. NV-2019-036 stipulates that forest products, which include cacti, "will be sold at no less than their appraised price and/or the minimum price." The Applicant would pay for a plant permit per the BLM forestry regulations and according to the appraised price schedule currently in effect for all cacti destroyed during construction, in accordance with MM VG-1 and the BLM regulations.

Loss of cacti would still occur, and direct impacts to the majority of these plants within the Project area would be adverse. An Integrated Weed Management Plan that limits invasion and spread by invasive plant species would be vital to conservation of the remaining cacti in the solar site. Additional requirements for inclusion in the Integrated Weed Management Plan are provided in MM VG-1, as described above for vegetation communities, and include eradication and monitoring of invasive species and salvage/transplant of individual cacti that are found within disturbance areas. CRMP SOP 7 (Air, Soils, and Water) also requires noxious weed control in upland and riparian areas in coordination with other agencies. These measures would reduce potentially adverse effects. Western Solar Plan PDFs SR2-1 and AQC2-1 requires soil stabilization measures to minimize air quality impacts from wind-blown dust. Project MM PS-3 requires a Fire Prevention and Safety Plan/Management Plan to minimize the risk of wildfires caused by construction and O&M of the Project. Western Solar Plan PDFs WF1-1 and WF2-1 also require that solar developments be sited and designed to minimize the risk of fires and that fire prevention measures are implemented for the life of the Project in coordination with the BLM, including inspections, monitoring, a WEAP, and adaptive management protocols.

Invasive Species. Invasive plant species are common throughout the solar site; however, because the landscape is mostly undisturbed, the existing densities are low. The Project has a high potential to

increase invasive species densities and introduce other invasive or noxious weed species within areas of construction impacts, given the level of soil disturbance and vegetation removal proposed. Increased densities of weeds on site would affect the surrounding landscape by modifying native plant assemblages, reducing biodiversity, increasing competition with native species including sensitive plants, altering hydrologic conditions and soil characteristics, and increasing fire hazards.

The treatment (mechanical or chemical) of invasive plant species and noxious weeds could result in inadvertent injury or mortality to native plants and special status species that are in close proximity. The amount of herbicide needed to control weeds on the solar site after construction could also kill the remaining native seed banks in the soil that survived construction disturbance and impede the establishment of new vegetation; however, establishment of new vegetation is unlikely given the use of the disk and roll site preparation method. Many weed species actively germinate year-round, which would require year-round maintenance of the site. In the experience of the BLM, implementation of invasive species management plans is challenging due to rapid colonization of disturbed areas. If invasive species are managed, there is still a high likelihood that edge effects from the Project would increase invasive and noxious weeds in the surrounding off-site areas.

An Integrated Weed Management Plan, CRMP SOP 18 (SOPs Common to All), MM VG-1, Western Solar Plan PDFs ER1-1 and ER2-1, and CRMP SOP 7 (Air, Soils, and Water) would be implemented. These measures would reduce potentially adverse effects, but the Project could still result in a higher cover and density of invasive plant species within the solar site and in adjacent habitat over time. Construction of the gen-tie, as a linear feature, could also result in the spread of additional weed species along its length. These measures could reduce some adverse effects on native vegetation and special status species from the spread of invasive weeds. However, adverse direct and indirect impacts would still occur from increased disturbance in the area and expected introduction and proliferation of these invasive species.

Operation and Maintenance Impacts

O&M activities would involve less repetitive ground disturbance than construction and would not extend outside of areas initially disturbed for construction. Areas of temporary disturbance would be restored and allowed to recover to the extent possible. Monitoring for restoration progress and invasive species management would occur during O&M, as outlined in the Site Restoration and Revegetation Plan and Integrated Weed Management Plan. Native vegetation would not be expected to regrow during the O&M period in areas that were cleared by grading or disk and roll methods (approximately 65 percent of the application area).

O&M impacts are anticipated to result in continued reduction of perennial vegetation cover throughout the site across the 3,420 acres of permanent disturbance. Herbicides would be used to control the establishment and spread of invasive species, which could have indirect effects on adjacent vegetation communities. Vegetation removal and soil compaction across the site would also result in increased runoff of surface water during precipitation events, which could result in erosion and some increased sediment transport downstream of the Project site. To manage stormwater flows during O&M and reduce downstream sedimentation impacts, the Project would include detention basins to capture surface water runoff and sediment. New roadways could create erosion during O&M. All roads used for O&M would be inspected, and erosion would be repaired as part of the maintenance (MM WR-3) to avoid off-site impacts to vegetation.

Solar panels create shade that can alter soil temperature, soil moisture, and the amount of light available for plants to photosynthesize (S. M. Grodsky and Hernandez 2020; Vervloesem et al. 2022; Tanner et al. 2020). These altered microhabitat conditions may affect the abundance, survival, and reproduction of native desert plants and could result in the loss of native plant communities for the duration of the Project and likely for decades to a century or more after decommissioning. This long-term loss of native vegetation can lead to increased weeds, dust emissions and erosion, loss of wildlife habitat and biodiversity, and adverse visual effects.

Western Solar Plan PDF ER3-1 requires the Applicant to maintain native vegetation to the extent possible and control invasive species during O&M of the Project. Western Solar Plan PDFs SR3-1, SR3-2, and AQC2-1 would be implemented to control sources of fugitive dust generated during O&M, including use of water and/or soil palliatives approved by the BLM. Consultation with the BLM would be maintained throughout O&M in accordance with Western Solar Plan PDFs ER3-1 and ER3-2, which require utilizing integrated pest management and an adaptive management strategy, as necessary.

Decommissioning Impacts

Decommissioning is anticipated to only directly affect areas that were previously disturbed during Project construction and O&M. With the soil disturbance and compaction from Project construction, most of the native seed bank in the soil would not be viable, so other sources of native seed would be needed for restoration. This need could put added pressure on regional seed sources, resulting in an adverse impact on adjacent communities where seeds are sourced. Vegetation communities could take as long as a century to fully recover to pre-disturbance conditions, if they do at all (S. R. Abella 2010). Over a long period of time, the cover of perennial plants would be reestablished. The Decommissioning and Site Reclamation Plan would include a description of acceptable seed types, seeding techniques, a monitoring and reporting plan, and performance standards, per MM VG-1. Decommissioning would set the Project site on a trajectory to regain some percentage of native perennial species cover; however, some species are not expected to ever recolonize the site given the level of disturbance, which would be an adverse effect.

Impacts to special status plant species from decommissioning would not be expected because individuals of sensitive species would likely be permanently lost during the construction and O&M phases of the Project. Implementation of a Decommissioning and Site Reclamation Plan would reduce potential adverse effects to sensitive plant habitats. Should newly discovered sensitive plant species be identified prior to decommissioning, MM VG-2 would also apply to these locations. Western Solar Plan PDFs SR4-1, SR4-2, and SR4-3 would also be applicable as they address reclamation, applying design features to avoid soil erosion, restoring original grades as much as possible, and restoring native plant communities.

Cumulative Impacts

A number of projects and other management actions in the region could potentially contribute to cumulative impacts to vegetation, including other current and proposed utility-scale solar development projects, transmission lines, and pit mining as proposed as part of the Pumpkin Hollow Copper Mine Expansion. Other proposed solar projects within the Western Solar Plan variance areas and transmission line projects would involve ground disturbance and vegetation clearing, resulting in the loss of native vegetation communities, cacti, and special status plant species. Similar to the Project, these cumulative projects would also likely result in the proliferation of invasive species and fugitive dust. The cumulative projects could result in increased fire frequency or intensity resulting from a combination of abundant invasive plant fuels and higher likelihood of anthropogenic ignitions that could have potentially severe ecosystem effects, adversely affecting sensitive plant communities and wildlife (S. R. Abella 2010; J.C. Chambers et al. 2013a; S. M. Grodsky and Hernandez 2020). Cumulative impacts on regional vegetation resources include the loss of native vegetation, increased spread of invasive species, disturbance of the soil seed bank, and loss of both perennial and annual plant diversity. Slow recovery from disturbance means impacts to these vegetation communities accumulate over time.

Most vegetation within the region that would be affected by other actions is on BLM-managed land. Other solar projects within the variance areas would need to adhere to Western Solar Plan PDFs to avoid or reduce impacts to vegetation resources. Implementation of Western Solar Plan PDFs for the protection of ecological resources, soils, air quality, and wildland fire as well as all relevant MMs and BLM-required plans developed for the construction, O&M, and decommissioning of the Project would reduce the Project's contribution to adverse effects on vegetation resources. Due to the amount of areas within the region that could potentially be affected, however, the effects would remain cumulatively adverse.

3.7.4.3 Alternative 1 – Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance

Construction Impacts

Alternative 1 would result in fewer impacts to vegetation from construction of the Project compared to the Proposed Action. This alternative would include site preparation and construction methods that avoid major washes and maintain more areas of native perennial vegetation than the Proposed Action, including limited overland travel that keeps vegetation intact (40 percent of the solar arrays at approximately 1,220 acres) or overland travel that crushes vegetation but leaves the root masses intact (another 40 percent of the solar arrays at approximately 1,220 acres). Traditional construction methods (i.e., disk and roll and grading) would be allowed on up to approximately 20 percent of the solar array blocks (612 acres). This alternative would result in an increase in the acreage of native vegetation that would be maintained or potentially restorable within the solar arrays (2,450 acres), which would be a reduction in that same amount of native vegetation lost from grading and disk and roll under the Proposed Action. At the end of construction, approximately 60 percent of the application area would have vegetation maintained versus 36 percent under the Proposed Action. Within most construction areas for the solar panel arrays, topography, soils, and vegetation would be left in place, and the installation of solar array components would occur over these existing resources. Vegetation not subject to grading, crushing, or other disturbance would be trimmed, but only if its height would interfere with the installation of the solar panels or safety. All other Project components would remain the same as the Proposed Action.

With the reduction in areas that would be permanently impacted through grading or disk and roll, as well as a maximum threshold set for native perennial vegetation loss, this alternative would result in fewer impacts to native vegetation communities, special status plant species, and cacti within the Project solar site as compared to the Proposed Action. In areas where soils remain intact, there would be a reduced likelihood of invasive species infestations and loss of soil seed banks (J.C. Chambers et al. 2013a; Copeland and Butterfield 2017; S.M. Grodsky, Tanner, and Hernandez 2020; J.E. Lovich and Ennen 2011a). Although disturbances to vegetation and soils across the Project site would be reduced, construction activities could still introduce new weed species to the Project area or spread seeds of existing weeds. Western Solar Plan PDFs, Project MMs, and the Integrated Weed Management Plan as described above for the Proposed Action would be implemented under this alternative and would likely be more successful, with fewer infestations, due to the reduction in ground disturbance. With the implementation of these combined measures and the reduced overall disturbance to vegetation from construction, this alternative would result in fewer impacts to native vegetation communities as compared with the Proposed Action, but impacts would still occur and thus remain adverse.

Operation and Maintenance Impacts

Under Alternative 1, vegetation would be maintained across the Project site during the O&M phase of the Project. O&M vehicle use within the solar site could result in ground disturbance and crushed vegetation but would be limited to access roads and the shortest routes possible off roads. When possible, work activities would be performed on foot. Vegetation would be trimmed as needed to prevent interference or safety issues within the solar facilities, which may reduce plant vigor and survival and may remove flowers and seeds depending on when the plants are trimmed. Ground disturbance associated with trimming may also result in additional crushing or other damage of vegetation. However, compared with the Proposed Action, this alternative is expected to result in survival of perennial plants, including cacti. Determinations for trimming would be made on an individual solar array basis so that there would be no mass trimming actions on large areas of vegetation. During O&M of the Project, drive and crush areas would be actively restored. Approximately 40 percent (1,220 acres) of the areas under the panels would be constructed using drive and crush methods. At least 20 percent of those areas are expected to be restored to native vegetation types during the 30-year O&M phase, for a total of 245 acres. By the end of the O&M phase, up to 65 percent of the application area is expected to have native vegetation cover (as compared to 36 percent under the Proposed Action). The Integrated Weed Management Plan would be implemented and would result in reduced impacts to vegetation during O&M. This alternative would also result in reduced indirect impacts from temperature increases during O&M of the Project. Retaining

vegetation within solar panel arrays would maintain the temperature of the site as compared to projects where vegetation is completely removed (Scott R. Abella 2010; Barron-Gafford et al. 2019; Devitt et al. 2022; Williams et al. 2023).

Decommissioning Impacts

Decommissioning and site restoration would be more successful than under the Proposed Action due to a reduced area of permanent disturbance, with vegetation recovering more easily and intensive restoration likely needed only in graded areas. The long-term impacts to vegetation communities would be reduced. Implementation of the Decommissioning and Site Reclamations Plan would further reduce potential adverse effects on vegetation during decommissioning. Decommissioning under Alternative 1 would therefore result in an overall reduced impact to native vegetation.

Cumulative Impacts

Less impactful construction techniques and retention of vegetation during construction and O&M would result in higher vegetation survival and plant diversity, which would reduce the contribution to cumulative losses and/or adverse effects to native vegetation within the region. Because the anticipated recovery time post-Project is expected to be less for this alternative than for the Proposed Action (5 to 10 years for the majority of the Project site, as opposed to hundreds of years), cumulative impacts would be reduced. Retaining vegetation also improves vegetation community resiliency for adapting to climate change impacts. Cumulative impacts to native vegetation communities would still be adverse due to ground disturbance, crushing, trimming, dust emissions, and invasive species; however, these impacts would be reduced under this alternative and would result in a reduced contribution to any cumulative impacts to vegetation resources within the Mason Valley.

3.7.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Construction, O&M, and decommissioning impacts from this alternative would be the same as described for the Proposed Action for the solar site. Impacts could vary from the use of supplemental access roads. These routes have already been disturbed and are not likely to contain suitable habitat for special status plants directly adjacent. No upgrades or new disturbance would be associated with the use of supplemental access roads, so there would be no direct impacts to vegetation; however, there could be indirect impacts. Roads are common vectors for invasive species, and the use of additional access routes could contribute to the proliferation of weeds. The increased use of unpaved segments of roads could also contribute to an increase in impacts on nearby vegetation from fugitive dust. Because these roads are currently used and maintained, it is unlikely that these effects would be noticeable beyond existing conditions. The routes would only regularly be used as supplemental access during Project construction and would not be used during O&M, so there would be no impacts from O&M. Supplemental access routes may be used during decommissioning as well, depending on timing, but resulting impacts are not expected to exceed those from construction. This alternative would result in the same contribution to cumulative impacts as described for the Proposed Action.

3.7.4.5 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Construction, Operation and Maintenance, and Decommissioning Impacts

Construction, O&M, and decommissioning impacts from this alternative would be the same as described for the Proposed Action for the solar site and the access road. The gen-tie would be reduced from a 24.1-mile-long line from the solar site to the Fort Churchill substation to a 0.54-mile-long gen-tie line extending from the eastern boundary of the solar site to a new switching station under the adjacent Greenlink West line. The new gen-tie and switching station would result in disturbance of just under 12 acres, a reduction of 92 acres of permanent disturbance and 100 acres of temporary disturbance as compared with the Proposed Action. Direct and indirect impacts to vegetation from construction, O&M, and decommissioning would thereby be reduced as compared with the Proposed Action.

Cumulative Impacts

Cumulative impacts to vegetation would be similar to those for the Proposed Action. The gen-tie length would be reduced from 24.1 miles to 0.54 mile, which would reduce the Project's contribution to native

vegetation disturbance and removal within the Mason Valley. The reduction in impacts would be limited, as the solar field would contribute the largest cumulative loss of vegetation within the analysis area.

3.7.4.6 No Action Alternative

Under the No Action alternative, the Project would not be constructed, and existing land uses would continue. The BLM would continue to manage the land consistent with the CRMP. There would be no impacts to vegetation from large scale solar construction, and existing habitat conditions and trends would remain. The vegetation communities currently exhibit gradual encroachment from invasive species, which may continue to exist or expand over time.

3.7.4.7 Relevant Required Western Solar Plan Programmatic Design Features, the CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Western Solar Plan Programmatic Design Features

PDFs from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to vegetation:

- AQC2-1
- ER1-1, ER2-1, ER3-1, ER3-2, ER4-1,
- SR2-1, SR3-1, SR3-2, SR4-1, SR4-2, and SR4-3
- WF1-1 and WF2-1

The CRMP Standard Operating Procedures

SOPs from the CRMP are listed in Appendix B. Several relevant SOPs were identified for the protection of vegetation:

- Soil, Watershed, and Air SOP 7
- Common to All SOPs 6 and 18

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction, O&M, and decommissioning to minimize impacts to vegetation:

- Site Restoration and Revegetation Plan (Draft is available on the Project website)
- Integrated Weed Management Plan (Draft is available on the Project website)
- Workers Environmental Awareness Program
- Fire Prevention and Safety Plan/ Management Plan
- Site Decommissioning and Reclamation Plan

The Project would comply with the following mitigation measures to minimize adverse impacts to vegetation:

MM VG-1: Site Revegetation, Weed Management, and Reclamation

The Site Restoration and Revegetation Plan, Integrated Weed Management Plan, and Decommissioning and Site Reclamation Plan shall include the following requirements, at a minimum:

- Weeds
- A Pesticide Use Proposal shall be completed and signed prior to the need for the use of pesticides.
- The Applicant is responsible for treatment and control of all non-native and noxious weeds for the lifetime of their ROW and until all restoration/decommissioning standards have been met. Specific control measures shall be identified in an Integrated Weed Management Plan.

- The contractor used for weed treatments shall be familiar with local vegetation to the extent that they are able to identify habitat for, and identify plant material belonging to, the sensitive plant species within the Project area.
- Vector areas, including along roadways, shall be cleared (through biological and/or chemical control) of any weed species that have or shall have seeds present, prior to ground disturbance.
- A BLM-approved botanist shall conduct periodic surveys for weed species throughout construction and O&M. Surveys shall be conducted when weed species are detectable but before they are anticipated to have gone to seed each year.
- The Applicant is responsible for the treatment of any new weeds that are introduced or existing weeds that spread to new areas as a result (as far as can be reasonably determined) of Project activities during construction, restoration of temporary disturbance, and O&M.
- All weeds shall be treated before they go to seed. If any weeds are discovered that are beginning to go to seed before they have been treated, they shall be hand-pulled, bagged in a puncture-proof bag or container, and disposed of in an enclosed, off-site trash receptacle.
- Reporting shall be conducted biannually during construction, restoration of temporary disturbance areas, and the first 3 years of operation and maintenance. This monitoring shall be compiled into an annual report that details all dates when monitoring occurred; the dates of all weed treatments; the number and types of weeds found; if any new weeds were located; and the amount, types, and locations of herbicides used (in accordance with the PUP). Reporting shall be submitted to the BLM on or before December 31 of each year. During the initial years when biannual reporting is required, reports shall also be submitted on or before July 1 (to document that spring surveys and treatments for weeds took place).
- Weed vectors (e.g., roads, transmission lines) associated with the Project shall also be monitored and treated according to the Integrated Weed Management Plan.
- Only certified weed-free materials shall be used during construction, restoration, and O&M. This includes gravel, seed mixes, and any waddles or other erosion control devices.
- Prevention measures shall be implemented, including Worker Environmental Awareness Program (WEAP) training and vehicle and equipment cleaning protocols (as described in the Integrated Weed Management Plan) as well as construction reporting.
- Cacti
- Where feasible, healthy, viable cacti within permanent disturbance areas where vegetation is removed (e.g., roads, battery storage areas, traditional development areas, transmission line towers) shall be salvaged and planted in an on-site nursery for use in restoration areas, per BLM's forestry program guidance. More details shall be included in the Site Restoration and Revegetation Plan.

MM VG-2: Special Status Plant Pre-Construction Surveys

- Prior to construction, a botanical survey for special status plant species shall be performed to identify and flag individuals or populations that are present within potential impact areas. These species shall be avoided where possible, and where it is possible for the individual to survive after construction (e.g., along the edge of the solar facility or temporary construction areas along the gen-tie).
- Herbicide treatment shall be completed in special status plant habitat prior to March 15 to avoid non-target impacts to sensitive plant species. After March 15, only hand-pulling of weeds in any sensitive milkvetch habitat is permitted.
- Where avoidance is not possible, seed collection of special status plants that would be affected shall occur in accordance with the Site Restoration and Revegetation Plan. Collections shall follow the Center for Plant Conservation (CPC) guidelines for seed

collection and include storage at a qualified CPC regional seedbank. Collection of seeds shall be used in project revegetation efforts.

- Workers Environmental Awareness Program (WEAP) training shall include information on habitat for all sensitive species, including how that habitat is marked on the ground (e.g., flagging, flagging color) in order for contractors to follow appropriate avoidance and weed treatment stipulations.

3.7.4.8 Irreversible, Irretrievable, and Residual Impacts

Irreversible or irretrievable impacts are those that cannot be reversed or recovered. The Proposed Action would result in the permanent loss of native vegetation on 3,420 acres within primarily Bailey's greasewood shrublands. Site reclamation, even with substantial effort, is not expected to restore these impacted areas to pre-Project conditions for decades to a century or more. Repeated restoration efforts would be necessary. Many species, such as cacti and other perennial shrubs, would not be expected to recolonize the site, and changes to native species composition would be considered permanent.

Approximately 839 individual cacti could be permanently lost from Project construction. Most of these are the more common grizzlybear prickly pear, but some special status species of sand cholla (an estimated 22 individuals, with potentially more along the gen-tie) would be lost and are not likely to grow back in areas of disturbance. Permanent loss of native vegetation communities would remain with the construction techniques identified in the Proposed Action even with the identified mitigation measures. These losses would be considered irretrievable. Alternative 1 would have similar effects but they would be reduced, and native vegetation cover would be more retrievable. Alternatives 2 and 3 would have impacts the same as or similar to the Proposed Action.

Residual effects would include the direct and indirect impacts from the Project, including soil erosion, fugitive dust, and the spread of invasive weed species that would persist even with mitigation measures. These impacts would be minimized with Western Solar Plan PDFs, management plans, and Project-specific MMs, but would likely not be eliminated. Alternative 2 would reduce residual effects the most, as compared with the Proposed Action and other alternatives.

3.8 General Wildlife; Special Status Wildlife Species; and Threatened, Endangered, Proposed, and Candidate Species

3.8.1 Introduction

This section provides a summary of the general wildlife resources, including special status species that are known to occur or could occur in the Project area and that could be affected by Project construction, O&M, and decommissioning. General wildlife includes all wildlife species that are not federally, or State listed or BLM sensitive species. Special status species include those that are BLM sensitive species, avian species protected under the Migratory Bird Treaty Act (MBTA) or Bald and Golden Eagle Protection Act (BGEPA), USFWS birds of conservation concern (BCC), species protected in Nevada under NAC Chapter 503, and NDOW species of greatest conservation need (SGCN). Threatened, endangered, proposed, and candidate species are those identified as such under the ESA. The Project is not within Bi-State sage grouse habitat areas identified in the 2016 Bi-State Sage Grouse Plan Amendment.

The BLM manages wildlife and their habitats according to the CRMP, BLM Manual 6500 Fish and Wildlife Conservation, and the BLM Manual 6720 Aquatic Resource Management. The BLM provides policy and guidance for the conservation of BLM special status species and habitat on BLM-administered lands, including through BLM Manual 6840. Wildlife conservation by the State of Nevada is regulated under NRS Title 45 and is further guided by the Nevada Wildlife Action Plan (Barnes, J. et al. 2023).

The following survey reports were used to determine the likelihood that special status species are present within the Project area and could be affected by construction, O&M, and decommissioning of the Project.

- Botanical Resources Report: Libra Solar Project (Phoenix 2023b)

- Golden Eagle (*Aquila chrysaetos*) Survey Report, Libra Solar Project (Dugan and Phoenix 2022)
- Memorandum – Preliminary Results for Libra Solar Avian & Raptor Surveys (Phoenix 2023)
- Bat Acoustic Activity Surveys for the Libra Solar Project, Final Report (Western Ecosystems 2023)
- Pale and Dark Kangaroo Mouse Survey Report, Libra Solar Project (Phoenix 2022a)

3.8.2 Analysis Area

The analysis area for consideration of impacts related to habitat connectivity and migration for wildlife and special status species is the Project site (including the solar site, gen-tie corridor, and access roads), adjacent mountain ranges, and the Mason Valley. This area is intended to capture existing conditions and potential impacts to individuals, habitats, and movement corridors for wide-ranging species such as bats, birds, and larger mammals that may have the potential to occur. For wildlife with smaller home ranges (e.g., reptiles, small mammals), most of the effects would be limited to the Project area and immediate vicinity. In accordance with USFWS guidance for protection of nesting eagles, the analysis area for golden eagle (*Aquila chrysaetos*) extends up to 10 miles from the Project site.

For cumulative effects, the analysis area includes the Mason Valley and Wassuk Range, within which similar special status species populations or habitats might occur and might be affected by other projects or management actions therein. Cumulative projects or actions within the region would affect habitat necessary to conserve the genetic, behavioral, morphological, and ecological diversity conducive to long-term sustainability of species.

3.8.3 Affected Environment

3.8.3.1 General Wildlife

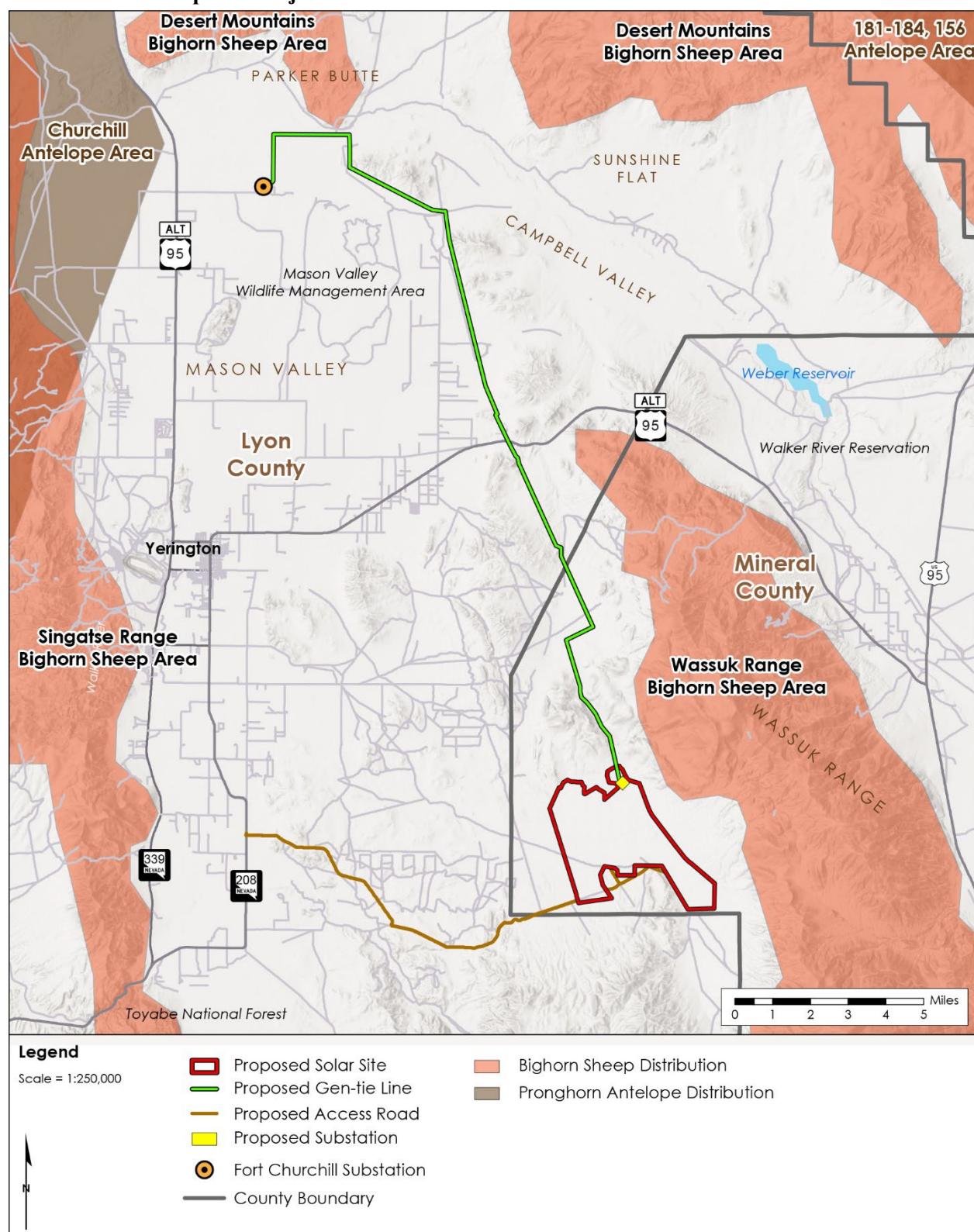
Wildlife species include mammals, reptiles, and birds. The solar site has been utilized for cattle grazing in the past, as evidenced by fencing, improvements for watering livestock, a few skeletal remains, and cow manure. The land is presently utilized occasionally by a herd or herds of wild horses; however, it is not in a BLM-designated herd management area. The closest management area is the Wassuk Herd Management Area, southeast of the solar site. No wild horses were encountered during field visits, but there was ample fresh evidence of their presence. Many terrestrial invertebrate species have potential to occur within the Project site. Invertebrates are a vital food source for other wildlife as well as important pollinators for native vegetation and are often critical to healthy and functioning ecosystems. General types of terrestrial invertebrates found in desert habitats of the Great Basin include moths, butterflies, bees, ants, beetles, spiders, scorpions, grasshoppers, and crickets.

The Project solar site was surveyed for special status species including small mammals, burrowing owls, avian species, and bats. Reconnaissance surveys were performed December 14, 2021, and January 19, 2022, to identify general habitats for wildlife species (Phoenix 2022b).

3.8.3.2 Big Game Species

Big game species found in the region include desert bighorn sheep (*Ovis canadensis nelsoni*) and pronghorn antelope (*Antilocapra americana*). Both species are priority species managed as game animals by NDOW. The range for desert bighorn sheep does not extend into the Project area; however, bighorn sheep may be found higher in the Wassuk Range east of and adjacent to the solar site, just north of the gen-tie alignment in the Desert Mountains, and in the Singatse Range to the west, beyond Yerington (>10 miles away from the solar site, as shown in Figure 3.8-1). Current mapping for pronghorn antelope shows their distribution ranges are even further to the east and west from the solar site, beyond the Wassuk Range and the Singatse Range (shown in Figure 3.8-1). However, pronghorn antelope are known to moderately utilize habitats within the Project area for foraging and migration and have been observed during various field visits. Winter fat occurs in this landscape and is a critical forage component for big

Figure 3.8-1 Desert Bighorn Sheep and Pronghorn Antelope Ranges within the Vicinity of the Proposed Project



Source: (NDOW 2010)

game species. While pronghorn antelope occur in the study area, the study area is not within a significant migration corridor for these species.

3.8.3.3 Small Mammals

A small-mammal trapping study was performed for the study area to determine whether two BLM sensitive species, dark kangaroo mouse (*Microdipodops megacephalus*) and pale kangaroo mouse (*Microdipodops pallidus*), were present, as an initial study indicated a potential to occur. Neither was captured during the trapping sessions (Phoenix 2022a). However, one NDOW Species of Conservation Priority (Wildlife Action Plan Team 2012), desert kangaroo rat (*Dipodomys deserti*), was captured. This species is found in a wide range of arid habitats in the Great Basin, usually low deserts with sandy soil and sparse vegetation.

3.8.3.4 Bats

Bat activity was monitored at two stations within the study area, within desert scrub representative of the solar site as a whole, from March to October of 2022. Of the 19 bat species that have the potential to occur within the study area, 18 were detected (Western Ecosystems 2023), with the exception being the spotted bat (*Euderma maculatum*). Spotted bats range widely in Nevada but are uncommon. All bats are protected in Nevada (NAC Chapter 503) and are identified as NDOW Species of Conservation Priority (Barnes, J. et al. 2023). All bats detected are also BLM sensitive species. Overall, bat activity at the survey stations was lowest in the spring and highest in the fall, during the migration period (Western Ecosystems 2023). Results from the two detectors for overall activity were similar, suggesting homogeneity in the quality of bat habitat throughout the study area. Detectors were not sited near focused attractants for roosting or foraging (e.g., water bodies, abandoned mines, seeps and springs, cattle tanks, guzzlers) because none of these features are present within the solar site; results therefore can be assumed to reflect bat presence throughout the study area. However, the gen-tie crosses permanent water sources that could attract more bat activity. The study area consists of marginal habitat for either roosting or foraging for all bat species detected. While ephemeral drainages could be suitable for foraging during the rainy season, better roosting and foraging habitat occurs around Walker Lake, approximately 11 miles to the southeast of the Project solar site. More suitable roosting habitat occurs at abandoned mines as close as 2.5 miles southeast of the solar site.

3.8.3.5 Birds

Golden Eagle

Mountainous areas within the Wassuk Range (the north, northeast, east, and southeast portions of the study area) contain the greatest density of high-quality golden eagle nesting habitat. The western and central portions of the study area, which include the solar site and most of the area within 3 miles, are characterized by flat topography, low-lying alluvial features, and riverbed habitats. Lacking vertical cliffs and rocky features, these areas contain only substandard golden eagle nesting habitat that is largely limited to low-lying structures within isolated foothills. However, the Project site contains foraging habitat commonly used by golden eagles.

USFWS-protocol surveys for golden eagle were performed for the study area and 10-mile buffer during winter, spring, and summer of 2022 (Dugan and Phoenix 2022). Six golden eagle nests, none of which were occupied or contained eggs or chicks at the time of surveys, were observed across three nesting locations. All nests were in rocky cliff habitats in locations that offered shelter from most potential anthropogenic disturbances, showed no signs of use or maintenance during the 2022 nesting season, and lacked a developed nest bowl. Moderate levels of anthropomorphic disturbance were noted, including but not limited to paved roads, OHV travel, fence lines, farming, and mining operations. Six live golden eagles were observed, including adult pairs perched near an unoccupied nest. The survey area approximately overlaps the southern half of the gen-tie alignment, which, in its northern half, runs adjacent to the proposed Greenlink West transmission line. The entire Greenlink West alignment, plus a 2-mile buffer, was surveyed in December 2021 and January 2022, with a second round of surveys in March and April of 2022. No nests were found in proximity to the northern half of the proposed Project's gen-tie alignment.

Migratory Birds

Migratory birds are protected under the MBTA and NAC Section 503.050. Avian species were identified during avian point-count surveys during spring, summer, and fall of 2022 (Phoenix 2023). Overall, species diversity and abundance are low within the study area. The years prior to surveys experienced below-average rainfall, likely resulting in decreased productivity in avian species. Across the three seasons of surveys, 11 different species were noted: American kestrel (*Falco sparverius*), barn swallow (*Hirundo rustica*), Brewer's sparrow (*Spizella breweri*), common raven (*Corvus corax*), house finch (*Haemorhous mexicanus*), horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), sagebrush sparrow (*Artemisiospiza nevadensis*), sage thrasher (*Oreoscoptes montanus*), and western meadowlark (*Sturnella neglecta*). Call broadcast surveys for burrowing owls (*Athene cunicularia*) were also conducted during spring of 2022 at 20 different sites throughout the solar site. No burrowing owl vocalizations were recorded during any of the site visits, indicating burrowing owls were not on site; however, the revised gen-tie alignment has not been surveyed, and burrowing owls may be present along with other MBTA-protected species.

In addition to the avian point-count surveys, raptor surveys were conducted in October 2022 (Phoenix 2023). Incidental observations of raptors were also recorded during the golden eagle protocol surveys (Dugan and Phoenix 2022). Additional species observations include Cooper's hawk (*Accipiter cooperii*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus hudsonius*), osprey (*Pandion haliaetus*), prairie falcon (*Falcomexicanus*), sharp-shinned hawk (*Accipiter striatus*), and turkey vulture (*Cathartes aura*). Raptor nests were also observed during golden eagle surveys, including six red-tailed hawk nests, four common raven nests, and one unidentified falcon nest. All were unoccupied except one red-tailed hawk nest. The occupied red-tailed hawk nest was observed in a large tree; all other nests were located on rocky substrates including vertical cliff faces, rocky buttes, rock cavities, and ledges.

Bi-State Sage-grouse

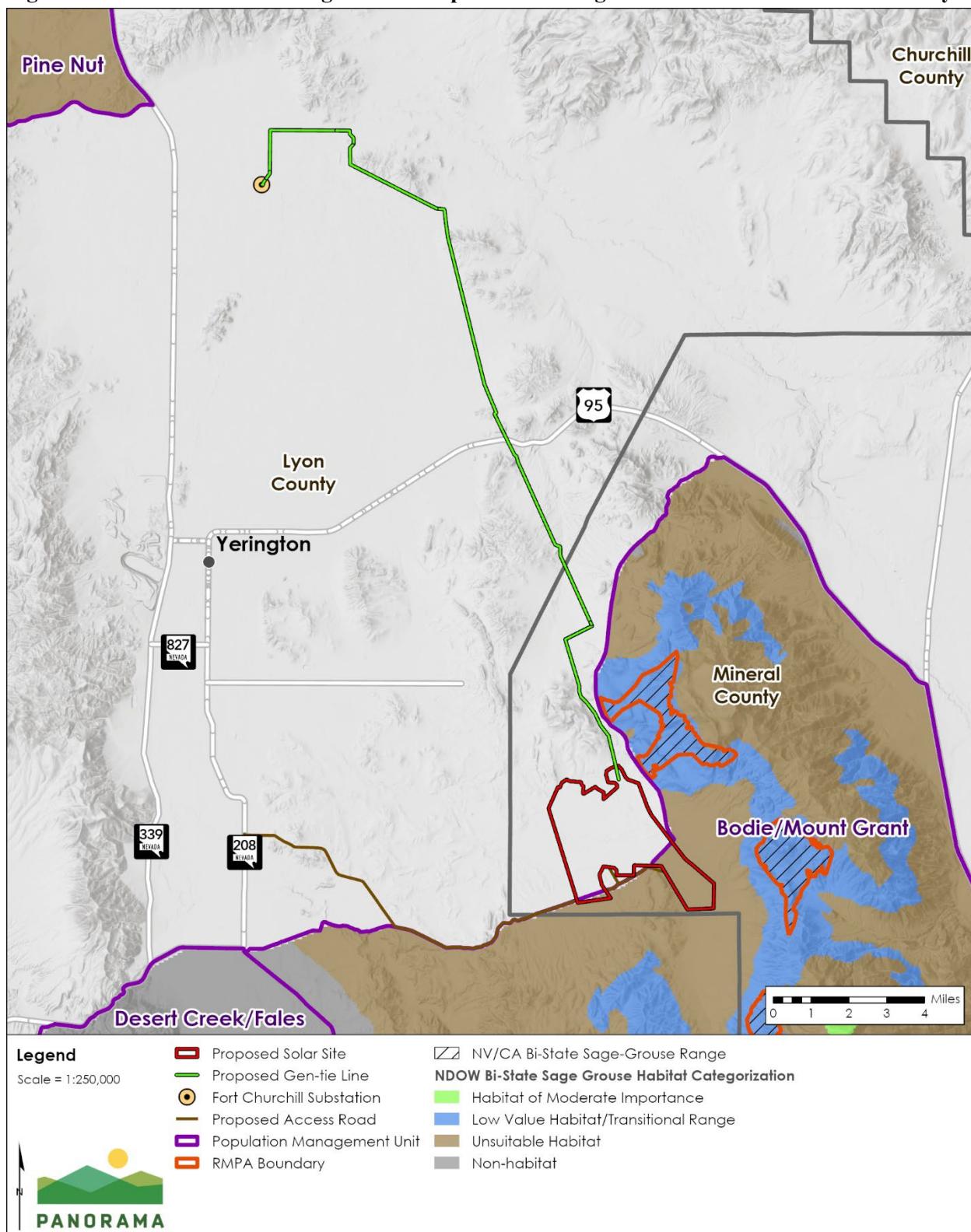
The Bi-State greater sage-grouse is a genetically unique population, known as a *distinct population segment* (DPS), of greater sage-grouse that lives in the far southwestern limit of the species' range in the California/Nevada Bi-State area. The Bi-State DPS is characterized as a genetically diverse, locally adapted meta-population consisting of several relatively small, localized breeding populations distributed among suitable sagebrush habitats throughout the Bi-State area (Bi-State Technical Advisory Committee Nevada and California 2012). In April 2023, the USFWS initiated a new status review to determine whether the Bi-State DPS meets the definition of an endangered or threatened species under the ESA (88 FR 25613). The status of this species is still currently under review.

There are six *population management units* (PMUs) designated for the Bi-State DPS. The solar site is partially located in the Mount Grant PMU. In the lower elevations of the Mount Grant PMU, the availability of quality nesting and brood rearing habitat are limiting factors. Habitat quality and productivity is better in the upper elevations of the PMU but is limited in overall extent (see Figure 3.8-2). The solar site does not contain species of sagebrush that support Bi-State sage grouse and is located in an area of unsuitable habitat and, therefore, this species is not expected to be present. The nearest mapped Bi-State sage grouse habitat is within 0.25 mile of the gen-tie at its closest point; however, the gen-tie at its closest proximity to the habitat is in a valley over 300 feet lower in elevation than the habitat. The area of mapped habitat, additionally, is of low-value or is transitional habitat and no leks are known to occur in this area (Figure 3.8-2).

Western Yellow-billed Cuckoo

The western yellow-billed cuckoo (*Coccyzus americanus*) is a migratory bird species, traveling between its breeding grounds in North America (Continental U.S. and Mexico) and its wintering grounds in Central and South America each spring and fall, often using river corridors as travel routes (USFWS 2014; Johnson et al. 2008).

Figure 3.8-2 Bi-State Greater Sage Grouse Population Management Units and Habitat Suitability



Source: (BLM 2016; NDOW 2015; 2017)

On October 3, 2014, the USFWS published a final rule (79 FR 59991) listing the western Distinct Population Segment (DPS) of the western yellow-billed cuckoo as threatened under the ESA. Western DPS yellow-billed cuckoos have historically bred in riparian areas across most of North America, from southeastern and western Canada throughout the continental United States to northern Mexico (Johnson, et al., 2007). Although population trend data is lacking, rough extrapolations of historic and current information suggest that the western yellow-billed cuckoo's habitat distribution, range, and population numbers have declined across much of the western United States over the past 50 years (USFWS, 2014). It is now only known to breed in isolated locations in Idaho, Wyoming, Colorado, Utah, Arizona, Nevada, California, and Sonora and Chihuahua in northern Mexico (Johnson et al. 2008; USFWS 2021).

Western yellow-billed cuckoos require structurally complex riparian vegetation with tall trees and a dense woody understory. They breed in large blocks of riparian vegetation, particularly in woodlands with cottonwoods and willows, usually not far from sources of water such as rivers, lakes, reservoirs, and wetlands. Habitat requirements for wintering are not well known but include brushy savanna edges, shrubby clearings and pastures, and woodlands near water. Critical habitat was designated in 2021 but does not include Nevada (U.S. Fish and Wildlife Service (USFWS) 2021). Three western yellow-billed cuckoo have been documented within the vicinity of the gen-tie. The nearest observation was in Mason Valley WMA in 2016 (Enders, Mark 2023). A pair of cuckoos was also observed further down the Walker River near the town of Schurz in 2013, which is on the other side of the Wassuk Range from the gen-tie. These observations indicate that the western yellow-billed cuckoo may utilize the Walker River corridor and have the potential to be present within the vicinity of the gen-tie where it crosses the river. However, the habitat within the gen-tie analysis area is of marginal quality for western yellow-billed cuckoo, and this species is unlikely to be present at this location.

3.8.3.6 Monarch Butterfly

The monarch butterfly (*Danaus plexippus plexippus*) is a federal candidate species for listing under the ESA and is a BLM sensitive species as well as a NDOW SGCN. After an extensive status assessment of the monarch butterfly in 2020, the USFWS determined that listing the monarch under the ESA is warranted but precluded at that time by higher priority listing actions. The monarch butterfly remains a candidate for listing and the USFWS reviews its status each year until they are able to begin developing a proposal to list the monarch.

Arid environments do not usually have vegetation communities with large numbers of nectar-producing plants, and this species would not be expected to occur in abundance within the Project site. However, larvae host plant species (narrowleaf milkweed [*Asclepias fascicularis*]) were observed within the gen-tie analysis area during surveys. No species of milkweed were observed during surveys of the solar site or access road analysis areas (Phoenix 2023b). There have been sightings of monarchs within the Mason Valley WMA where there is more milkweed present; however, these observations are from the 1980's. The most recent sightings from 2016 (including breeding monarchs) and 2020 have been around agricultural fields north and south of Yerington, well outside the vicinity of the Project.

3.8.4 Environmental Consequences

3.8.4.1 Methods

Direct effects to wildlife, including special status species, could occur from noise disturbance, harassment, entrapment, injury, and mortality, as well as changes in habitat use or behavior such as movement, foraging, or breeding. Indirect effects include changes in the characteristics or quality of habitat (e.g., loss, degradation, modification).

The Project would result in short-term, long-term, and permanent effects to wildlife. Short-term effects would be associated with Project construction and are not expected to persist beyond 5 years following the construction phase and restoration of temporary use areas. Long-term effects are expected during O&M for the 30-year duration of the Project. Permanent effects are expected in areas of complete removal of native vegetation (refer to *Section 3.7 Vegetation, Special Status Plants, and Noxious Weeds*). The term "permanent" accounts for the fact that plant communities in desert ecosystems could take a

century or longer to fully recover or may not at all. Long-term effects to wildlife beyond 30 years are difficult to predict due to the increasingly unknowable nature of species interactions and environmental variables over time.

3.8.4.2 Proposed Action

Construction Impacts

General Wildlife. Project construction would result in adverse impacts to native vegetation that provides habitat for wildlife. The Project would result in 3,420 acres of permanent ground disturbance for the solar site, access roads, and gen-tie. The CRMP SOP 6 (Common to All) requires vegetation disturbance to be limited to the minimum amount needed. The permanent loss of habitat for wildlife during construction would be locally, but not regionally, adverse due to the extensive amount of similar habitat in the Central Basin and Range Province, which covers approximately 42,486 square miles (27,191,040 acres), with 8,752 square miles (5,601,280 acres) in northern Nevada. Most wildlife would not be expected to remain on site during construction due to large areas of ground-disturbance, human presence, and vegetation removal.

Direct effects, such as injury or mortality of wildlife, may occur from contact with Project facilities and equipment during construction. Many animals are susceptible to visual, noise, and vibration disturbances caused by the presence of humans and construction equipment. Such disturbances could cause wildlife to alter foraging and breeding behavior and avoid suitable habitat; however, construction activities would be temporary. Construction disturbances could decrease individual animal fitness and lower the chances of survival or reproduction, potentially resulting in population-level adverse impacts that are harder to quantify without long-term demographic studies (Chock et al. 2021). Any disturbances to foraging or breeding, or direct harm to wildlife would be adverse. Mitigation measures to minimize disturbance or harm to wildlife include MM WILD-1, which requires the presence of an approved biologist and monitors on site during construction to ensure protection of wildlife; MM WILD-2, which requires the WEAP to include discussion of wildlife avoidance; and MMs WILD-3 and WILD-4, which would prevent injuries to wildlife in equipment or from vehicle collisions and require escape ramps and other escape methods in excavations and water storage ponds. Implementation of these mitigation measures would reduce the potential for adverse effects; however, disturbances and direct harm from Project construction would not be completely avoidable. Impacts would be short-term for the duration of construction and would not be expected to result in a notable loss of local wildlife.

Exposure to herbicides or other hazardous materials, such as oil or other petroleum products, could also directly affect wildlife species. Contact or ingestion of chemicals can not only kill wildlife but are also known to disrupt hormones in animals, potentially affecting behavior and the ability to reproduce. Direct harm or disruption of reproduction from hazardous materials could result in adverse impacts to wildlife. In accordance with the BLM regulations, only herbicides with low toxicity to wildlife would be used and would be applied in a manner consistent with their label requirements and agency guidance. Herbicides would only be stored, handled, and used in accordance with an approved Integrated Weed Management Plan and PUP that are required per a BLM ROW grant and in accordance with the BLM manuals and guidance provided in the Final PEIS for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007). Implementation of the BLM-required plans such as the SPCCP, Hazardous Materials and Waste Management Plan, and WEAP training would ensure proper use, storage, and spill prevention for hazardous materials. Adherence to the protocols for proper use, containment, and disposal of hazardous materials outlined in these plans would reduce the likelihood of exposure to wildlife and adverse impacts.

Construction would have the potential to indirectly impact wildlife in surrounding areas. Habitat loss and degradation from the introduction and spread of invasive species would reduce forage, shelter, nesting, and migration opportunities. This loss would cause species to rely more heavily on habitat in surrounding areas, which could increase competition for limited resources in those areas and could create barriers to gene flow. Loss of nesting habitat or burrows would cause wildlife to search for or dig new burrows or build new nests, subjecting them to stress and causing interruption to normal breeding periods, potentially

resulting in a loss of reproduction (Grodsky et. al 2017). Construction would alter disturbance regimes within the solar site, potentially facilitating the spread of invasive species, which in turn may alter species interactions (Lovich and Ennen 2011; Tanner et al. 2020). Increased invasive species cover can create highly flammable fine fuels across the landscape that increase the risk of wildfires and resulting habitat loss. Indirect effects from invasive species would be reduced through a BLM-required Integrated Weed Management Plan developed to control invasive species within the Project area and minimize spread into adjacent habitats. MM WILD-1 and invasive species management would reduce effects; however, unavoidable habitat loss and degradation would occur, and therefore effects would remain adverse.

Other MMs and applicable Western Solar Plan PDFs would be implemented to further minimize the direct and indirect effects to wildlife from construction. In accordance with Western Solar Plan PDF ER 2-1, a Site Restoration and Revegetation Plan would be developed to reduce the amount of habitat loss and accelerate recovery of natural habitats. Western Solar Plan PDF ER1-1 requires designation of a qualified biologist responsible for overseeing compliance with all PDFs related to the protection of ecological resources throughout all Project phases, particularly in areas requiring avoidance or containing sensitive biological resources. PDF ER1-1 also requires measures to ensure mitigation and monitoring of impacts on special status wildlife in coordination with appropriate federal and state agencies. The implementation of PDFs and MMs, as described above, would reduce the potential for adverse effects. However, construction would result in unavoidable habitat loss and disturbance to wildlife, and therefore adverse impacts would remain. Due to the amount of available habitat outside of the Project site, it is not expected that local wildlife populations would be meaningfully affected.

Big Game Species. The Project site is not within known ranges for bighorn sheep, and they are known to remain in higher elevations in the Wassuk Range. Pronghorn antelope are known to use habitats within the Project area for foraging, as the vegetation communities contain winter fat (*Krascheninnikovia lanata*), which is an important food source for these animals. Permanent security fencing installed around the Project site would interfere with the movement and habitat use by animals too large to fit through or under the fence, which includes pronghorn antelope. Pronghorn could still move around the site in similar habitats if they are travelling through the area. Concerns were raised over whether the gen-tie would impact migration of big game near the Mason Valley WMA. During construction, human presence could inhibit big game species from moving within the immediate area of work but not the entirety of the gen-tie development area, and individuals could move through areas not under construction. The Project would not impede access to important riparian areas or water sources, as the gen-tie over the Walker River would allow movement and the nearest springs are several miles from the Project solar site. The solar site is not a barrier to any water sources. Adverse impacts are not expected for bighorn sheep; however, adverse impacts could occur from loss of foraging habitat and movement barriers for pronghorn antelope. Impacts are not expected to conflict with the CRMP objectives for habitat management (BLM 2001, WLD-1–WLD-2); however, MM WILD-8 would be implemented to off-set the loss of foraging and some migration habitat for pronghorn antelope through compensatory mitigation that includes restoring natural springs used by pronghorn to the south of the Project site. The compensatory mitigation would be developed in coordination with NDOW.

Small Mammals. Desert kangaroo rats nest in burrows and are particularly susceptible to impacts from ground-disturbing activities, such as disk and roll and grading. Ground disturbance associated with construction of the Project could destroy burrows and directly harm or kill individuals, whose presence often goes undetected as they are nocturnal. The Project would result in reduced foraging opportunities for small mammals from vegetation removal associated with site preparation methods. In accordance with Western Solar Plan PDF ER 2-1, a Site Restoration and Revegetation Plan would be developed to reduce the amount of habitat loss and accelerate recovery of natural habitats, which would include the use of BLM-approved seed mixes that would contain grass species known to provide forage. Given the sparse detections of small mammals during trapping surveys, they are likely not present in large numbers within the Project site, and adverse impacts to species and population viability are not expected.

Bats. No roosting habitat for bats occurs on the solar site or along the access road because there are no caves, mines, cliffs, bridges, structures, or trees near a perennial water source to provide opportunities for

roosting. Potentially suitable foraging habitat for bat species is present on the solar site, but the habitat is of marginal quality due to the lack of any permanent water source. The gen-tie alignment crosses permanent water sources, and bats could occur in larger numbers in those areas. There is limited information on the effects of utility-scale solar development on bats; however, the Project would result in habitat loss and fragmentation, and it has recently been documented that overall bat activity is reduced at solar sites compared to previous levels prior to construction (Tinsley et al. 2023). Bats are nocturnal species and could also be adversely affected by artificial lighting associated with construction. Night lighting installed for safety purposes may create light pollution and disorient bats. Construction activities would primarily occur during daylight hours, some security lighting would be required at night during those periods. Large areas of similar foraging habitat are available adjacent the solar site, and construction-related lighting would be temporary. The Bird and Bat Conservation Strategy (BBCS) includes measures to detect and avoid or protect bats during construction to minimize effects in accordance with MM WILD-5. Adverse effects would be minimized.

Birds. *Golden Eagles.* Potential direct impacts on nesting golden eagles as a result of Project-related construction activities include increased anthropogenic disturbances, injury, or mortality due to collisions with Project equipment or vehicles, and abandonment of a breeding territory or nest sites. However, due to the distances from the Project site of all three golden eagle nesting locations and the steep topography around each nest, direct adverse impacts to nesting golden eagles would not occur. All six nests documented during the survey were located high on cliff features, 5 miles or more from the Project solar site. This location offers them shelter from anthropogenic disturbances (e.g., human presence and noise) associated with construction.

The solar site is characterized by flat topography and low-lying alluvial features and does not contain any suitable nesting habitat for golden eagles; however, golden eagles could forage within the Project site given the proximity to potential nesting sites. Potential direct and indirect impacts to foraging golden eagles include the loss of foraging habitat during construction and reduced prey species populations within foraging areas. Foraging behavior could also be affected by increased anthropogenic disturbances. Eagles are a wide-ranging species and use a variety of habitats for foraging, and large areas of undisturbed habitat in the greater area and nearby Wassuk Mountain range would be available. Foraging habitat within the Project solar site would be adversely affected. The gen-tie is proposed largely within an existing designated transmission corridor adjacent to other existing and proposed transmission lines and not within the steeper mountain ranges where golden eagle nests were found. As a linear facility, the gen-tie's construction would be localized at any one time and would not impact foraging or nesting golden eagles.

Migratory Birds. Construction of the Project could affect migratory birds by removing or altering 3,420 acres of potential migratory bird habitat from construction of the Proposed solar facility, gen-tie, and modifications to an existing access road. Active bird nests in shrubs and those near or on the ground could be directly affected during construction activities that cause ground disturbance and vegetation removal or crushing, which could result in nest abandonment, nest destruction, and loss of chicks or eggs. Grading, leveling, and disk and roll construction methods would reduce available cover, foraging areas, and nesting and perching structures and would likely result in displacement of bird populations and adverse effects. Construction activities also have the potential to cause visual and auditory disturbance, which could result in avoidance of otherwise suitable habitats. This disturbance could indirectly affect migratory birds by causing stress and increased energetic costs as birds may end up nesting and foraging in less suitable habitat. Direct and indirect impacts to avian species would be minimized with implementation of conservation measures to protect migrating and nesting birds through MM WILD-6, as well as CRMP SOP 9 (Common to All), and the BBCS. Measures include conducting ground-disturbing activities outside the migratory bird breeding season when practical or avoiding active nests if the work cannot be conducted outside this period (February/March through August) and conducting pre-construction surveys prior to vegetation clearing during the breeding season for nesting birds. If any occupied nests (those containing eggs or young) are found, an appropriate buffer around the nest site must be avoided until the young birds fledge. The buffers are based on specific requirements for each species or group, defined in the BBCS. Spatial buffers would be applied depending on the biological needs of the species and

susceptibility to anthropogenic disturbances and could vary with changes in site conditions. Project-related impacts on migratory and other special status bird species are not expected to result in a large reduction in population levels; however, displacement of species from the Project area may put pressure on adjacent habitats. Measures to protect migratory birds would reduce effects, but habitat loss and disturbance to birds would still occur and impacts would remain adverse. Due to the amount of available habitat outside of the Project site, it is not expected that local bird populations would be substantially affected.

Burrowing owls are unlikely to be present within the solar site and were not identified during Project call broadcast surveys specifically conducted to detect burrowing owls. Burrowing owls could occur in areas along the gen-tie. If burrowing owls occur along the gen-tie, preparation and construction methods could result in injury or mortality to adult owls, nestlings, or eggs that may occupy a previously undetected burrow. MM WILD-6 requires that burrowing owl surveys be conducted in areas of suspected owl presence (e.g., along the gen-tie) prior to construction following the USFWS protocol and that any nests be avoided by at least 250 feet until the young have fledged. Protection measures for burrowing owls would be included in the BLM-required BBCS and would minimize adverse impacts.

Bi-State Sage Grouse. No direct or indirect impacts would occur to Bi-State sage grouse or their habitat. Neither the solar site, nor the gen-tie are within suitable habitat for Bi-State sage grouse. Patches of identified low-quality/transitional habitat are located within 1 mile; however, no leks are known to occur in these areas, and the areas are at higher elevation than the solar site and gen-tie. At the closest point, the gen-tie is 0.25 miles from identified habitat; however, is at 300 feet lower elevation. Indirect impacts, such as visual disturbance from tall structures would not occur, since no leks have been found in this area. No indirect impacts to the habitat would occur since the disturbance for the gen-tie is limited to areas of construction. Dust would be limited from gen-tie construction and would not drift upslope. No direct or indirect impacts would occur to habitat or Bi-State sage grouse individuals.

Yellow-billed Cuckoo. No suitable habitat for the yellow-billed cuckoo is found within the solar site nor areas proposed for disturbance from construction of the gen-tie. Although never observed directly in the area of the gen-tie construction, if individuals were to be migrating along the Walker River, they could be disturbed by construction activities. Impacts to western yellow-billed cuckoo would be avoided with implementation of MM WILD-1 and MM WILD-6, which requires pre-construction surveys, biological monitoring, and implementation of a limited operating period if the species is found within 0.5 mile of work areas along the Walker River. With implementation of these measures, no impacts to western yellow-billed cuckoo would occur.

Pollinators and Monarch Butterfly. Desert communities found within the Proposed Project area support a highly diverse range of insect pollinators and plants with which pollinators have coevolved. Recent studies have shown that solar energy development negatively affects pollinators, including butterflies, bees, flies, and beetles (Steven M. Grodsky, Campbell, and Hernandez 2021). Disruption of pollinator populations may lead to cascading effects on biodiversity, including potential decreases in globally imperiled and highly valuable cacti populations dependent on insect pollination (Steven M. Grodsky, Campbell, and Hernandez 2021; Wagner et al. 2021). MM WILD-7 would require pre-construction surveys to include identification and avoidance of bee overwintering sites, which would reduce impacts to these resources. MM VEG-1 and the BLM-required Site Restoration and Revegetation Plan would include measures to restore temporary disturbance areas as quickly as possible once their use is no longer needed for construction, which would facilitate revegetation with some flowering plants for pollinators. However, large areas of flowering perennial vegetation, such as cacti and yucca, would be lost due to construction, and impacts to these species would be adverse.

Monarch butterfly are not expected to be present due to limited habitat for foraging within the majority of the Project site and lack of recent detections nearby, as well as the limited observations of milkweed species within the analysis area (only found within the gen-tie study area, near the Walker River).

Adverse direct and indirect impacts to monarch could occur if undetected milkweed plants are removed or crushed during construction, since monarch may be found near milkweed, and it serves as a larval host plant. MM WILD-7 would require pre-construction surveys to include identification of milkweed plants

and flagging for avoidance where possible. With the implementation of this measure, and the low likelihood of monarchs being present at the time of construction, adverse impacts to this species would not occur.

Operation and Maintenance Impacts

General Wildlife. O&M would result in long-term and permanent disturbance of habitat within the Project site. Impacts would include the loss of habitat and fragmentation, movement barriers, degradation of adjacent wildlife habitat, direct mortality, increased noise, dust and dust-suppression effects, light pollution effects, and increased fire risk as a result of introduction and spread of invasive weed species (Scott R. Abella, Gentilcore, and Chiquoine 2021; Jeanne C. Chambers et al. 2013; S.M. Grodsky, Tanner, and Hernandez 2020). The magnitude of ongoing disturbances to wildlife associated with O&M would be less than that during construction, since active equipment, human presence, and noise would be reduced. Other direct effects to wildlife could occur from permanent security fencing installed around the Project site, which would interfere with the movement and habitat use by animals too large to fit through or under the fence. Similar habitat occurs adjacent to the Project site, and affected individuals too large to pass through the fence would likely shift use to these adjacent areas. Smaller wildlife that can fit through or under the Project fences, such as rodents, reptiles, small mammals, and invertebrates, may still occupy the site; however, habitat quality would be dramatically altered by the loss of vegetation. Any other fences added for rangeland management (see Section 3.11 *Rangeland Resources*) would be in conformance with CRMP SOP 5 (Common to All).

As with temporary construction lighting, permanent lighting for operational safety of the Project could result in light pollution in foraging areas for nocturnal species. A Lighting Management Plan would be developed with designs for some security lighting during operation, in accordance with PEIS PDF VR2-2 (minimization of night-sky effects), to minimize the direct and indirect effects of night-lighting on wildlife. Long-term adverse effects from lighting to nocturnal wildlife species within the Project site and immediate vicinity would not be expected for the duration of the Project O&M, with implementation of the approved Lighting Management Plan.

Routine O&M activities are anticipated to result in slight increases in traffic along regional transportation routes as well as internal access roads, which could result in an increased risk of direct mortality of or injury to wildlife from vehicle strikes and increased disturbance from the dust, noise, and ground vibrations associated with vehicle use. However, due to the relatively low level of O&M-related vehicle use or disturbance, the risk of increased collisions is low. Additionally, the implementation of Western Solar Plan PDFs would minimize the risk of collisions and dust, noise, and vibrations generated from vehicle use. These measures include PDF ER2-1, which requires reduced speed limits and carpooling, and Western Solar Plan PDFs SR3-1, SR3-2, and AQC2-1, which require soil monitoring, stabilization, and other erosion and dust-control measures and implementation of a Dust Control and Air Quality Plan. Adverse impacts from O&M vehicle use would be reduced through these measures.

O&M activities would increase the likelihood of introduction and spread of invasive weeds, which can increase fire risk in wildlife habitat and result in habitat degradation on and off site. The Integrated Weed Management Plan and the Fire Management Plan would reduce the risk of fire and/or habitat degradation of surrounding habitat, but the Project would still likely result in a higher cover and density of invasive plant species within the Project area and in adjacent habitat over time. Even with these management plans, the potential for adverse impacts occurring from the spread of invasive species would remain.

Herbicides would likely be needed to control invasive species, and other hazardous materials could be used on site during operations (such as fuel) and could continue to expose wildlife to harmful substances. Herbicides would only be used in accordance with an approved PUP and in accordance with the BLM Manuals and guidance provided in the Western Solar Plan on vegetation treatments using herbicides (Abella 2010). Implementation of Western Solar Plan PDF HMW1-1 and the SWPPP, Hazardous Materials and Waste Management Plan, and WEAP would ensure proper use, storage, and spill prevention for hazardous materials. Adherence to the measures for proper use, containment, and disposal of hazardous waste outlined in these plans would reduce the likelihood of exposure to wildlife.

Big Game Species. During O&M, the solar site would not be available habitat for big game species due to the perimeter fence preventing access and movement through the site. Impacts to pronghorn are addressed under construction and the same impacts would persist through O&M regarding loss of habitat. The gen-tie is not expected to deter big game species or change behaviors in its vicinity. Transmission lines are already present in the area, including in hunting units near the Fort Churchill Generating Station. MM WILD-8 would reduce effects, which includes compensatory mitigation comprised of providing funding to NDOW to support restoration of Summit Spring and Buckbrush Spring south of the Project site that have been degraded by cattle and wild horses.

Small Mammals. Impacts to small mammals would be reduced during O&M as compared to those described for construction. No new ground disturbance is proposed during O&M, although the loss of perennial vegetation cover would result in reduced cover and foraging opportunities for small mammals for the life of the Project and beyond. The Site Restoration and Revegetation plan would include BLM-approved seed mixes that contain some species that provide sources of forage, such as grasses. Given the sparse detections of small mammals during surveys, it is likely that even fewer would occupy the Project site during O&M, thus minimizing potential for effects during the operations phase. A Raven Management Plan would also be prepared prior to issuance of a NTP for the Project.

Bats. Bat fatalities have been documented at numerous solar projects and studies have begun to investigate bat mortality in relation to solar developments. A recent study examined mortality rates at 13 solar sites across southern California, and determined collisions with solar infrastructure and fencing are the primary cause of death among bats and result in thousands of fatalities a year (Smallwood 2022). While the potential impact on bats is expected to be minimal given the lack of roosting features within or near the site, ongoing monitoring (to be described in the BLM-required BBCS) would address effects on bats from solar development. While these effects would be minimized to the extent practicable, adverse effects due to risk of collision and night-lighting would remain adverse.

Birds. *Golden Eagles and Migratory Birds.* Impacts would predominantly be related to foraging habitat loss, as described under Construction Impacts, as well as risks of collision with equipment and the gen-tie. Birds are susceptible to collision and electrocution associated with overhead power lines. The Project would include an overhead gen-tie line up to approximately 24.1 miles in length, part of which is located near the Walker River and Mason Valley WMA. Waterfowl, which fly low and are abundant in the area, could be impacted from collisions. Impacts associated with collision and electrocution would be minimized with implementation of Western Solar Plan PDF ER2-1 and CRMP SOP 19 (Common to All), which requires implementing current guidelines and methodologies in the design of transmission facilities to minimize the potential for avian species collision or electrocution. All overhead power lines would be constructed with avian-safe designs in accordance with APLIC suggested practices (APLIC 2006) and, to the extent practicable, tall structures would be sited to avoid known flight paths of avian species. APLIC measures, including use of marker balls over water crossings and in the vicinity of the Mason Valley WMA, would reduce impacts, but some avian deaths from collisions may be unavoidable. The Applicant would also be required to develop a BBCS, including an Avian and Bat Mitigation Monitoring Plan (ABMMP), in accordance with MM WILD-5. Monitoring would include overall annual mortality, species composition, and spatial differentiation based on established searcher efficiency and carcass persistence trials at the site. The BBCS would include monitoring these areas and adaptive management measures if higher than expected mortality is detected. Additional measures may need to be implemented in coordination with NDOW, the BLM, and the USFWS, as appropriate.

There is concern over the effect large solar installations can have on migrating birds, in particular waterfowl that may mistake the PV solar arrays for waterbodies and try to land (known as the “lake effect”). The lake effect theory was first described in Horváth et al. (2009) as the effects on bird species from *polarized light pollution* (PLP) produced by large-scale solar energy projects. PLP refers to highly and horizontally polarized light reflected from artificial surfaces, which alters the naturally occurring patterns of polarized light experienced by organisms in ecosystems. Utility-scale PV solar facilities may attract migrating waterfowl and shorebirds through PLP, whereby migrating birds perceive the reflective surfaces of PV solar panels as bodies of water and collide with the structures as they attempt to land on

the panels (Horváth et al. 2009; R. Y. Chock et al. 2021; Kagan et al. 2014; Smallwood 2022; Kosciuch et al. 2020; 2021). Many waterfowl species require waterbodies to take off and regain flight, which can result in their becoming stranded in habitats where they cannot survive. This hypothesis is being actively studied as the number and size of utility-scale (>20 MW) solar energy facilities dramatically increases across the southwestern U.S. (R. Y. Chock et al. 2021; Kosciuch et al. 2021; Smallwood 2022). While anecdotal reports support this theory, limited relevant research has been conducted to date to evaluate the attraction of PV facilities to migrating waterfowl or songbirds.

Impacts to migratory birds would be minimized through implementation of Western Solar Plan PDF ER3-1. This measure includes turning off all unnecessary lights to avoid attracting migratory birds and removing unoccupied nests from areas that may be dangerous to the species. All nests destroyed or removed during O&M would be reported to the BLM and USFWS, and some would require a permit before handling, such as those of raptors. The ABMMP included in the BBCS would include reporting fatalities associated with powerlines and PV panels as well as overall annual mortality, including species composition and spatial differentiation. Monitoring plans would be designed to account for seasonal differences and fatality events of rare species. The WEAP would be provided on a regular basis during operation to ensure the continued ecological awareness during all phases of the Project's life and would incorporate adaptive management protocols for addressing ecological changes over the life of the Project, should they occur. Adverse impacts to migratory birds during O&M may occur but would not be expected to affect species adversely at the population level.

Bi-State Sage Grouse. No impacts would occur to Bi-State sage grouse, as described under Construction.

Yellow-billed Cuckoo. No impacts to yellow-billed cuckoo would occur during O&M. As described under Construction, no yellow-billed cuckoo have been found in the vicinity of the Project; however, the gen-tie crosses the Walker River in one location. During operation, the gen-tie would not directly or indirectly impact yellow-billed cuckoo migration. The gen-tie would be installed above the riparian brush.

Pollinators and Monarch Butterfly. Impacts to pollinators would be similar to those described for construction and would largely result from the removal of native vegetation cover and reduced habitat for foraging. The Site Restoration and Revegetation Plan would include measures to reintroduce native plant species into temporary disturbance areas, including some flowering plants, to provide continued sources of forage throughout the O&M phase. While these measures would reduce the effects from habitat loss, some flowering perennial vegetation, such as prickly pear cacti, would be lost but could regenerate during operation. Impacts would be reduced through restoration but still could remain adverse. Milkweed along the gen-tie would not be further disturbed during O&M. No additional impacts to monarchs are expected.

Decommissioning Impacts

Decommissioning and site reclamation at the end of the life of the Project could result in short-term adverse effects to general wildlife and special status wildlife species within and adjacent to the Project site. Decommissioning is anticipated to only directly affect habitat that was previously disturbed during the Project construction and O&M phases and would likely result in fewer direct impacts due to reduced habitat likely at the time of decommissioning. Temporary disturbances to wildlife and special status wildlife species from noise, dust and dust suppression, ground vibrations, and humans and vehicles associated with decommissioning would be comparable to those from construction. The use of heavy equipment and other activities associated with decommissioning would result in impacts to wildlife similar to those described above for construction, including injury, mortality, or avoidance behavior.

Following decommissioning activities and removal of the perimeter fence, wildlife species would be able to access and move through the Project site. However, desert ecosystems can take decades to a century or more to recover from disturbance (Abella 2010), and long-term habitat quality would be degraded, which could have persistent adverse impacts on wildlife populations and adjacent habitat. Restoration following construction per the Site Restoration and Revegetation Plan and Western Solar Plan PDFs would set the Project site on a trajectory to regain native species cover and habitat function; however, restoration is a long, slow process in desert environments, and it would likely still take several decades following decommissioning for the site to regain full habitat function for wildlife (Lovich and Ennen 2011; Abella

et. al 2021). Even with PDFs and a Site Restoration and Revegetation Plan and Decommissioning and Site Reclamation Plan, the overall impacts to wildlife from decommissioning the Project would remain adverse, but given the scale of surrounding similar habitat, it is not expected that wildlife would be considerably affected.

Cumulative Impacts

A number of projects and other management actions in the region would contribute to cumulative impacts to wildlife, including other existing and proposed utility-scale solar development projects, transmission lines, and mining located on other BLM and private lands. Similar to the Project, these cumulative projects would involve ground disturbance and vegetation clearing and would also likely result in habitat degradation and disturbances to wildlife. The cumulative projects could result in increased fire frequency or intensity from a combination of abundant invasive plant fuels, higher likelihood of anthropogenic ignitions, and introduction of solar infrastructure with ecosystem effects, adversely affecting sensitive plant communities and wildlife (Abella et. al 2021; Chambers et al. 2013; Grodsky et. al 2020b).

Construction and O&M of the cumulative projects considered could also directly harm or kill wildlife or cause avoidance or other changes in behavior. Direct and indirect cumulative effects on wildlife could occur from herbicide use, dust and dust suppression, noise, lighting, spread of invasive species, and other changes in the area. Cumulative impacts to golden eagles could occur from aggregated loss of foraging areas. Security fencing around the perimeter of other solar development sites would be similar to that of the Project and would result in movement barriers for some wildlife across the region. The cumulative effects would be adverse. The Project would involve the use of equipment and vehicles that could directly or indirectly harm wildlife during construction and O&M and would result in habitat loss, also similar to the cumulative projects. The Project would contribute to the adverse cumulative effects on wildlife.

Implementation of various management plans and mitigations, including the Lighting Management Plan, PUP, and MMs WILD-1 through WILD-5, however, would reduce the Project's contribution to cumulative adverse effects.

3.8.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction Impacts

With the reduction in areas of permanent impacts through grading and a maximum threshold set for native perennial vegetation loss, Alternative 1 would result in reduced impacts to wildlife and special status wildlife species and habitat within the Project site. While the Project components would remain the same, this reduction in permanent disturbance areas (from 64 percent of the application area to ultimately, 35 percent) would allow for more areas of native habitat to remain undisturbed and allow for quicker recovery in disturbed areas. Larger areas of native plant communities would be preserved and reduced areas of heavy soil disturbance would likely reduce invasive species infestations and loss of the soil seed bank. Natural plant recruitment would be likely to occur in areas constructed using drive and crush. The duration of disturbance to wildlife from construction activities (e.g., noise, dust, human presence, hazards from equipment and vehicle use) would be similar as for the Proposed Action (with an approximate time extension of 2 months), but the intensity would be reduced due to smaller areas of vegetation removal and ground disturbance. Reducing disturbance would also help to preserve functional wildlife habitat and reduce the potential for the introduction of invasive weeds and fugitive dust from construction. Ground disturbance would still be expected to adversely affect burrowing species and ground-nesting birds; however, Alternative 1 would benefit these species by minimizing habitat loss and allowing some level of continued nesting and burrowing within the Project site as compared to the Proposed Action. Larger areas of functional habitat would also support prey species for predators (e.g., coyotes and foxes) and raptors, including golden eagles. During Project O&M, fenced corridors would be maintained throughout the Project site, which would remain open to allow larger animals, such as big game species, to move through. This feature would increase the availability of the site for migration of species that would be too large to access the site under the Proposed Action.

This alternative would reduce the overall adverse impacts to wildlife and special status species from the development of the solar site but would not eliminate them. All Western Solar Plan PDFs, the CRMP SOPs, MMs, and management plans required by the BLM for mitigating negative impacts to wildlife and special status species from Project construction would remain the same as those identified for the Proposed Action.

Operation and Maintenance Impacts

During the 30-year Project lifespan, vegetation would be maintained throughout the solar site and would provide wildlife habitat. Because more native vegetation would be preserved and/or restored during O&M, more vegetation maintenance (i.e., trimming) could be required under this alternative, which could impact wildlife in the Project site. Vegetation would be trimmed as needed to prevent interference or safety issues with the solar array components, which would also reduce cover and forage opportunities. While there is some concern that preserving more areas of habitat could increase the potential for harm to wildlife from the solar facility (e.g., collisions with equipment or disturbance during maintenance activities), the long-term benefits of habitat preservation and reduced fragmentation beyond the Project lifespan outweigh the risks. Reduced disturbance areas would require less dust abatement and herbicide use, and Western Solar Plan PDFs for the protection of wildlife would be adhered to. These measures include PDF ER 3-2, which requires project proponents to manage projects to minimize impacts to wildlife during O&M, employing an adaptive management strategy as necessary and approved by the BLM.

Decommissioning Impacts

Decommissioning under Alternative 1 is anticipated to affect areas previously disturbed during Project construction. Decommissioning would result in direct and indirect impacts to wildlife and special status wildlife species similar to those described for construction for this alternative. With less impactful construction methods, vegetation communities would likely recover more quickly during O&M, resulting in more areas of suitable habitat and thereby increasing potential for direct impacts to wildlife during decommissioning. These impacts would be short-term, and site reclamation would be more successful due to fewer areas of permanent disturbance. Habitat within the Project area would recover more easily after decommissioning than under the Proposed Action (Abella 2010; Chambers et al. 2013; Hernandez et al. 2014; Lovich and Bainbridge 1999). Even though short-term impacts could be greater during decommissioning under this alternative, restoration of these habitats would likely be more successful, with reduced long-term impacts to wildlife habitat. Implementation of the Site Decommissioning and Reclamation Plan and Western Solar Plan PDFs as described for the Proposed Action would further reduce potential adverse effects on wildlife from decommissioning.

Cumulative Impacts

Alternative 1 would still have adverse impacts, but the reduced Project impacts would result in fewer cumulative effects on wildlife and habitats within the analysis area. Because the anticipated recovery time post-Project is expected to be much less for this alternative (5–10 years as opposed to hundreds of years), cumulative adverse impacts to the area (specifically, wildlife habitat) would be reduced over time. Retaining vegetation would also improve habitat resiliency for adapting to climate change, as compared to the Proposed Action.

3.8.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Construction, O&M, and decommissioning impacts from this alternative would be the same as described for the Proposed Action for the solar site and gen-tie. Differences in impacts could occur from the use of supplemental access routes. These routes have already been disturbed, and habitats adjacent to the roads would not be expected to provide high quality habitat for wildlife. No upgrades or new disturbance would be associated with the use of supplemental access roads, so there would be no direct disturbance to wildlife habitat from use. However, the use of additional roads would disperse traffic within the Mason Valley and could increase disturbances to wildlife from noise and dust and could increase the risk of vehicle collisions. Because these roads are currently used and maintained, it is unlikely that these effects would be noticeable beyond existing conditions. The routes would only regularly be used as supplemental

access during Project construction, which would be short-term (approximately 16 months), so any impacts from increased traffic on these routes would be temporary. The supplemental routes would not be used during O&M, so no additional impacts to wildlife would occur during O&M. Depending on the timing, supplemental access may be used during decommissioning, as well, but is not expected to result in impacts beyond those of construction. This alternative would contribute to cumulative adverse impacts to wildlife as described for the Proposed Action.

3.8.4.5 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Construction, Operation and Maintenance, and Decommissioning Impacts

Construction, O&M, and decommissioning impacts from this alternative would be the same as described for the Proposed Action for the solar site and the access road. The gen-tie would be reduced from a 24.1-mile-long line from the solar site to the Fort Churchill substation to a 0.54-mile-long line extending from the eastern boundary of the solar site to a new switching station under the Greenlink West line. This would result in just under 12 acres of permanent disturbance to habitat for wildlife, representing a reduction of 92 acres of permanent disturbance and 100 acres of temporary disturbance to habitat compared with the Proposed Action. Direct and indirect impacts to wildlife from construction, O&M, and decommissioning would be reduced under this alternative given the much smaller impact footprint and length of the gen-tie. This alternative would also avoid disturbance and operation of a transmission line near sensitive riparian habitats along the Walker River and the Mason Valley WMA, eliminating potential impacts to golden eagle, migratory birds (including western yellow-billed cuckoo), bats, monarch butterflies and pollinators, and big game species in that area.

Cumulative Impacts

Cumulative impacts to wildlife would be similar to the Proposed Action. There would be no construction of the 24.1-mile gen-tie line, which would reduce the Project's contribution to native vegetation disturbance and removal within the Mason Valley. The difference in impacts would be small as the solar field would contribute the largest cumulative loss of habitat within the analysis area.

3.8.4.6 No Action Alternative

Under the No Action alternative, the Project would not be constructed, and existing land uses would continue. The BLM would continue to manage the land consistent with the CRMP. There would be no impacts to wildlife from Project implementation, and existing habitat conditions and trends would remain.

3.8.4.7 Relevant Western Solar Plan Programmatic Design Features, the CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Western Solar Plan Programmatic Design Features

PDFs from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to wildlife:

- AQC 2-1
- ER1-1, ER2-1, ER3-1, ER3-2, ER4-1
- HMW1-1
- SR2-1, SR3-1, SR3-2, SR4-1, SR4-2, SR4-3
- VR 2-2

The CRMP Standard Operating Procedures

SOPs from the CRMP are listed in Appendix B. The following SOPs were identified for the protection of wildlife resources:

- Common to All SOPs 5, 6, 9, 19, 22

Management Plans and Mitigation Measures

The following management plans required by the BLM ROW grant would be relevant and implemented during Project construction, O&M, and decommissioning to minimize impacts to wildlife resources:

- Site Restoration and Revegetation Plan (Draft available on the Project website)
- Integrated Weed Management Plan (Draft available on the Project website)
- Workers Environmental Awareness Program
- Lighting Management Plan (Draft available on the Project website)
- Dust Control and Air Quality Plan (Draft available on the Project website)
- Hazardous Materials and Waste Management Plan
- Bird and Bat Conservation Strategy (Draft available on the Project website)

The Project would comply with the following mitigation measures to minimize adverse impacts on wildlife resources:

MM WILD-1: Biological Monitoring

The Applicant shall designate a BLM-approved biologist to be responsible for overseeing compliance with mitigation measures related to the protection of ecological resources throughout all Project phases, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species. Additional qualified biological monitors may be required on site during all Project phases as needed to ensure protection of sensitive resources.

MM WILD-2: Worker Environmental Awareness Program

WEAP training shall include identification and protection of ecological resources, including knowledge of mitigation measures required by federal, State, and local agencies.

MM WILD-3: Elimination of Wildlife Hiding Locations

The number of areas where wildlife could hide or be trapped (e.g., open sheds, pits, uncovered basins, laydown areas) shall be minimized. For example, an uncovered pipe that has been placed in a trench shall be capped at the end of each workday to prevent animals from entering the pipe. If a special status species is discovered inside a component, that component must not be moved or, if necessary, moved only to remove the animal from the path of activity until the animal has escaped. Workers shall not approach or feed wildlife.

MM WILD-4: Elimination of Conflicts with Wildlife

Access roads shall be appropriately constructed, improved, maintained, and provided with signs to minimize potential wildlife/vehicle collisions and facilitate wildlife movement through the Project site. Project vehicle speeds shall be limited in areas occupied by special status animal species. Appropriate speed limits shall be determined through coordination with federal and State resource management agencies. Traffic shall be required to stop to allow wildlife to crossroads. Unless authorized, personnel shall not attempt to move live, injured, or dead wildlife off roads, ROWs, or the Project site. Honking horns, revving engines, yelling, and excessive speed are inappropriate and considered a form of harassment. If traffic is being unreasonably delayed by wildlife in roads, personnel shall contact the Project biologist and security, who shall take any necessary action. Pet animals shall not be permitted on the Project site.

If any approved-PUP allowable chemicals are used in the construction-water storage ponds that are not bird or wildlife compatible, or if injuries to birds occur due to increased flocking at the ponds, the ponds shall be fitted with exclusion devices such as floating balls or fencing. Textured material shall be placed on the bottom of the ponds to minimize the likelihood of wildlife drowning.

MM WILD-5: Bird and Bat Conservation Strategy Requirements

The BBCS shall include a robust systematic monitoring and adaptive management plan to assist in avoiding and minimizing Project impacts on migratory birds. The monitoring shall include overall annual mortality, species composition, and spatial differentiation based on established searcher efficiency and carcass persistence trials, being established through other studies at solar facilities, at the site and shall be designed to account for seasonal differences and fatality events of rare species.

MM WILD-6: Nesting Bird Avoidance and Minimization

Habitat-altering activities shall be avoided during bird breeding season (February 15–August 31) to the extent possible. If a Project-related activity must occur during the breeding season, a qualified biologist shall survey the area for nests immediately prior to commencing construction activities. The surveys shall include burrowing and ground-nesting species in addition to those nesting in vegetation. If any active nests are found, an appropriately sized buffer area shall be established in coordination with the BLM and maintained until the young birds fledge. This buffer shall be required to connect to another suitable undisturbed habitat. The above dates are a general guideline, and any active nests observed outside of this range shall also be avoided. If burrowing owls are suspected (e.g., along the gen-tie), pre-construction surveys shall be conducted in accordance with the USFWS's latest burrowing owl guidance. If an active nest is identified, construction activities shall cease within 250 feet of the burrowing owl nest location to prevent disturbance until the chicks have fledged or the nest has been abandoned, as determined by a qualified biologist. Buffers may be increased or reduced as needed with the approval of the BLM and USFWS. For western yellow-billed cuckoo, a limited operating period (LOP) shall be implemented from June through August if this species is located within 0.5 mile of work areas during pre-construction surveys or monitoring. All construction activities within 0.5 miles shall cease until the LOP has ended, or a qualified biologist has determined the species is no longer present.

MM WILD-7: Protection of Native Pollinators and Monarch Butterflies

Prior to construction, pre-construction surveys shall include identification of locations of bee overwintering sites and milkweed (*Asclepias* spp.). Ground disturbance or noise shall be avoided near bee overwintering sites, particularly during peak foraging and breeding. Milkweed shall be flagged for avoidance. Herbicides with long residual toxicities and long-lived toxic nitroguanidine neonicotinoids shall not be used within the Project area, and herbicides shall only be applied during appropriate weather windows (wind <10 mph, in mornings or evenings or when cool temperatures reduce likelihood of evaporation). Seed mixes used for restoration shall include species of flowering plants to provide continued sources of foraging for pollinators.

MM WILD-8: Pronghorn Antelope Compensatory Mitigation

The Applicant shall work with NDOW to provide funding to support restoration of two springs south of the Project site that have been degraded by cattle and wild horses, including Summit Spring and Buckbrush Spring. The funding shall be applied towards upgraded fencing and development of water troughs for horses and cattle outside the fencing. All work may require its own NEPA analysis and the appropriate BLM authorization/decision.

3.8.4.8 Irreversible, Irretrievable, and Residual Impacts

Irreversible or irretrievable impacts are those that cannot be reversed or recovered. The Proposed Action would result in irreversible or irretrievable impacts on up to 3,420 acres of wildlife habitat across the development area. Alternative 1 would reduce the long-term loss of that habitat to approximately 1,903 acres. Site reclamation, even with substantial effort, is not expected to restore these impacted areas to pre-Project conditions. Restoration could take decades to centuries on a project of this size (especially in an arid environment), and repeated restoration efforts would be necessary. Many species, such as cacti and other perennial vegetation, would not be expected to recolonize the site, and changes to native species composition and habitat would be permanent. Permanent adverse impacts to wildlife habitat would remain, even with mitigation measures, but Alternative 1 would substantially reduce the impacts in comparison to the Proposed Action.

Residual impacts to wildlife would occur within the Project area. The area would be maintained with a perimeter security fence for the duration of the Project, which would contribute to habitat fragmentation for larger species not able to access or move through the site. Residual impacts under the Proposed Action also include the long-term alteration of over approximately 3,420 acres of native wildlife habitat, which would reduce overall regional habitat. Indirect impacts to wildlife habitat from the Project (e.g., fugitive dust, spread of invasive weed species) would persist even with the Western Solar Plan PDFs, the BLM-required management plans, and MMs. While these measures would reduce impacts for the duration of construction, O&M, and decommissioning of the Project, they would not eliminate them. Alternative 1 would substantially reduce the residual impacts as compared to the Proposed Action.

3.9 Water Resources

3.9.1 Introduction

This section presents the potential impacts on water resources from construction, O&M, and decommissioning of the Project. The water resources within the Project area include surface water and groundwater. Both surface waters and groundwater are managed through a variety of State and federal rules and regulations pertaining to the quantity and quality of the waters and through a program of water rights pertaining to the distribution of water resources.

The information in this section is based on the following studies:

- Preliminary Drainage Study: Libra Solar Project, Mineral County, Nevada, June 16, 2023 (Westwood 2023a).
- Libra Solar Project: Informational Summary of Water Rights, Supply, and Use, June 2023 (Panorama 2023).
- Draft Groundwater Impact Analysis Report, Libra Solar Project, Mineral County, Nevada, June 2023 (West Yost 2023).
- Aquatic Resources Delineation Report (Phoenix 2022).

Surface and groundwater are managed under the following regulations.

- All waters in Nevada are public property and are subject to the laws described in NRS Chapters 532 through 538.
- The Nevada Division of Water Resources (NDWR), led by the State Engineer, is responsible for managing surface and groundwater resources, including overseeing water right applications, appropriations, and intercounty and interbasin transfers (NDWR 2010).
- The Clean Water Act (33 USC §1251–1387) is the primary law protecting water quality in surface waters by limiting polluting discharges.
- Executive Order 11990 Protection of Wetlands provides additional protections to wetlands (OFR 1977b).
- Executive Order 11988 Floodplain Management provides additional protections to floodplains (OFR 1977a).
- Mineral and Lyon counties participate in the National Flood Insurance Program created through the National Flood Insurance Act of 1968.
- Mineral County Code Section 17.37.020 (L)-(M).

3.9.2 Analysis Area

The analysis area for surface water resources, including waters potentially within U.S. Army Corps of Engineers (USACOE) jurisdiction under the Clean Water Act, consists of the 5,141-acre solar site, the entire gen-tie alignment, the access roads, and downstream areas in the Mason Valley. This analysis area considers all anticipated surface-water-impacting activities associated with the Project. The analysis area

for groundwater and water consumption consists of the Project area and the Mason Valley Hydrographic Unit (Basin 9-108) (Figure 3.9-1), also referred to as the Mason Valley Hydrographic Basin, which is bounded by the Desert Mountains to the north, the Wassuk Range to the east, the Cambridge Hills and Gray Hills to the south, and the Singatse Range to the west.

3.9.3 Affected Environment

3.9.3.1 Surface Water

Onsite Conditions

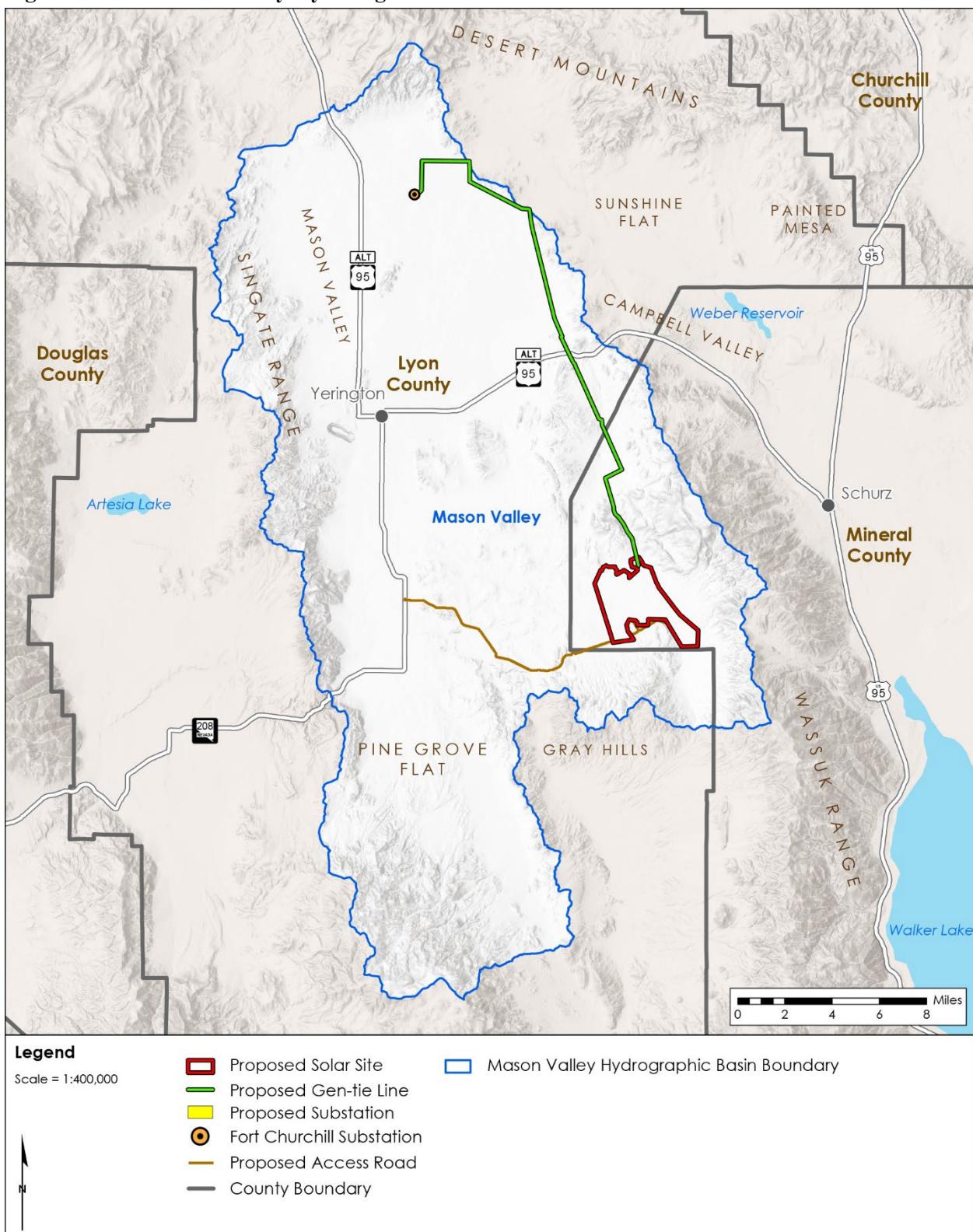
The Project solar site is located on Black Mountain Well and Pumpkin Hollow Hydrologic Unit Code (HUC)-12s,⁴ and is at the foot of Black Mountain. The solar site is relatively flat with slopes of less than 3 percent; however, this slope is exceeded in some locations. Many braided washes flow westward through the solar site, including washes that originate on the solar site. All washes within the analysis area have an ephemeral flow regime, only conveying flow during heavy precipitation events (see Section 3.3 *Air Quality and Climate Change* for a description of climate); however, some of the washes may also convey snowmelt in years with heavy snowfall. The ephemeral drainages found along the access road and solar site have shallow gradients, and banks are comprised of silty or sandy sediment. No evidence of groundwater discharges to the surface, such as from springs or seeps, has been observed during field studies within the solar site. A cluster of active springs are located between the Gray Hills and the Wassuk Range, about 2.5 to 3.5 miles southeast and east of the solar site. These springs drain groundwater from the fractured basement rocks of the Wassuk Range (West Yost 2023).

The access road would cross the East Walker River, a perennial river, as well as two irrigation ditches, approximately 0.5 mile east of the intersection with SR 208. This area is near an existing residence and has a well-developed riparian corridor around the river. The remainder of the access road would cross numerous dry washes, including a large dry wash located approximately 1.9 miles east of the intersection of East Walker Road with Reese River Road, along Reese River Road. The gen-tie would also cross numerous ephemeral drainages and the main stem of the Walker River in its northern extent.

Jurisdictional Waters

An Aquatic Resources Delineation Report (Phoenix 2022) has been provided to the USACOE and is awaiting approval. During the initial field delineation, conducted in June 2022, no wetlands were identified along the surveyed areas, which included the solar site and the access road. However, 520 ephemeral desert wash channels (non-relatively permanent water [RPW]) with ordinary high watermark (OHWM) characteristics were identified within the solar site and access road buffer. Three hundred and ninety-three (393) of these features, totaling 562,520 linear feet, were identified within the Project solar site and access road. One hundred and twenty-seven (127) of these features, totaling 7,555 linear feet, were within the access road buffer. The main OHWM indicators include change in sediment texture, change in vegetation cover, and presence of bed and bank. The washes have low vegetation cover due to storm discharge events, lack of developed soils, and well-drained coarse soil textures that lack soil moisture. Species found within the dry washes were also found in adjacent upland habitats.

⁴ Watersheds are delineated by USGS using a nationwide system based on surface hydrologic features. This system divides the country into 22 regions (2-digit), 245 subregions (4-digit), 405 basins (6-digit), ~2,400 subbasins (8-digit), ~19,000 watersheds (10-digit), and ~105,000 subwatersheds (12-digit). A hierarchical hydrologic unit code (HUC) consisting of 2 additional digits for each level in the hydrologic unit system is used to identify any hydrologic area.

Figure 3.9-1 Mason Valley Hydrologic Basin

The gen-tie alignment was surveyed in June 2023, along with the proposed access road improvements. Nine wetlands totaling 5.4 acres were delineated within the northern part of the gen-tie alignment west and east of the East Walker River. These features are defined as palustrine emergent wetlands and palustrine shrub-scrub wetlands, which are non-riverine wetlands characterized by the presence of standing water or saturated soil. In addition to these wetland features, 251 streams totaling 91,958 linear feet and 19.2 acres were delineated within the gen-tie and additional access road survey areas. All of the streams appeared to be ephemeral washes except for the East Walker River, which is perennial.

The washes and irrigation ditches in the basin drain towards the Walker River, but not all meet the Walker River. The Walker River originates in the Sierra Nevada Mountains in California and flows over 60 miles until it enters Walker Lake in Nevada, which is a terminal lake. The East Walker and Walker rivers originate in California, and thus are jurisdictional, navigable waters. However, the washes within the solar site and that cross Reese River Road are not known to be jurisdictional as they lose their banks and spread over the surface to the west of the Project area. Once the drainages lose their bed and banks, there is no longer a direct hydrologic connection to the East Walker or Walker Rivers. A hydrologic nexus to the Walker River, therefore, was not identified for the washes within the solar site.

Jurisdictional waters are likely limited to the northern portion of the gen-tie, within the Walker River WMA and where it crosses the Walker River. Additional information on the surface waters found in the Project area (including the access road, solar site, and gen-tie) are included in the Final Aquatic Resources Delineation Report (Phoenix 2022).

Floodplains

The Federal Emergency Management Agency (FEMA) has not completed a study to determine flood hazards for the Project area; the Project is covered by Flood Insurance Rate Map (FIRM) panels 32032C0300C and 32021C0500C. The Project area contains areas of FEMA Zone D flood hazards. FEMA Zone D areas are where flood hazards are possible but are undetermined as no flood hazard analysis has been conducted. No preliminary or pending FEMA changes are proposed within the Project area.

3.9.3.2 Groundwater

Groundwater Resources

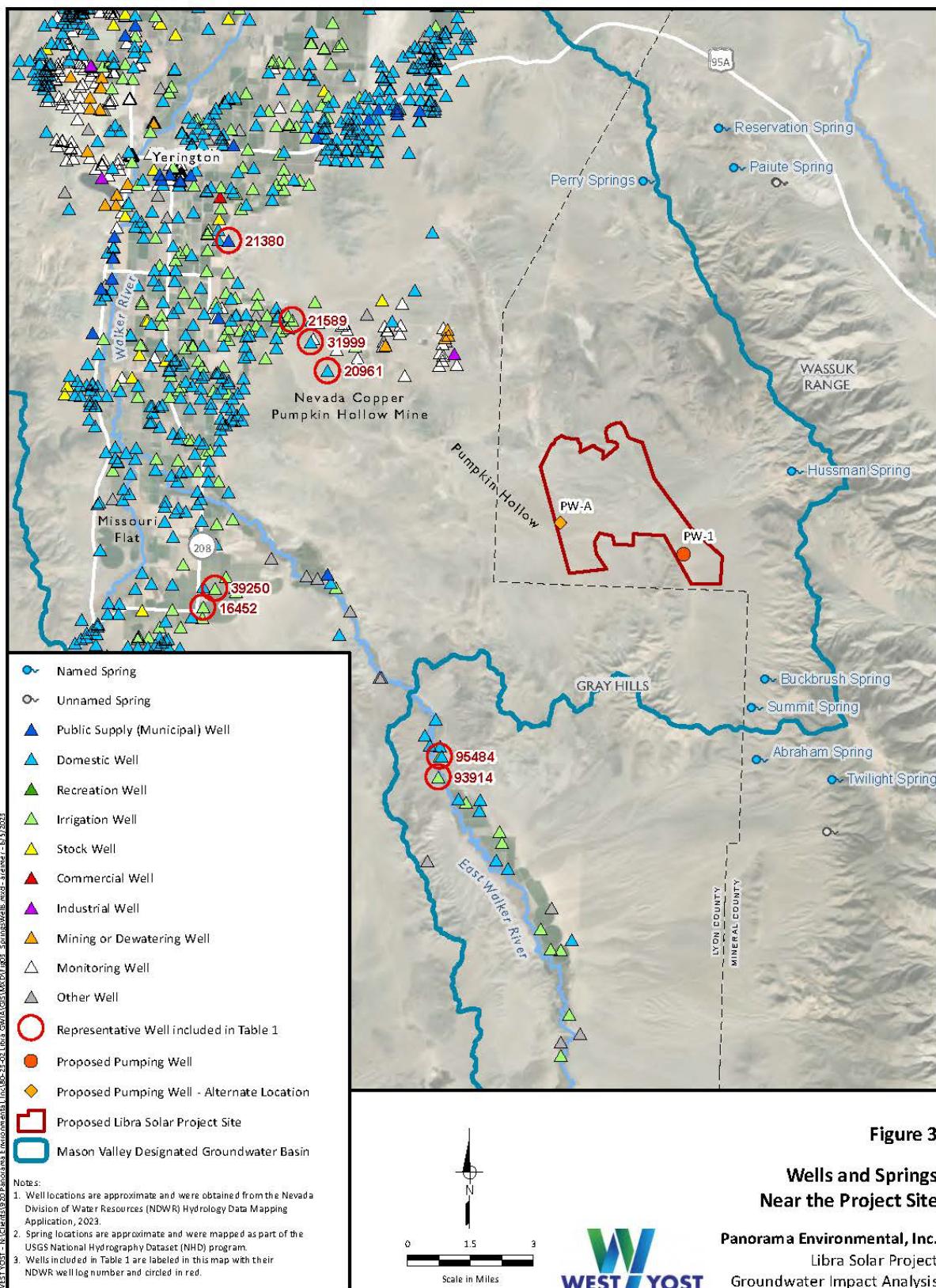
Regionally, groundwater flows northward through the Mason Valley Hydrographic Unit, following the flow direction of Walker River (Huxel and Harris 1969). Groundwater movement within the Mason Valley Hydrographic Unit is primarily controlled by topography and flows from the exposed mountain blocks towards the center of local flats and valleys, and ultimately towards the Walker River.

Groundwater through the Project solar site flows toward the north and west. Faults in the area may function as either barriers or conduits for groundwater flow.

The main source of groundwater recharge in the basin is the percolation of irrigation water derived primarily from diversions of the Walker River, with some local recharge from snowmelt in the Wassuk Range. Discharge from springs northeast of the Buck Brush Spring Fault and within the Wassuk fault block not used under existing water rights for grazing stock water, either pond or flow northwest through the valley fill and percolate to recharge the groundwater aquifer. Surface water seeping through the Walker River channel also contributes on a smaller scale to aquifer recharge, and so does about 1 percent of the annual precipitation.

Irrigation makes up about 86 percent of groundwater usage in the Mason Valley Hydrographic Unit (NDWR 2022), followed by industrial use (4.3 percent), recreation (4 percent), and municipal supply (< 2 percent). The city of Yerington pumps its municipal water through four public supply wells approximately 18 miles northwest of the Project solar site. Groundwater wells nearer to the Project area are located along the East Walker River, along the mainstem Walker River, and at the Nevada Copper Pumpkin Hollow Mine (as shown in Figure 3.9-2). Most of these wells are used for monitoring or dewatering and are constructed within the basement bedrock.

Figure 3.9-2 Groundwater Basins in the Proposed Project Area



The depth to groundwater highly varies across the Mason Valley, with water levels nearest to the surface found in proximity to the Walker River. The closest monitoring wells to the Project area are located on the Pumpkin Hollow Copper Mine, north of the Project solar site. These monitoring wells show a decline in groundwater levels over the last decade, with levels in 2022 at 300 to over 500 feet or deeper for the southernmost wells closest to the Project solar site (NDWR 2023). Groundwater under the solar site is also expected to be several hundred feet below ground surface (bgs). Further west and north in the basin, near the East Walker and Walker Rivers, groundwater is only a few feet bgs. Additional detail is provided in the Groundwater Impact Analysis Report (West Yost 2023).

Groundwater Rights

Overview. Nevada water rights are guided by two principles: the prior appropriations doctrine and the concept of beneficial use (NDWR n.d.)⁵. A water right establishes an appropriation amount and priority date. Water rights are treated as both real and personal property and can be transferred independent of land ownership rights. (Hecox 2001) The amount of groundwater available for extraction, and therefore permitting, is based on the *perennial yield*, which is the maximum amount of groundwater that can be salvaged (i.e., extracted) each year over the long term without depleting the groundwater reservoir and that does not exceed the natural recharge to the aquifer. The Mason Valley Hydrographic Basin is critical management area under N.R.S. § 534.110, referred to as a designated basin, having an estimated perennial yield of 25,000 acre-feet (NDWR 2022) but committed groundwater resources of 145,346 acre-feet per year. No new allocations of surface water or groundwater are available from this basin. This means that the Applicant must find a water right from existing allocations or from sources outside the basin.

Temporary Uses and Transfers in Designated Basins. One method of obtaining water for the Project includes leasing or buying water rights and requesting a temporary change of use. NRS §533.345 specifically allows temporary or permanent change of the direction, manner, or use of existing groundwater rights, creating a pathway by which new water uses could be accommodated in a designated basin including temporary changes up to 3 years for renewable energy generation projects.

Intercounty Transfers. Another pathway to acquiring water for the Proposed Project is obtaining water from other counties or basins. Using this path requires county notification, public hearings, and ultimately approval from both the State Engineer and counties involved, per NRS §533.363 (NDWR 1999).

3.9.4 Environmental Consequences

3.9.4.1 Methods

Surface Water

Surface water flow was modeled using FLO-2D, an industry-accepted physical process model appropriate for estimating hydrological parameters based on input parameters including rainfall, topography, and groundcover. A FLO-2D model with 50-foot grid cells was utilized to model the watershed within and directly impacting the Project solar site. A FLO-2D model with 100-foot grid cells was used to model the larger area outside of the Project solar site that impacts the access road and gen-tie alignment. The elevation data that was used was a blend of 10-meter digital elevation map (DEM) data from the USGS Data Gateway, NextMAP Intermap 5-meter data, 5-meter DEM data from USGS Scientific Data Center, and 1-foot flown data. The 10-meter DEM data from Data Gateway was used for topographic coverage of the central 45,000 acres surrounding the access roads, the 5-meter DEM data from the Scientific Data Center was used for topographic coverage of the eastern 98,000 acres, and the 1-foot flown data was used to cover the solar site. This data was exported as a single digital terrain model, which is read directly into FLO-2D to provide the drainage volume and velocity baseline conditions and conditions with Proposed

⁵ Examples of beneficial uses include irrigation, mining, stock watering as well as recreation, commercial, industrial, and municipal uses.

Action and alternatives. The assumptions and model inputs of the analysis are detailed in the Preliminary Drainage Study (Westwood 2023a).

Groundwater

The potential effects of the Project on groundwater, primarily from groundwater pumping for construction, O&M, and decommissioning water, were assessed using the USGS groundwater model WTAQ (Barlow and Moench 1999). WTAQ is a computer program that implements an analytical solution for drawdown due to pumping from a partially penetrating well in a homogenous, anisotropic aquifer. The program provides drawdown results at discrete points in time and space. It was used to prepare contour maps of the simulated groundwater level drawdown at the end of construction of the Project and hydrographs of the simulated groundwater level drawdown and recovery induced by Project pumping during construction, O&M, and decommissioning. The assumptions and model inputs of the analysis are detailed in the groundwater impacts analysis report (West Yost 2023).

3.9.4.2 Proposed Action

Construction and O&M Impacts

Surface Water. Surface grading and removal of vegetation would disturb ephemeral washes and alter drainage patterns during both construction and the O&M phase of the Project. Potential impacts include (1) changes in water quality, primarily from transport of sediments, and also due to potential chemical releases from equipment or herbicides; and (2) increased risks of flooding on-site and downstream from increased surface flows to the major washes.

Water Quality and Sedimentation. Sedimentation risks are highest during construction, as construction involves continuous soil disturbance. In accordance with the Construction Stormwater General Permit NVR100000, a SWPPP would be prepared and implemented during construction, which would include installation of site-specific erosion control BMPs as part of the site preparation process. Western Solar Plan PDF SR2-1 also requires BMPs to minimize soil erosion (BLM and U.S. DOE 2012, app. A). BMPs include, but are not limited to, controlling water runoff and directing it to temporary settling basins during construction; minimizing vegetation removal only to areas of active construction; recontouring and revegetating Project roads that are no longer needed to increase filtration; and using temporary stabilization (e.g., erosion matting blankets, soil stabilizing agents such as dust palliatives) for areas that are not actively under construction and along high use unpaved roads. BMPs would be implemented throughout construction to reduce erosion and subsequent sedimentation of washes. The washes level out to sheet flows (i.e., lose their beds and banks) downstream of the solar site before reaching any water bodies, including before reaching the manmade feature, High Ditch. Accordingly, increased sediment transport is not anticipated to have adverse effects during construction. Western Solar Plan WR1-1 would require that Project site drainage, erosion, and sedimentation related to stormwater runoff is minimized, and the CRMP SOPs 4, 7, 10, and 18 (Common to All) require rehabilitation and restoration of disturbed areas to minimize soil erosion (BLM 2001). To further reduce potential for effect, MM SOILS-1 would require that the Applicant implement phasing of disturbance in order to minimize the amount of area of destabilized soils at a time. Phasing would include ground disturbance and development of roads, pads, and infrastructure in up to 1,000-acre units at a time. The areas would likely be developed to the point that array posts are installed, and then the ground stabilized, before opening the next 1,000 acres of development. This measure would reduce the amount of soils subject to water erosion and thus downstream sedimentation.

Widening of Reese River Road and creation of road spurs and access roads for the gen-tie, as well as installing gen-tie poles, could also provide a new source of stormwater runoff and sedimentation during construction. The northern end of the gen-tie alignment would cross the Walker River through a riparian area and over open water. The gen-tie line would span the open water, and poles would be sited to minimize effects to riparian habitat. The CRMP SOP 10 (Common to All) requires implementation of measures to reduce the potential for pollution or siltation of the Walker River and surrounding areas. The SWPPP would also apply to the construction of the gen-tie and the access road work and, thus, would reduce effects. Construction of portions of the gen-tie in the vicinity of the Walker River could require a

Clean Water Act Section 404 Nationwide Permit (NWP) and a Section 401 Certification if any fill of jurisdictional drainages were to occur. The conditions of the NWP and 401 permit would apply, including similar measures to and including the SWPPP, and would reduce potential effects. In terms of use of the access road during construction but also during O&M, sediments may flow off of East Walker Road into waters that flow to the East Walker River. East Walker Road, however, would not be widened, reducing those risks during construction. The first 1.5 miles of East Walker Road may be resurfaced or paved, as determined in coordination with Lyon County and the two homeowners along the road. The road, while not currently paved, is compacted and thus, once it is paved, would experience similar runoff conditions. Under MM WR-1, the Applicant would work with Lyon County to ensure adequate road drainage and a maintenance plan for construction and O&M for the road to address any erosion before it can cause sedimentation or off-road impacts to the surrounding land and water. This measure would reduce the potential for adverse effects from sedimentation on the East Walker River.

During construction and O&M, for all Project components (the solar site, the access road, and the gentle), fuel, herbicide, and other chemical spills and accidents could occur. A SPCCP would be developed prior to construction in accordance with regulations, which would address spills associated with fuel tanks. The SWPPP would also establish procedures to minimize the effect of accidental releases of other hazardous materials on water quality. Herbicides would only be applied in accordance with a PUP and Integrated Weed Management Plan to ensure that water quality is protected. Although spills could still occur, the likelihood of occurrence is considered low. Effects would be short-term and localized if a spill were to occur and would not have lasting effects on regional water quality. Ponds (or tanks) would be created to hold water, which would primarily be used for dust control during construction. Water could be sourced from an on-site well. The ponds, if used, would be designed with a liner and berms to ensure that the water remains only in the ponds. The ponds could overflow and increase runoff and sedimentation of waterways during a storm event. Per MM WR-2, the ponds would be designed with appropriate freeboard and/or spillways and flow dissipation to ensure that water is held or properly discharged during a storm event without causing excessive sedimentation. Water retention basins (i.e., stormwater features) would be constructed on site as well and would also serve to reduce off-site sediment transport during construction and O&M.

Flooding. Adverse on- or off-site flooding as a result of construction activities or during O&M is not expected. Based on the Flow2D modeling performed for the Project, flows are predicted to remain confined in established washes for the 6-hour, 100-year storm event and below. Stormwater flow depths and volumes and flow rates from the 100-year storm event were analyzed as the likely worst-case scenario. Figure 3.9-3 through Figure 3.9-6 present the existing 6-hour, 100-year flow rates and the Project development flow rates and depths for the Project site given removal of 64 percent of the vegetation and maintenance of the existing drainage network. The results show that even during a 100-year storm event, the flood depths across the majority of the Project solar site and immediately downstream are 0.5 feet, with velocities of less than 1 foot/second. Table 3.9-1 provides a breakdown of flow depths within the Project solar site. Four discharge points were evaluated for the flow depths and velocities. Those points are shown in Figure 3.9-4 and Figure 3.9-6. Table 3.9-2 presents the results of the modeling of flow volume and velocity changes as compared with the baseline conditions from the Project for each discharge point. Overall changes for flow volumes and velocities would be a 3.3 and 5.5 percent increase, respectively. Perimeter fencing is not anticipated to increase flooding risks or hazards. Impacts to flows and flooding is not anticipated from piling installation given the small size of each piling. Piles would not likely be installed in drainages less than 3 feet (1 meter) in diameter, which are in most cases, avoidable. MM WR-3 requires erosion control and bank stabilization devices to be installed in and around on-site and off-site washes (subject to appropriate permits) if excessive scour or erosion is seen during construction or O&M. The measure also requires routine site inspections to identify and repair areas of erosion such as deep rills and gullies in the panel arrays and to maintain, change, or add additional erosion control features if needed (in accordance with required permits).

Figure 3.9-3 Existing Conditions: Maximum Flow Depths in 6-Hour 100-Year Storm Event of the Proposed Solar Site

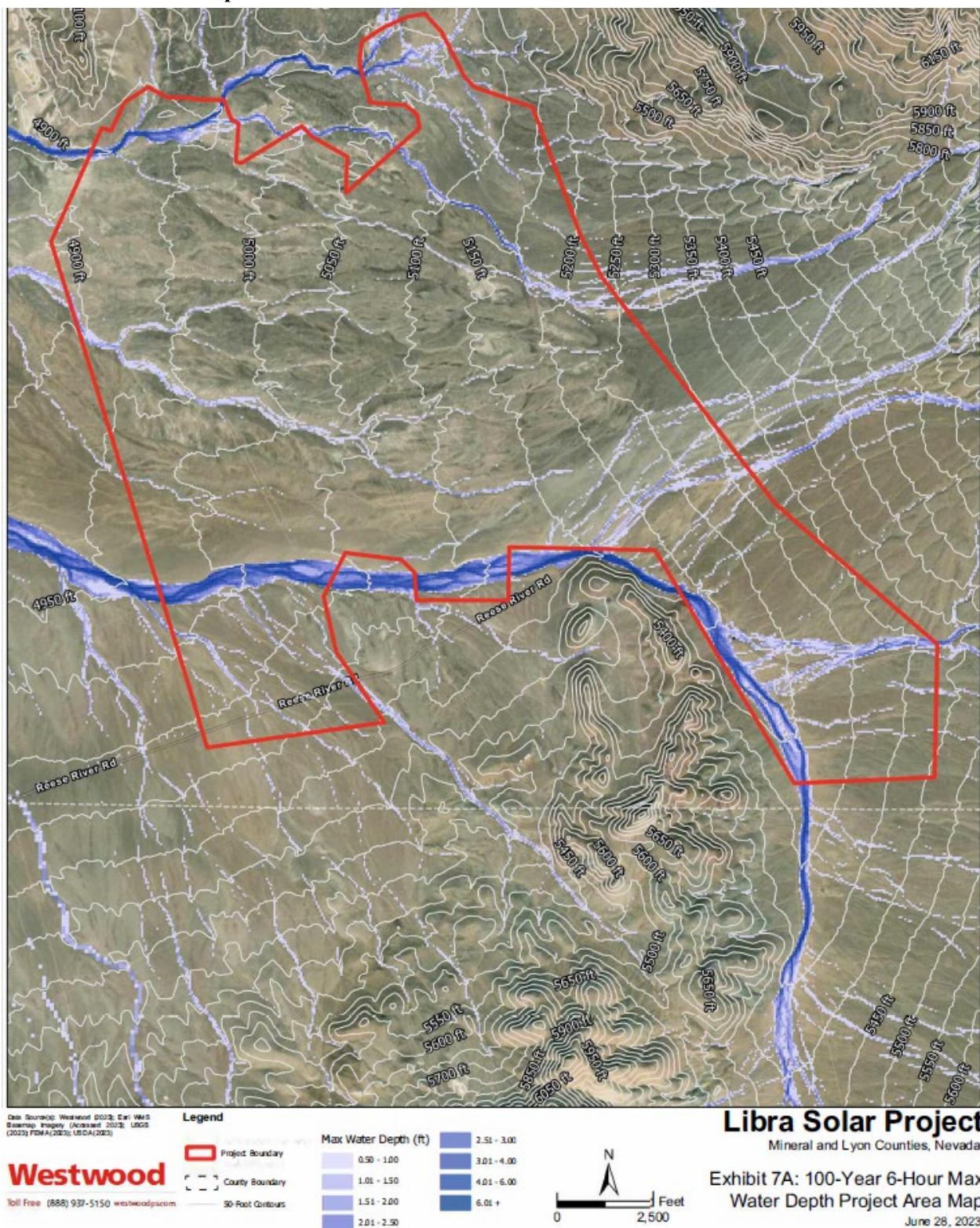


Figure 3.9-4 Project: Maximum Flow Depths in 6-Hour 100-Year Storm Event of the Proposed Solar Site

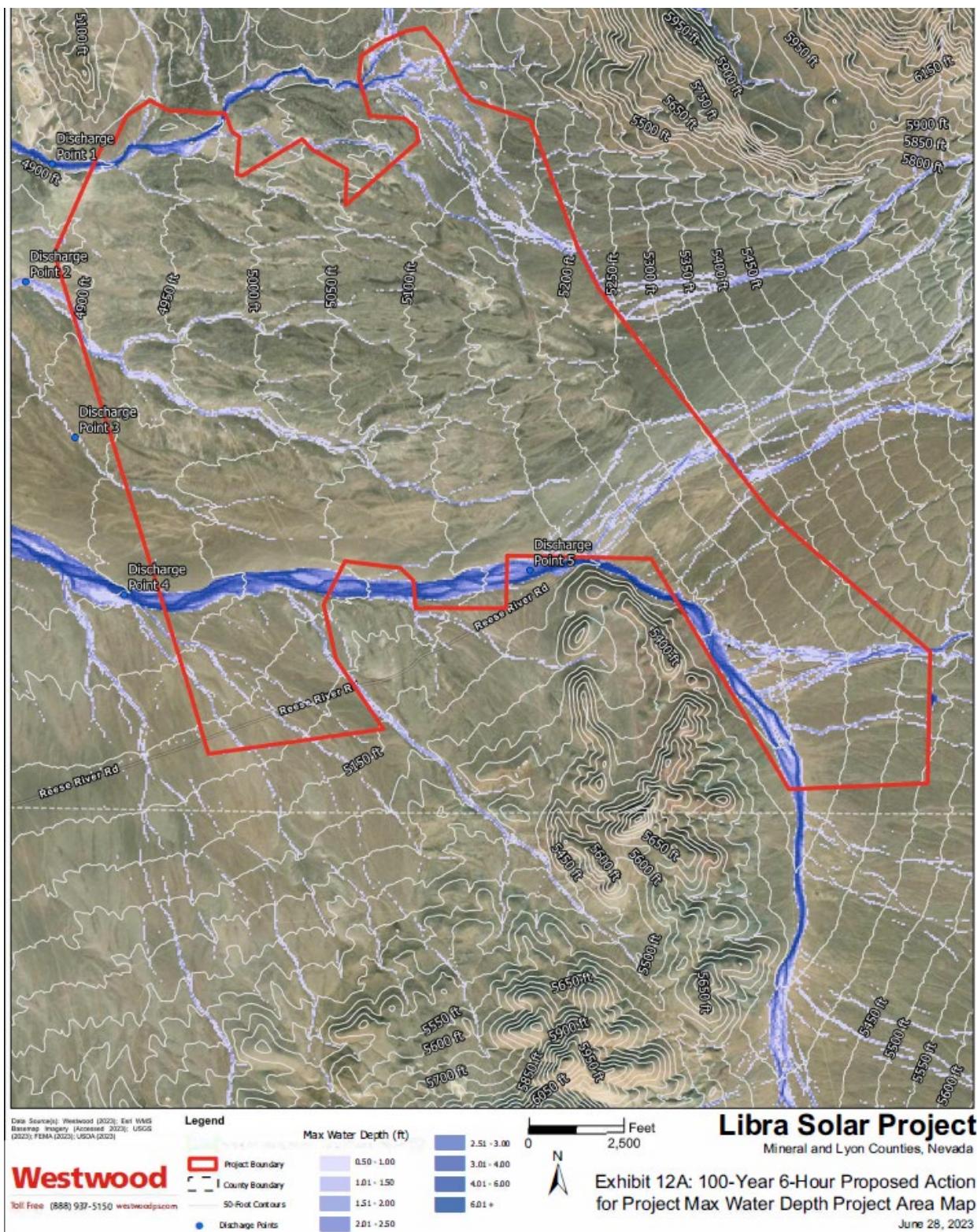


Figure 3.9-5 Existing Condition: Peak Velocities under the 6-Hour 100-Year Storm Event of the Proposed Solar Site

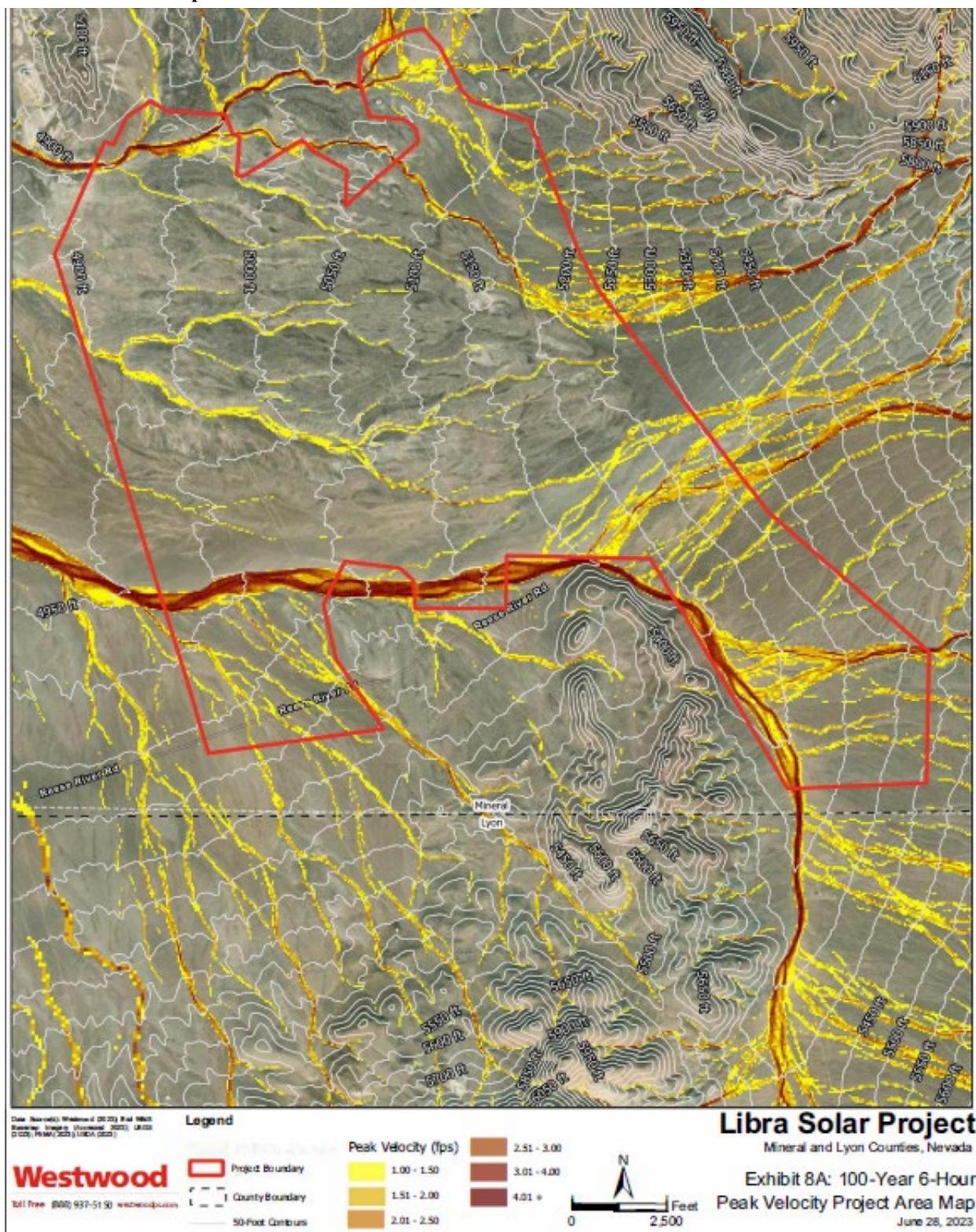


Figure 3.9-6 Project: Peak Velocities under the 6-Hour 100-Year Storm Event of the Proposed Solar Site

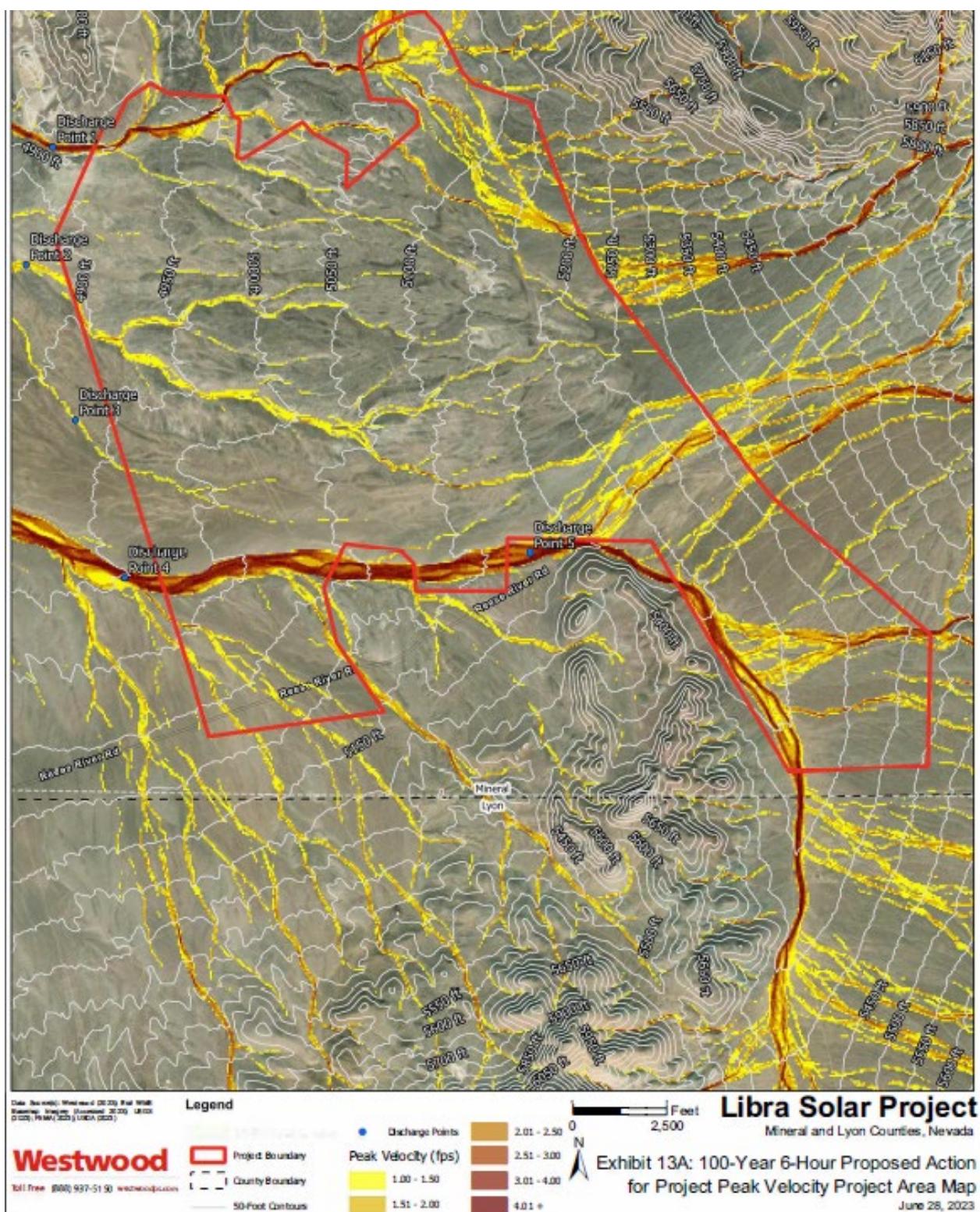


Table 3.9-1 Flood Depth Onsite for the Proposed Action

Peak flow depth (feet)	Percent of Project solar site covered by peak flow depths
0.00–0.49	89.9%
0.50–1.00	4.9%
1.01–1.50	1.8%
1.51–2.00	1.0%
2.01–2.50	0.7%
2.51–3.00	0.6%
3.01–4.00	0.8%
4.01–6.00	0.3%
6.01	0.0%

Source: (West Yost 2023)

Table 3.9-2 Existing and Proposed Action Channel Volumes for the 6-Hour 100 Year Storm Event

Discharge point	Existing channel volume (acre-feet)	Project volume (acre-feet)	Difference (cfs)	Increase (%) ^a
1	544	564	20	3.6
2	129	148	20	13.3 ^a
3	24	32	8	24.1 ^a
4	1,139	1,167	28	2.4
5	936	956	20	2.1
Overall	2,771	2,867	96	3.3

Notes: ^a The percent increase for these discharge points shows a relatively large increase as the drainages originate on the Project site. These drainages are smaller drainages and have lower velocity flows than drainages 4 and 5. Additionally, all the drainages converge further west of the site and thus the total change of 3.3 percent increase in volumes is most representative of the impacts and considered minor.

Source: (West Yost 2023)

Table 3.9-3 Existing and Project Maximum Flow Rates for the 6-Hour 100-Year Storm Event

Discharge point	Existing channel flow rate (cfs)	Initial channel flow rate (cfs)	Difference (cfs)	Increase (%)
1	751	750	(1)	-0.1
2	634	798	163	20.5 ^a
3	107	191	84	43.9 ^a
4	1464	1465	0	0.0
5	1276	1276	0	0.0
Overall	4232	4479	247	5.5

Source: (West Yost 2023)

Notes: ^a The percent increase for these discharge points shows a relatively large increase as the drainages originate on the Project site. These drainages are smaller drainages and have lower velocity flows than drainages 4 and 5. Additionally, all the drainages converge further west of the site and thus the total change of 5.5 percent increase in velocities is most representative of the impacts and considered minor.

Mitigation would minimize the adverse impacts of erosion and scour from increased flows across the solar site. Portions of Reese River Road, the Project's access road, are within a large wash and could be affected by flooding, which could result in washout of the road and could make travel unsafe during construction or O&M. MM WR-1 requires that the road be designed to minimize flood hazard risks. Improvements along Reese River Road would be made to the BLM road standards, and the road sections would be engineered to reduce effects. The area most at risk is not expected to be USACOE jurisdictional and thus Section 404 and 401 permits are not anticipated to be necessary for this work.

Gen-tie poles would occupy a small surface area. They would not be expected to result in adverse changes in surface water flows that could cause off-site flooding and would not impact 100-year floodplains (West Yost 2023). The gen-tie's access roads would be approximately 20 feet wide and covered with an aggregate substrate where needed. Development of gen-tie access roads would result in approximately 64 acres of vegetation removal but would largely follow land contours. Washes would cross over the gen-tie access roads. To minimize adverse effects to incised drainages (thus, potential USACOE jurisdictional water along the northern portion of the gen-tie) from direct fill, jurisdictional waters would be avoided during gen-tie access road construction, per MM WR-3. Fill would only be allowed if unavoidable and would require permitting through USACOE's Section 404 NWP program.

Some minor alteration of flows could occur from changes in runoff patterns due to the access roads but would be localized and away from any structures or infrastructure and thus adverse effects would not occur.

Groundwater. A water right for Project construction and O&M would most likely be purchased (and transferred to the place of use) and accessed through construction of an on-site groundwater well. A primary pumping well location (PW-1) and an alternative well location (PW-A) were identified for the Project (Figure 3.9-7). The well would be designed to produce up to approximately 466 gallons per minute (1,000 acre-feet over the 16-month period) and then would provide up to 28 acre-feet per year for the O&M phase of the Project. In order to assess whether groundwater level drawdown could occur from the groundwater pumping on the Project site, a modeling effort was undertaken. The results of modeling showed maximum groundwater drawdown of 5.83 feet within 2,000 feet of the well but 0.76 feet at 8,000 feet, as shown in Figure 3.9-7 and listed in Table 3.9-4.

Figure 3.9-7 Results of Groundwater Drawdown Analysis showing Maximum Drawdown

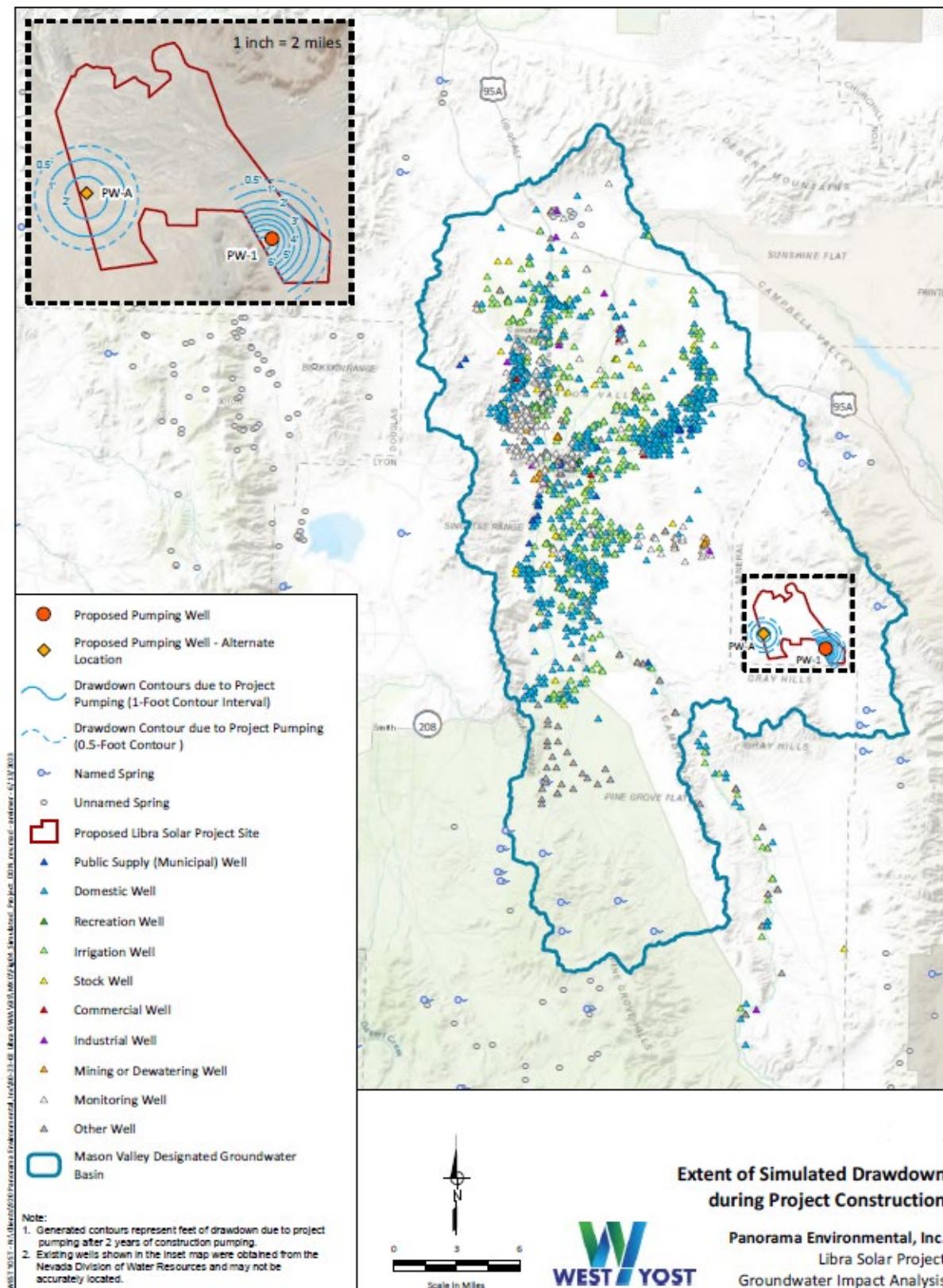


Table 3.9-4 Groundwater Drawdown Simulations Results

Well	Distance downgradient of pumping well (feet/miles)	Drawdown after 16 months of construction, feet ¹	Drawdown after 30 years of construction and O&M ²	Maximum drawdown (feet)	Elapsed time at maximum drawdown (years) ³
PW-1 (proposed well)	2,000/0.38	5.07	0.89	5.83	31.4
PW-1 (proposed well)	4,000/0.76 mile	1.25	0.64	2.09	31.7
PW-1 (proposed well)	8,000/1.5 mile	0.06	0.41	0.76	38.5
PW-A (alternate well)	2,000 /0.38	2.53	0.44	2.92	31.4
PW-A (alternate well)	4,000/0.76 mile	0.63	0.32	1.04	31.7
PW-A (alternate well)	8,000/1.5 mile	0.03	0.21	0.38	38.5

Notes:

1. Drawdown 16 months (1.3 years) after start of Project construction, prior to start of operations pumping
2. Drawdown 30 years after start of Project construction, prior to start of decommission pumping
3. Years after the start of Project construction. Project pumping ended 31 years and 4 months (31.3 years) after the start of Project construction.

No known wells that are currently in use and no known springs are located within 8,000 feet of the proposed pumping well site (or alternative site). Buckbrush Spring is the nearest spring to the Project solar site and is located 3.6 miles (19,000 feet) southeast of PW-1. Most of the wells in the region are agricultural and industrial wells near East Walker River, approximately 5.5 to 8.5 miles northwest of the proposed pumping wells PW-A and PW-1, respectively. No measurable impact is anticipated to occur at springs or existing water supply wells due to Project pumping. Western Solar Plan WR1-3 considers water conservation measures related to solar energy technology water needs to reduce Project water requirements and a Groundwater Monitoring and Reporting Plan would be implemented. Adverse effects to groundwater or groundwater uses would not occur.

The use of the well would require purchase of a water right with a change in Point of Diversion, Place of Use, and Manner of Use from the State Engineer and could potentially require the process for intercounty transfers since the water would be used for dust control along the access road and gen-tie in Lyon County (while the well would be built in Mineral County). Refer to the Informational Summary of Water Rights, Supply, and Use for the Libra Solar Project (Panorama 2023) for more information on the process.

Aquifers are recharged by infiltration of precipitation to the subsurface. Increasing the acreage of impervious surfaces in an area can adversely affect groundwater recharge by decreasing the amount of water that infiltrates to the subsurface. New impervious surfaces resulting from Project construction would total an estimated 184 acres (including internal access roads, which, while not impervious, would be compacted and, thus, semi-impervious). Areas of removed vegetation that could be compacted include an additional 3,062 acres, comprising approximately 0.1 percent of the entire 287,360-acre Mason Valley Groundwater Basin. Rainwater is only 1 percent of the recharge. The Project is not expected to affect groundwater infiltration in the basin.

Decommissioning Impacts

Decommissioning would include the removal of the solar facility and reclamation of the site, as described in a Decommissioning and Site Reclamation Plan. Erosion impacts, as well as impacts to water quality from accidental spill during demolition of the facility would be similar to those described for construction. The SWPPP and erosion control BMPs, Stormwater Quality Management Plan, Site Drainage Plan, as well as the SPCCP, would continue to apply. Any areas of vegetation removal and soil compaction on the solar site as well as gen-tie alignment are not anticipated to recover for decades to a century or more. CRMP SOPs 4, 7, and 18 (Common to All) require rehabilitation and restoration of disturbed areas to also minimize soil erosion (BLM 2001). The stormwater drainage volumes and flows would be expected to continue to be similar to those for O&M. Impacts would not be adverse.

Groundwater use for the Project O&M would cease although water may continue to be provided for grazing. The modeling presented previously describes the impacts including decommissioning. Groundwater impacts would not be adverse as no other uses would be impacted and groundwater drawdown would not affect any surrounding water uses.

Cumulative Impacts

The Proposed Action is not expected to cumulatively affect groundwater. If the Applicant acquires water rights in Mason Valley, the review and approval process to grant the Applicant use of existing water rights in the Mason Valley Hydrographic Unit would ensure that no adverse effects would result. No other projects are proposed that would utilize groundwater near the Project well (within a few thousand feet) and, thus, compounded impacts of drawdown would not occur.

None of the other past, present, or reasonably foreseeable future projects would affect the same drainage systems as the Project, with the exception of Greenlink West. Greenlink West would be located upslope of the solar site and, thus, could contribute some minor increases in flow volumes and rates in drainages flowing onto the Project site. Given Greenlink West is a linear feature adjacent to an existing transmission line and would primarily utilize existing roads for the section of the alignment upslope of the solar site, effects would be minimal. A cumulative impact on stormwater flows and drainage increases would not occur. The water from the solar site flows in drainages that lose their bed and bank and converge west of the solar site, south of the Nevada Copper Pumpkin Hollow Expansion Project area. The flows would neither impact the mine nor combine with drainage flows from the mine, which flow north. Adverse cumulative effects would not occur.

None of the cumulative projects would change flows that could impact the access road to the solar site and, thus, cumulative impacts are not anticipated for the access road. The gen-tie would run in close proximity to other potential solar projects, including Mason Valley Solar, Pine Nut Solar, Parker Butte Solar, and Sleepy Orange Solar. These projects are located near the northern portion of the gen-tie. The gen-tie is not expected to contribute to adverse changes in drainage, and these projects would likely require implementation of drainage control BMPs similar to the Project's; thus, adverse cumulative impacts are not anticipated.

3.9.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction, Operations and Maintenance, and Decommissioning

Impacts from Alternative 1 for the access road and gen-tie on water quality and drainage/stormwater flows would be the same as for the Proposed Action and would require the same measures to be implemented to reduce effects.

Construction impacts related to water quality and sedimentation from active construction activities at the solar site would also be similar to those described for the Proposed Action but would be reduced since Alternative 1 would reduce ground disturbance based on the construction methods used that would preserve as much as 40 percent of vegetation within the solar array blocks. A SWPPP and erosion control BMPs, as well as an SPCCP, would be implemented to further reduce effects.

The changes in drainage systems from the construction and O&M of the Project from stormwater flows were also modeled for this alternative to show the reduction in flow depths/volumes and velocities as compared with the Proposed Action. Table 3.9-5 shows the stormwater flow volumes and velocities modeled under existing conditions and Alternative 1. Figure 3.9-8 and Figure 3.9-9 depict the results. The peak volume during the 6-hour, 100-year storm event at the discharge points would reduce from a 3.3-percent change for the Proposed Action over the baseline, to a 0.1-percent change over baseline conditions. The peak velocities during the 6-hour 100-year storm event would reduce from a 5.5-percent change to a 0.5-percent change for Alternative 1, as compared to the Proposed Action. The changes in drainage and potential for flooding would thus be very similar to existing conditions and not adverse under this alternative.

Table 3.9-5 Existing and Alternative 1 Maximum Channel Volumes for the 6-Hour 100 Year Storm Event

Discharge point	Existing channel volume (acre-feet)	Proposed Action volume (acre-feet)	Difference (cfs)	Increase (%)
1	544	547	3	0.6
2	129	122	-6	-5.0
3	24	28	4	13.3 ^a
4	1,139	1,140	1	0.1
5	936	938	1	0.1
Overall	2,771	2,775	3	0.1

Notes: ^a The percent increase for these discharge points shows a relatively large percent increase as the drainages originate on the Project site. These drainages are smaller drainages and have lower velocity flows than drainages 4 and 5. Additionally, all the drainages converge further west of the site and thus the total change of 0.1 percent increase in volumes is most representative of the impacts and considered minor.

Source: (West Yost 2023)

Figure 3.9-8 Alternative 1: Maximum Flow Depths in 6-Hour 100-Year Storm Event

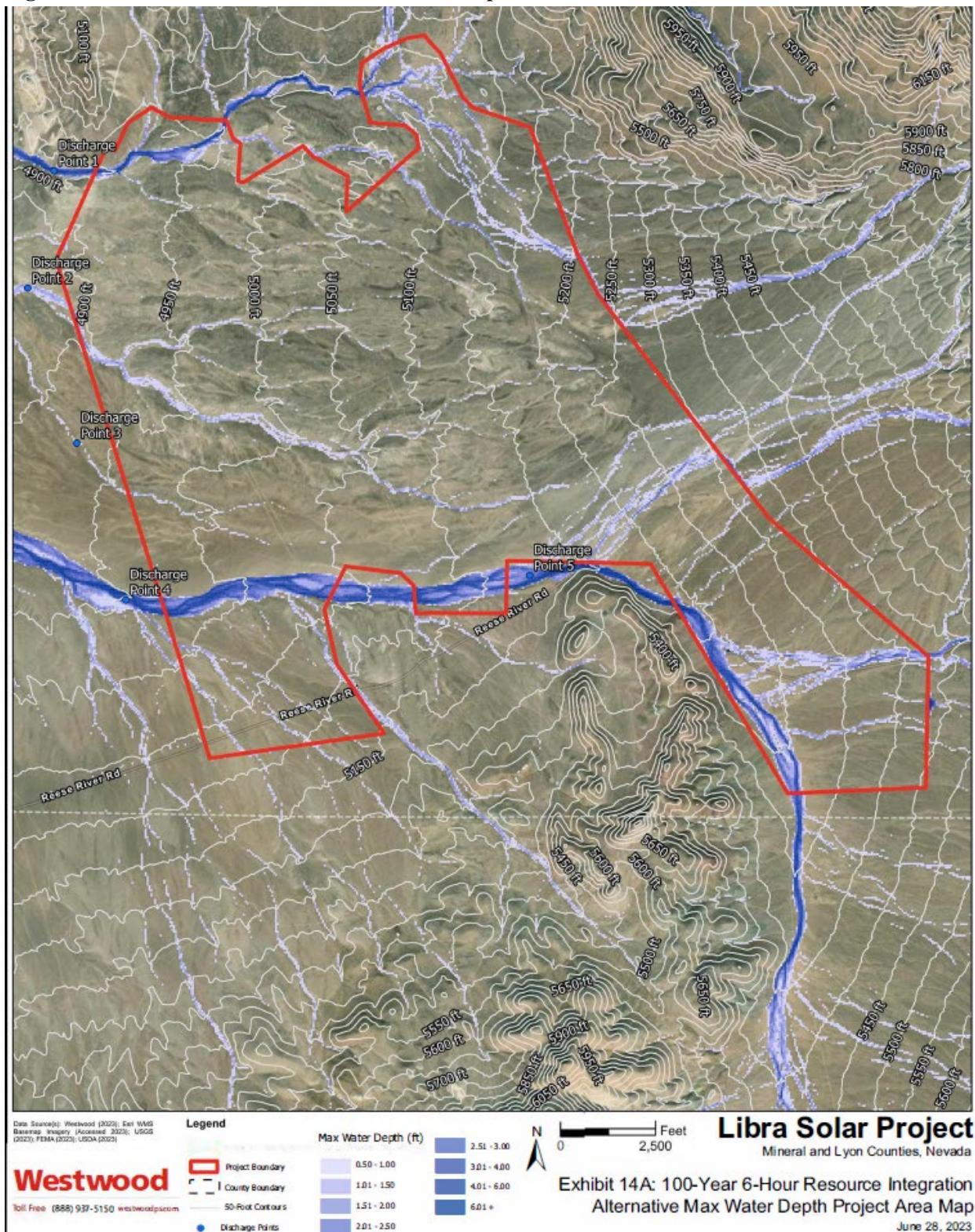


Figure 3.9-9 Alternative 1: Peak Velocities under the 6 Hour 100-Year Storm Event

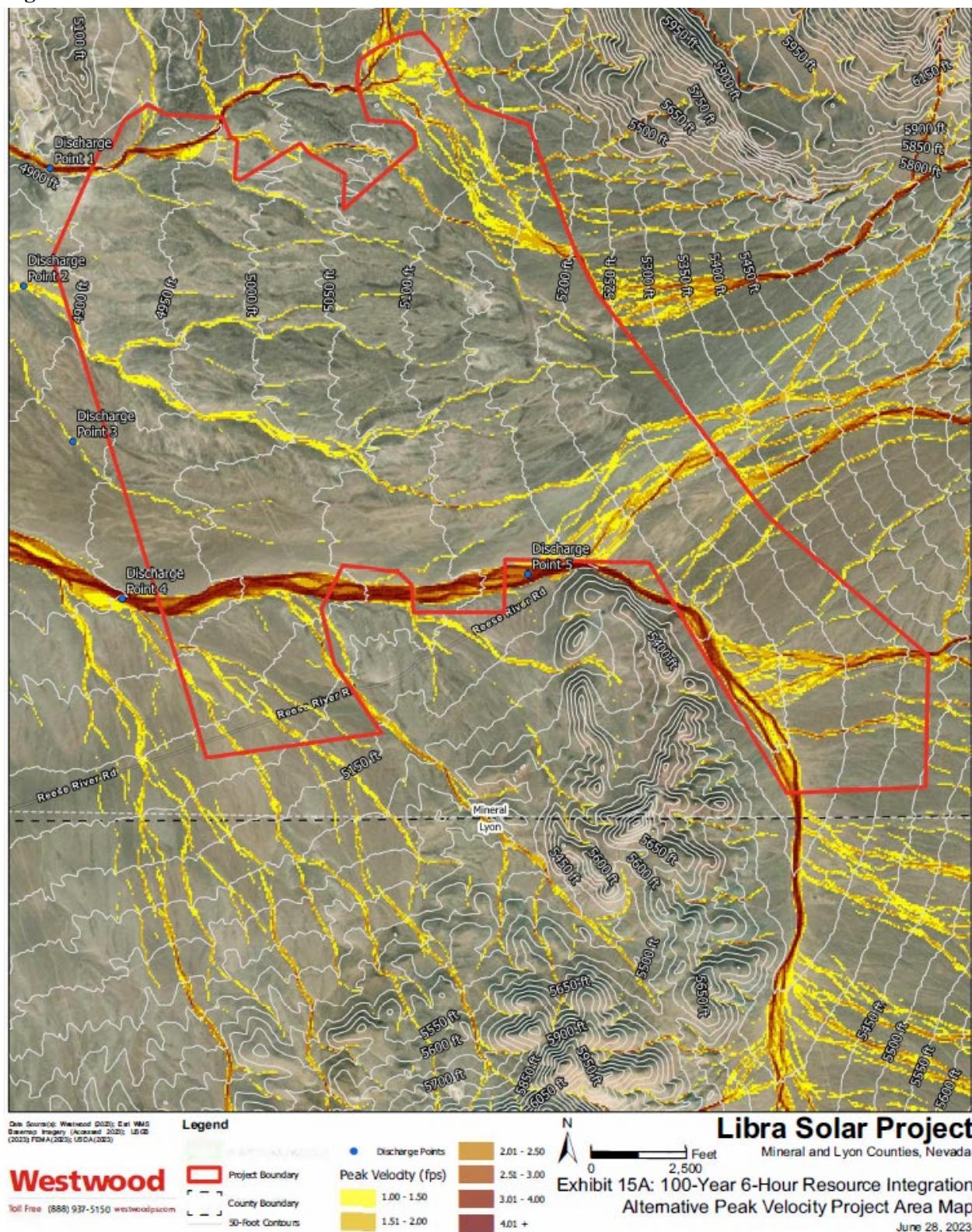


Table 3.9-6 Existing and Alternative 1 Maximum Flow Rates for the 6-Hour 100 Year Storm

Discharge point	Existing channel flow rate (cfs)	Initial channel flow rate (cfs)	Difference (cfs)	Increase (%)
1	751	750	-1	-0.1
2	634	604	-31	-5.1
3	107	158	51	32.2 ^a
4	1464	1,465	0	0.0
5	1276	1,276	0	0.0
Overall	4232	4,253	20	0.5

Notes: ^a The percent increase for this discharge point shows a relatively large percent increase as the drainages originate on the Project site. These drainages are smaller drainages and have lower velocity flows than drainages 4 and 5. Additionally, all the drainages converge further west of the site and thus the total change of 0.5 percent increase in velocities is most representative of the impacts and considered minor.

Source: (West Yost 2023)

Cumulative Impacts

Cumulative impacts under Alternative 1 would be reduced compared to the Proposed Action since there would be fewer drainage changes. Adverse cumulative impacts are not anticipated.

3.9.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Alternative 2 would result in fewer vehicle trips on East Walker Road as compared to the Proposed Action but increased traffic on other routes used for supplemental access during construction. This alternative does not include any upgrades to the other access routes. Use of the supplemental access roads would require additional dust control and maintenance; however, no new ground disturbance that could impact water quality or create a new source of sedimentation would occur. All impacts, including for construction, O&M, and decommissioning, and cumulative impacts would be the same as described for the Proposed Action. The same measures, including the SWPPP, BMPs, Western Solar Plan PDFs, and MMs, and management plans would apply to this alternative.

Groundwater usage may be greater under this alternative as more roads would need dust control. The amount is not expected to be substantial (i.e., <10 –15 percent) since reduced traffic on East Walker Road would mean less dust control may be needed and that water would instead be used on the supplemental access routes. The groundwater impacts were found to be very minor and, thus, minor increases in groundwater use or needs are not anticipated to result in any impacts to groundwater uses. Impacts would not be adverse.

3.9.4.5 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Under Alternative 3, impacts from the solar site and access road to water quality and flooding or drainage changes during construction, O&M, and decommissioning would be the same as described for the Proposed Action. The same measures, including the SWPPP, BMPs, Western Solar Plan PDFs, and MMs would apply to this alternative. This alternative would reduce the potential impacts for runoff, spills, and minor changes in drainage by replacing the 24.1-mile-long gen-tie with a 0.54-mile-long gen-tie east of the solar site to a switching station under the Greenlink West line. Impacts to the Mason Valley, including riparian areas around the Walker River and the WMA, would be avoided under this alternative. This alternative also reduces the Project's potential for impacts to jurisdictional waters associated with the Walker River. New areas of ground disturbance would occur that could impact drainage patterns; however, since the gen-tie and switching station would only impact 11.8 acres on areas of low slope, impacts are not anticipated to be adverse. Less groundwater for dust suppression would be needed for this alternative since less ground disturbance is involved than for the Proposed Action. The same measures as

described for the Proposed Action would be applied to minimize effects, including implementation of an SWPPP, SPCCP, and Western Solar Plan PDFs, MMs, and management plans. Cumulative impacts would also be similar to that described for the Proposed Action. By eliminating the gen-tie in the vicinity of the other potential solar projects, the Project under Alternative 3 would not contribute to drainage changes associated with those projects. Cumulatively adverse impacts are not anticipated.

3.9.4.6 No Action Alternative

Under the No Action alternative, the Project would not be constructed, and no impacts to surface water, groundwater, or jurisdictional waters would occur. Surface waters would continue to flow unobstructed, and no groundwater resources would be consumed. Water resources would not be affected.

3.9.4.7 PDFs and Mitigation Measures

Western Solar Plan Project Design Features

Programmatic design features from the Western Solar Plan are listed in Appendix C. The Project would comply with the following PDFs to minimize impacts to soils:

- WR1-1, 1-3
- SR2-1

The CRMP Measures

SOPs from the CRMP are listed in Appendix C. The following SOPs would minimize impacts to soils:

- Soils, Watershed, and Air SOPs 4, 7
- Common to All SOPs 10, 18

Plans Required and Mitigation Measures

Plans required include:

- Groundwater Monitoring and Reporting Plan
- Site Restoration and Revegetation Plan (Draft is available on the Project website)
- Decommissioning and Site Reclamation Plan

The Project would comply with the following mitigation measures to minimize adverse impacts on water resources, as well as MM Soils-1 from Section 3.4 Soils.

MM WR-1: Road Upgrades

The Applicant, in coordination with Lyon County, shall ensure adequate road drainage and a maintenance plan for construction and O&M for East Walker Road to address any erosion before it can cause sedimentation or off-road impacts to the surrounding land and water, commensurate with the Project's use of the road. The Applicant shall also design all road upgrades to Reese River Road to the BLM Road Standards identified in the BLM Handbook 9113-1- Road Design. Reese River Road upgrades shall be designed to ensure safe passage at all times during storm events and shall be adequately maintained over the life of the Project. Necessary permits shall be obtained based on the final design of the road improvements.

MM WR-2: On-site Construction Water Ponds

On-site ponds used for construction water shall be designed with appropriate freeboard and/or spillways and flow dissipation to ensure that water is held or properly discharged during a storm event without causing excessive sedimentation.

MM WR-3: Bank Stabilization

During final Project design, the Applicant's engineer shall assess the need for erosion control and bank stabilization devices (including, if determined appropriate, riprap lining of wash banks to direct flows and protect banks) to be installed in and around Project area washes and shall include recommended

stabilization in the final design to be submitted to the BLM prior to issuance of the Notice to Proceed (NTP). The Applicant shall obtain appropriate permits as needed. The facility operator shall perform routine site inspections to identify and repair areas of erosion, such as deep rills and gullies in the panel arrays and along the gen-tie access routes, and shall maintain, change, or add additional erosion control features if needed in accordance with required permits.

3.9.4.8 Irreversible or Irretrievable Impacts and Residual Effects

No irreversible or irretrievable impacts to water resources would result from implementation of the Proposed Action or alternatives. Surface waters impacted by the construction of access roads associated with the Project could be restored to pre-construction conditions to the extent feasible following the 30-year lifespan of the Project. Residual impacts are also not anticipated with mitigation.

3.10 Land Use, Realty, and Special Designations

3.10.1 Introduction

This section is based on information provided in the Land Use and Corridor Report (Panorama 2023b).

3.10.2 Analysis Area

The area of analysis for land use and realty features is the extent of lands that could be directly or indirectly affected by the Project, such as lands subject to an existing ROW, permit, lease, or easement; a designated transmission corridor; or another land use authorization. Direct or indirect effects on land use and realty would be limited to areas where land use designations or authorizations would change, where permanent features would be installed, or where land disturbance or land use conflicts could or would occur during construction.

3.10.3 Affected Environment

3.10.3.1 Land Use and Realty

The Project solar site and proposed gen-tie are located almost entirely within BLM-administered land, with the exception being approximately 2 miles of the 24.1-mile-long proposed gen-tie alignment that is located on State-owned lands within the Mason Valley WMA adjacent the Fort Churchill substation and on private lands to the north of the Mason Valley WMA. The 13.8-mile-long access road is located within BLM-administered land except for a 2.1-mile segment that is located on non-BLM lands. Approximately 18 miles of the gen-tie alignment that is located on BLM lands is within an existing designated Section 368 energy corridor (DOE n.d.). The Fort Churchill substation is also the northern terminus of Greenlink West, originating from Clark County, Nevada (Harry Allen substation).

Existing, approved, and pending land use authorizations were identified in a title report for the Project, including lands affected as described in the public land survey system (PLSS) sections. The BLM provided additional pending land use authorization information. All land use authorizations in and adjacent to the Project area are detailed in the Land Use and Corridor Report (Panorama 2023b) and summarized in Table 3.10-1. Adjacent ROW holders were notified of the Project by the BLM. One ROW authorization, serial number NVNV105887193 (legacy NVN 093397), for a distribution power line crosses through the Project solar site. This distribution line is owned by NV Energy doing business as Sierra Pacific Power, and the ROW was renewed in 2021; however, it is not currently energized. The Project includes realignment of this distribution line through the solar site, as shown in Figure 3.10-1. Several other existing ROWs cross the gen-tie alignment, including the following:

- NVN1060796522 (legacy N-1018): LADWP Pacific DC Transmission Line
- NVNV106083279 (legacy N-60243): Union Pacific Railroad
- NVNV106143630 (legacy N-40975): Lyon County Pete Hendrich's Road

Figure 3.10-1 ROW Authorization NVNV105887193 through the Proposed Project Solar Site

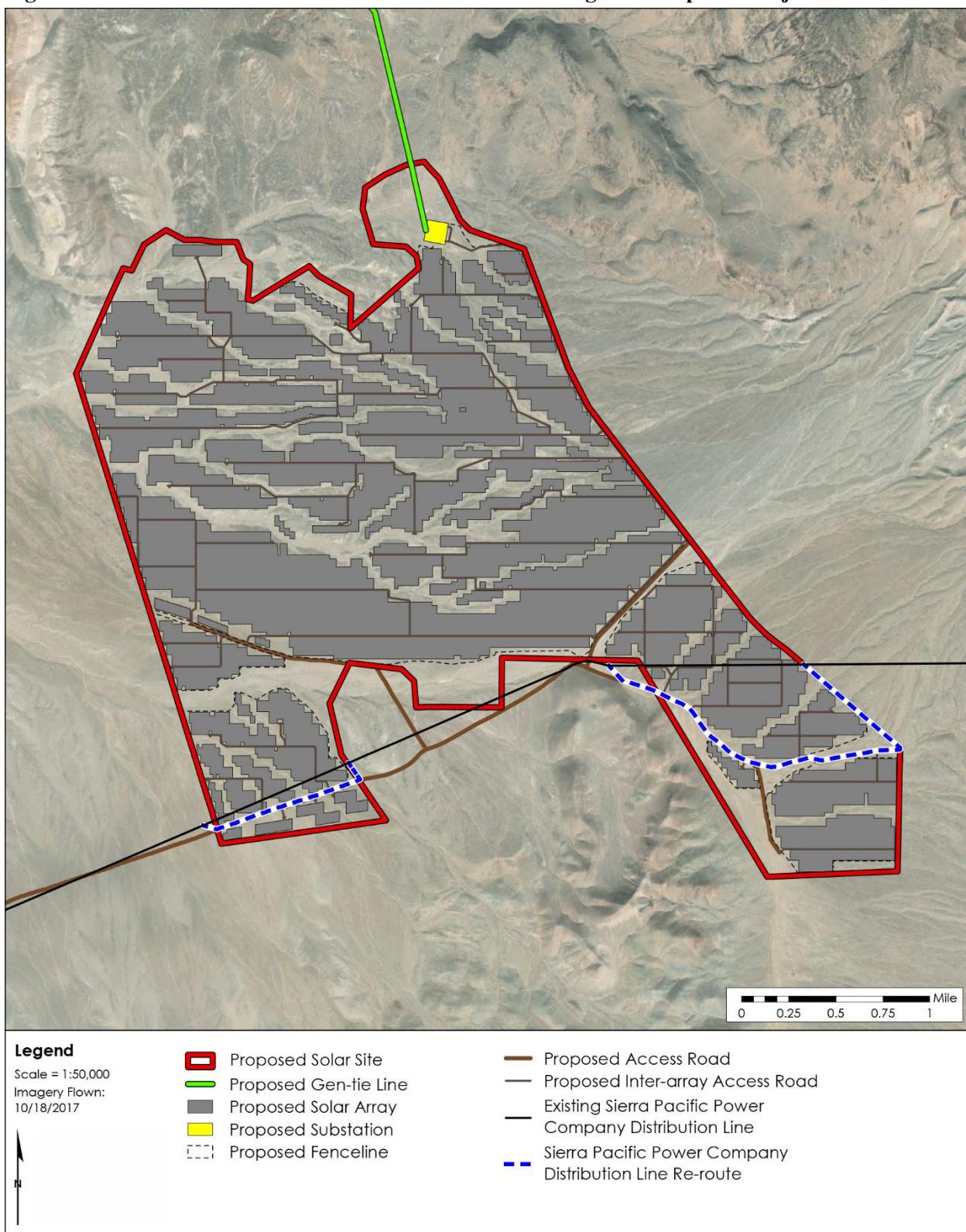


Table 3.10-1 Land Use Authorizations in the Project Area

Name	Type of ROW authorization	Status	Owner/applicant	BLM Case file number
Greenlink West	Power transmission infrastructure (525 kV transmission line)	Proposed	NV Energy	N-099863
Mason Valley East Solar	400 MW solar facility	Proposed	NextEra	N-100105
Pine Nut Solar	200 MW solar facility	Proposed	NextEra	N-100106
Sleepy Orange	500 MW solar facility	Proposed	Sleepy Orange Solar, LLC	N-101056
Honey Mesquite	500 MW solar facility	Proposed	Honey Mesquite Solar, LLC	N-101526
Nettleleaf	500 MW solar facility	Proposed	Nettleleaf Solar, LLC	N-101524
U.S. Route 95 Alternate (US 95A)	Transportation (Interstate highway)	Operating	Nevada Department of Transportation	N-091950
Old State Road 2C	Transportation (Roadway)	Decommissioned	N/A	N/A
Southern Pacific (Union Pacific) Railroad	Transportation (Railroad)	Operating	Union Pacific	NVNV106083279 (legacy N-60243)
Reese River Road	Transportation (Roadway)	Operating	Lyon County	N/A
Sierra Pacific Power Transmission Line	Transmission	Operating	Sierra Pacific Power Co	N-091646
Sierra Pacific Power Transmission Line	Transmission	Operating	Sierra Pacific Power Co	N-00725
Sierra Pacific Power Company/NV Energy	Distribution	Not operating	Sierra Pacific Power Co.	NVNV105887193 (legacy NVN-093397)
LADWP Pacific DC Transmission Line	Transmission	Operating	Los Angeles Department of Water and Power	NVN1060796522 (legacy N-1018)

Name	Type of ROW authorization	Status	Owner/applicant	BLM Case file number
Wassuk Microwave Station	Transmission	Relinquished	American Tower LP	N-73815
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-94367
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-91233
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-91655
Miller Dusty LLC Geothermal	Geothermal Lease	Closed	Miller Dusty LLC	N-79706
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-005253
John David Stanley	Road	Operating	John David Stanley	N-041273
NDOT Highway	Federal-aid highway	Operating	NDOT	N-61187
Lyon County Pete Hendrich's Road	Road	Operating	Lyon County	NVNV106143630 (legacy N-40975)
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-43296
Michael A Sturge Irrigation Well	Water facility: well	Operating	Michael and Michelle Sturge	N-78533
LA Department of Water and Power Communication Site	Communication site	Operating	LA Department of Water and Power	N-1117

Name	Type of ROW authorization	Status	Owner/applicant	BLM Case file number
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-7255
Sierra Pacific Power Company Transmission Line	Distribution infrastructure (12.5 kV)	Operating	Sierra Pacific Power Co.	N-91645

3.10.3.2 Transportation Corridors

Regional site access is provided by US 95A, which bisects the gen-tie alignment east–west and then runs north–south on the west side of the Mason Valley, opposite the gen-tie. Where the gen-tie and US 95A cross, the gen-tie alignment is within the existing Section 368 energy corridor (corridor 18-224). US 95A provides connection to Yerington, Nevada, via US 95 and US 50. SR 208 would be used for access to the solar site, connecting to unpaved East Walker Road and Reese River Road. Lyon County maintains East Walker Road (Lyon County 2006). The BLM maintains Reese River Road. Union Pacific (UP) operates the Hawthorne Branch rail line, which connects to a UP mainline east of Fallon, Nevada. The UP mainline passes near the Fort Churchill substation.

3.10.3.3 Utility Corridors

Two designated utility corridors are in the Project area, including the BLM’s utility corridors and the Section 368 energy corridor (as shown in Figure 3.10-2). The BLM’s utility corridors are located immediately adjacent to both the eastern and western borders of the Project solar site. The corridors converge, continuing north along the proposed gen-tie alignment, crossing through the Fort Churchill substation.

The Section 368 energy corridor serves as a multi-jurisdictional interstate pathway. The Section 368 energy corridor follows a nearly identical route to the BLM’s utility corridors on the eastern and western borders of the Project solar site. The Section 368 energy corridor is approximately 2 miles wide and continues north along an existing BLM utility corridor. Included within the utility corridors is Los Angeles Department of Water and Power’s (LADWP’s) Pacific DC Transmission Line (BLM Case file number NVN1060796522 [legacy N-1018]) that runs parallel for an approximate 5-mile portion of the gen-tie alignment and then crosses near the northern end of the gen-tie alignment.

3.10.3.4 Specially Designated Areas

National Conservation Areas

The Pistone-Black Mountain NCA was designated by Congress and signed into law in December 2022. The area includes 3,415 acres to be managed by the BLM, as shown in Figure 3.10-3. The site has cultural and historical significance to the Walker River Paiute Tribe and is used for pine nut picking, ceremonies, and visiting sacred sites (Walker River Paiute Tribe 2019). The site includes significant archaeological resources as well as petroglyphs. It is located within 5 miles of the Project solar site; however, it is not easily accessible from the Project solar site due to rugged intervening terrain.

National Historic Trails

The California National Historic Trail is located approximately 9.4 west of the Project solar site. The Pony Express National Historic Trail is located approximately 26 miles north of the Project solar site and approximately 9 miles north of the northern-most portion of the gen-tie. These trails are shown in Figure 3.10-3.

Figure 3.10-2 Utility Corridors

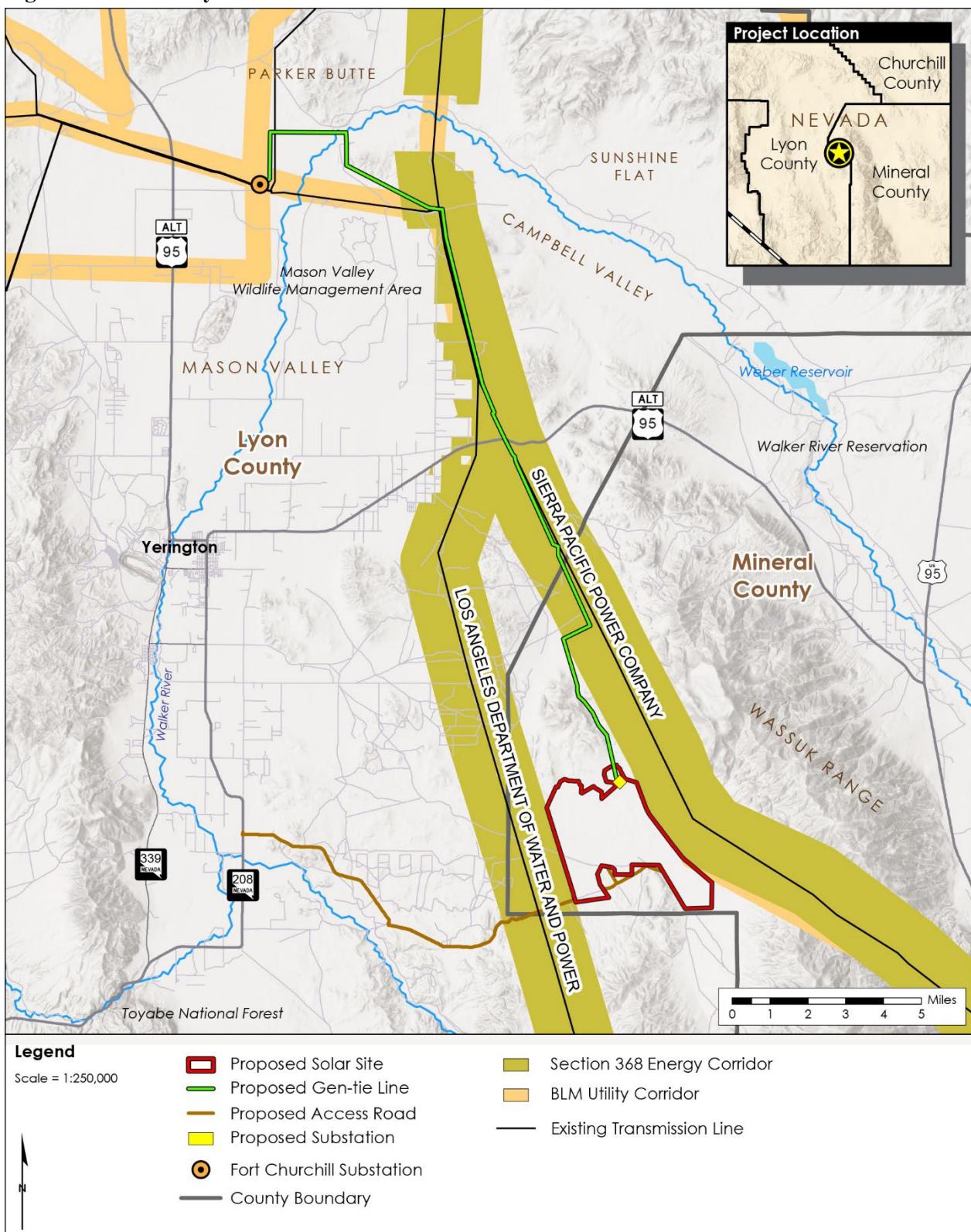
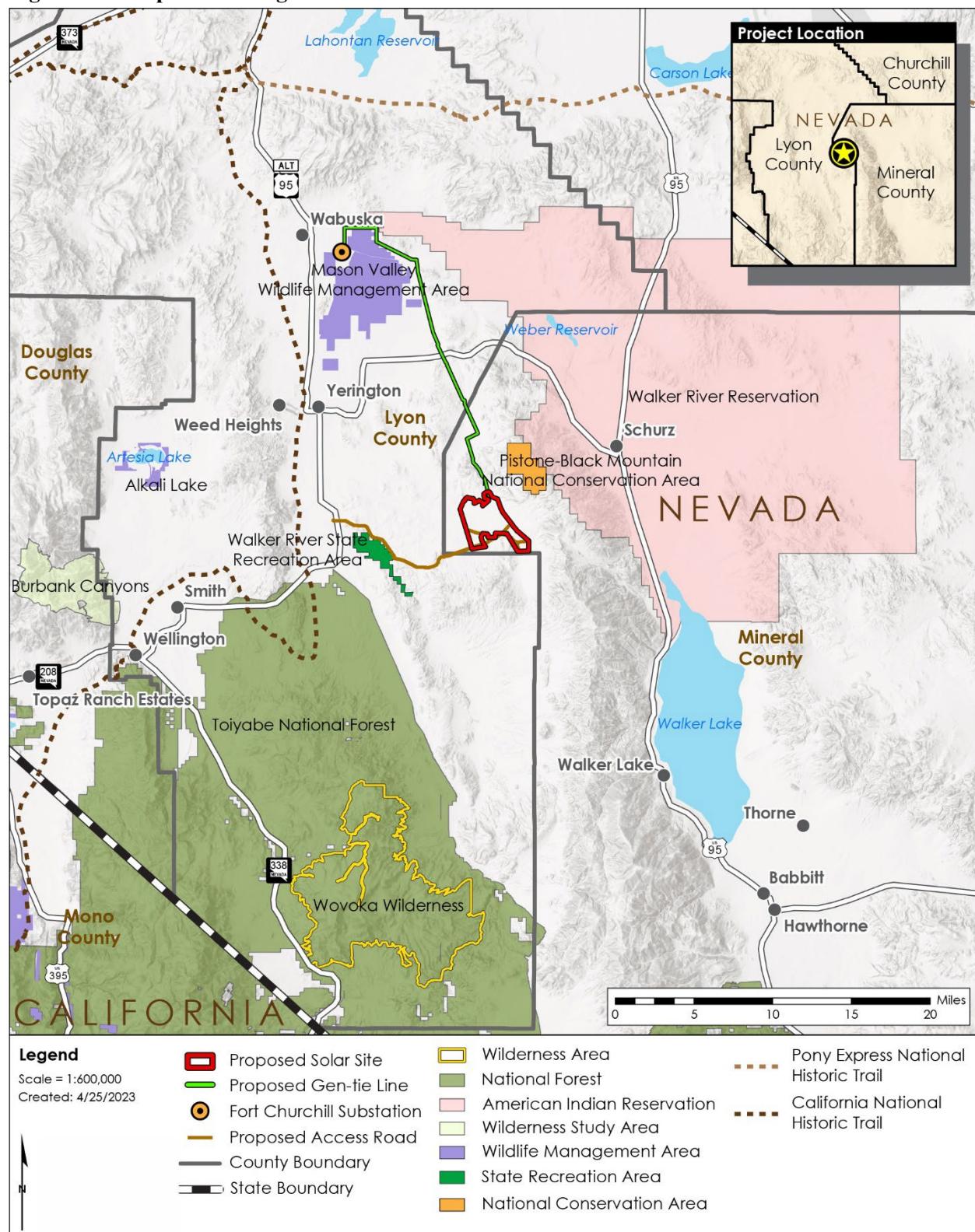


Figure 3.10-3 Special Management Areas



State Parks and Wildlife Management Areas

The State-managed Pitchfork Ranch section of the Walker River State Recreation Area is located approximately 3.5 miles east of the Project area along East Walker Road (as shown in Figure 3.10-3). The Project access road along Reese River Road provides access to and is partially located on the Walker River State Recreation Area.

The Mason Valley WMA is located north of Yerington, Nevada, and is nearly surrounding the Fort Churchill substation. The proposed gen-tie alignment borders the WMA to the east and south. The proposed gen-tie alignment crosses a small portion of the most northern section of the Mason Valley WMA. No other WMAs are located within or near the Project area (including the Project solar site, gen-tie, and access road).

Gas transmission lines are located on the northwest side of the Mason Valley, north of Yerington and extending northwest from the Fort Churchill substation, following the BLM utility corridor (DOT 2023).

American Indian Reservations

The Walker River Reservation (Reservation), belonging to the Walker River Paiute Tribe, is located to the northeast of the Project area. The Project solar site is on the west side of the Wassuk Mountain Range, opposite the Reservation. The linear distance between the Reservation and Project solar site varies; however, it is bisected by the Wassuk Range until the northern end of the proposed gen-tie alignment (as shown in Figure 3.10-3). The Project solar site or other components are not proposed to be sited on any Reservation lands.

3.10.3.5 Military and Civilian Aviation

The Project is not within the area of Risk of Adverse Impact on Military Operations and Readiness Areas (RAIMORA). The closest RAIMORA site is the Restricted Airspace R2508 and Nevada Test and Training Range (NTTR) near the Hawthorne Army Depot and associated facilities (DOD 2016). The Project and surrounding area is within multiple military training routes. Figure 3.10-5 shows military training routes, Federal Aviation Administration (FAA) special use airspace, and military airbases and training targets. There are 21 registered airports (including airfields) within 50 miles of the Project area. The closest registered airports include Yerington Municipal and the Lantana Ranch, a private airport located 14 miles southeast of Yerington. Figure 3.10-4 shows the locations of airports within 50 miles of the Project solar area, which is inclusive of the gen-tie.

The BLM and other federal or State agencies conduct low-level flights in the Project vicinity for fire operations, wild horse and burro censuses and gathers, wildlife inventories, facility maintenance, or other activities. Aerial operations for resource management activities are not known to occur in the immediate Project area, nor are any aerial training activities. In the event of a wildland fire in the area, it is assumed that aerial firefighting operations could occur in the Project area below an altitude of 500 feet above ground level for the deployment of smokejumper crews, water and fire retardants, and miscellaneous para-cargo (BLM and DOE 2012).

3.10.3.6 Mineral Resources

The closest active mine to the Project solar site is the Pumpkin Hollow Copper Mine, owned by Nevada Copper. Pumpkin Hollow is located on private land that was withdrawn from public land in 2015 through an act of Congress. The Project gen-tie alignment crosses through unpatented mining claim areas. The closest mining claim areas for Pumpkin Hollow are approximately 0.3 mile to the northwest of the Project solar site, as shown in Figure 3.10-6. The gen-tie alignment traverses seven sections that have active or filed claims within them. These claims are related to Pumpkin Hollow (as shown in Figure 3.10-6). The sections and number of claims crossing the gen-tie alignment are listed in Table 3.10-2.

Figure 3.10-4 Airports



Figure 3.10-5 Military Routes

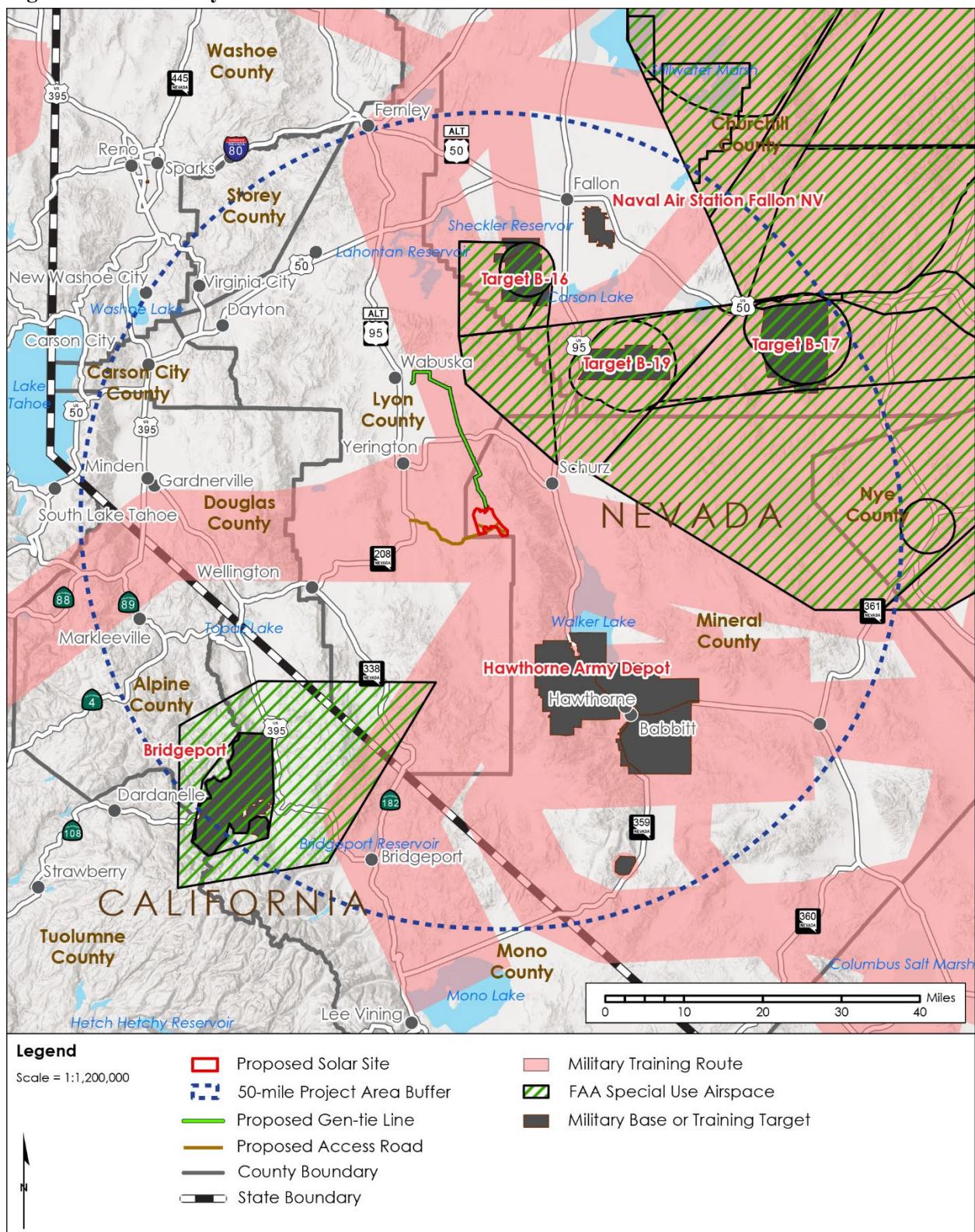


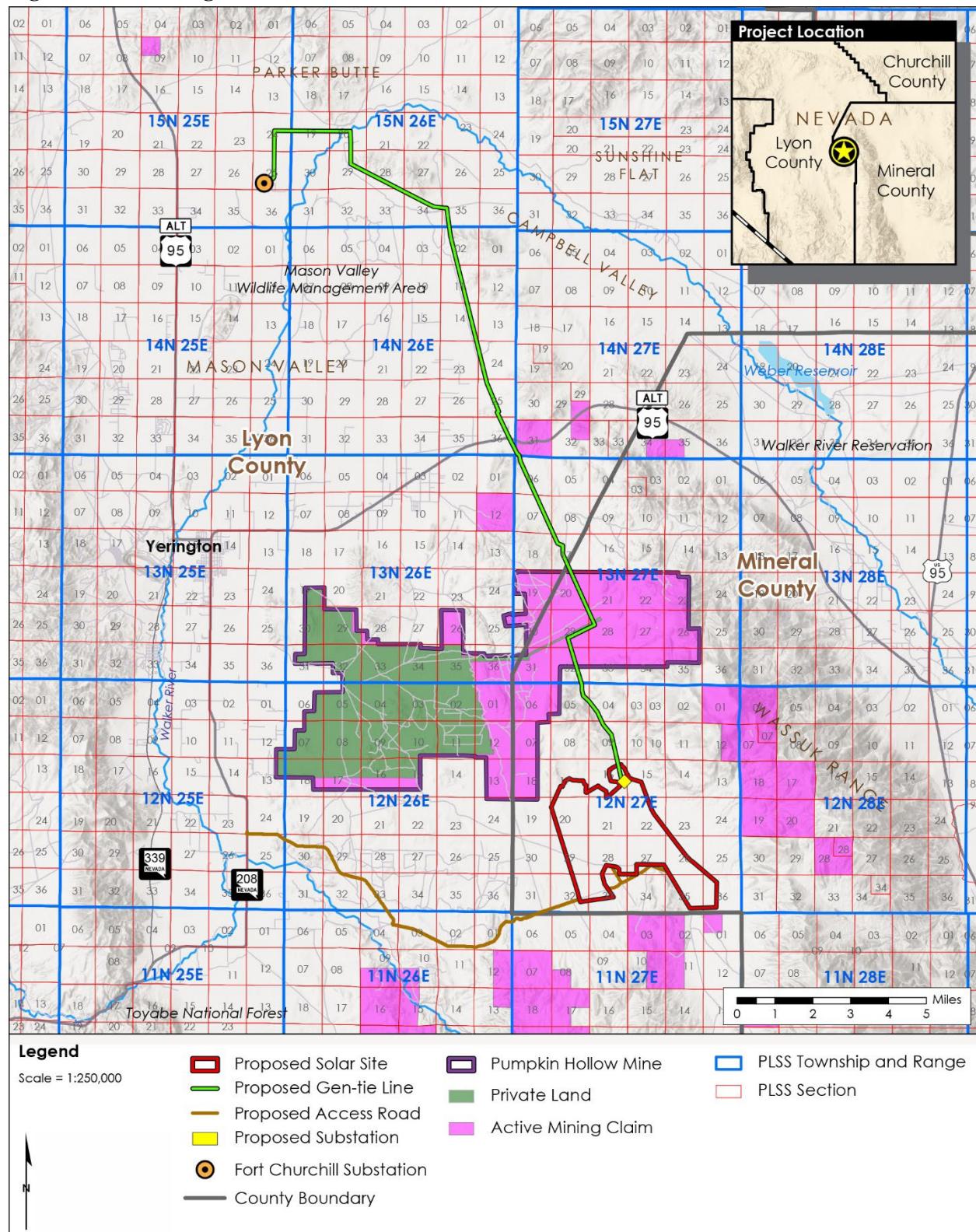
Figure 3.10-6 Mining Claims

Table 3.10-2 Active Claims within Gen-Tie Alignment

Township	Range	Section	Number of claims
12 North	27 East	5	8
13 North	27 East	17	3
13 North	27 East	20	33
13 North	27 East	21	36
13 North	27 East	28	45
13 North	27 East	29	27
13 North	27 East	32	20

Source: (EnviroMine, Inc. 2022)

3.10.4 Environmental Consequences

3.10.4.1 Methods

Existing land use data were collected through analysis of aerial photography, field verification, review of existing studies and plans and BLM databases, and through coordination with local and county agencies. The Project was reviewed for conflicts with applicable land uses and realty, plans and policies, special management areas, and military and civilian aviation.

3.10.4.2 Proposed Action

Construction Impacts

Land Use and Realty. Several existing approved and pending land use authorizations are found in the Project area, as shown in Table 3.10-1. The Project could impact existing and approved, as well as proposed, new land use authorizations if it conflicts with activities authorized in the ROW or lease. The Applicant would be required to coordinate with existing ROW holders where the Project would be located adjacent to or crossing an existing ROW. Any work within an existing ROW would be coordinated with the existing ROW holder.

A distribution line ROW held by Sierra Pacific Power Company (doing business as NV Energy) is located within the Project solar site (NVNV105887193) and would need to be re-routed through coordination with NV Energy and a permitting process with NV Energy. This line is not energized; however, NV Energy renewed the ROW in August of 2021 for 30 years. The Project gen-tie alignment would cross several existing and proposed transmission line ROWs, including the existing LADWP Pacific DC Transmission Line (NVN1060796522 [legacy N-1018]), which may require a License Agreement that would be submitted to LADWP prior to construction. The gen-tie would also parallel the proposed Greenlink West ROW (N-099863) for approximately 20 miles.

Coordination would be needed to ensure that, when the final engineering and design is completed for the proposed Project and Greenlink West, the placement of the line and ROW are compatible, including clearance distances. Several other transmission and gas lines are located in proximity to the Fort Churchill substation and would require additional coordination during the Project's final design to avoid conflicts.

The Western Solar Plan PDF LR2-1 requires that solar facilities be designed and constructed to avoid, minimize, and/or mitigate impacts on the BLM land use planning designations. Additionally, Solar PDF LR1-1 requires that land use conflicts and constraints be identified in the WEAP. The WEAP would be provided to all personnel prior to entering the Project site. MM LU-1 would be implemented to avoid potential ROW conflicts during construction. MM LU-1 requires coordination with the transmission line holders (i.e., NV Energy and LADWP) to identify potential conflicts between existing and proposed transmission lines and Project gen-tie lines. Additional requirements include reaching an agreement with

NV Energy for relocation of the existing distribution line through the Project solar site and adjustments to the ROW for the distribution line and scheduling with the appropriate holder (i.e., NV Energy) in overlapping ROW areas to minimize disruption to construction activities. Potential impacts to ROW would be minimized through the implementation of MM LU-1.

Transportation Corridors. Improvements to the unpaved East Walker Road, Reese River Road, and Old State Road 2C would be required to sustain heavy truck traffic for construction. Preliminary estimates include improving the road base and some stabilization where required. The Project is anticipated to have a long-term beneficial impact on these transportation corridors and improve public access while reducing dust generation. East Walker Road would be paved and is managed by Lyon County Roads. To ensure no conflicts, the Applicant would need to obtain the appropriate permits for use and upgrade of roadways under county and State jurisdiction.

The Project would temporarily impact transportation corridors where the gen-tie lines would cross local roads as well as US 95A and the UP Railroad. Transportation routes in the Project area would see an increase in vehicle traffic during implementation of the Project, especially during construction activities (see Section 3.17: *Transportation and Traffic*). Project construction activities would occur over a 16-month period and would not block or preclude existing land use authorizations located within or adjacent to the analysis area. Traffic concerns would be addressed within the Traffic and Transportation Plan and would not cause an impact to adjacent landowners, land uses, or transportation routes to adjacent land.

Support structures for the gen-tie lines would be installed outside of the transportation corridors. The structures and suspended conductor would not impede travel; however, brief highway, road, and railway closures are expected during construction (installation) and decommissioning (removal) of the overhead conductor. Closures are necessary for safety purposes when installing/removing temporary guard structures and during specific periods of the conductor stringing process.

Temporary closure of US 95A, local roads, and the railroad would be coordinated with NDOT, Lyon County, and UP Railroad, respectively. The necessary encroachment permits and authorizations would be obtained prior to any work within the ROWs. Vehicle traffic on highways would be managed according to NDOT encroachment permit requirements. Adverse impacts to existing transportation corridors are not anticipated as the Applicant would be required to obtain the appropriate permissions, approvals, and permits to cross the transportation corridors.

Utility Corridors. The Project is designed to avoid conflicts with utilities that would be crossed by or aligned parallel to the gen-tie line. The Project would be built within the existing Section 368 energy corridor as an authorized use of the corridor. The Project solar site was selected to avoid the energy corridors to the east and west as well as the north. No incompatible uses with energy corridors would occur. The gen-tie would be located outside of energy corridors, including just to the north of the solar site, in order to avoid designated Bi-State sage grouse habitat within the energy corridor. The gen-tie would also be constructed outside the BLM utility corridor as the corridor crosses through the Mason Valley WMA, which contains sensitive resources. No adverse effects on energy corridors would occur.

Specially Designated Areas. Overview. Specially designated areas identified within 25 miles of the Project area include both boundary-based features (e.g., parks and conservation areas) and linear features (i.e., national trails and byways). All specially designated areas are sufficiently removed from the Project area to avoid direct impacts or adverse land use effects.

National Conservation Areas. The Project solar site would be located approximately 2.5 miles from the 3,415-acre Piston-Black Mountain NCA. A visual analysis was completed to review potential visual impacts to the NCA (BLM and DOE 2012). The visual analysis concluded that the surrounding topography would screen the majority of the Project from view and that, at positions from which it is visible, the Project solar site would not dominate the natural characteristics of the viewshed. Due to the lack of visibility and the distance to the Project area from key viewpoints, no impacts to the NCA are anticipated from the Project solar site. Refer to Section 3.13: *Visual Resources* for more information on the visual analysis.

The proposed gen-tie would be a high voltage line, which can generate corona noise, particularly in wet conditions and high heat. Corona noise is a buzzing sound that can be up to 50 to 60 decibels at 50 feet. Noise drops off approximately 6 decibels per doubling of distance and at 2.5 miles would be expected to be imperceptible within the Pistone-Black Mountain NCA. Background noise levels in a rural, quiet environment are around 45 decibels. Due to the distance between the Project and Black Mountain, no adverse effects are anticipated.

National Trails. The Project solar site and other components may be visible from the California National Historic Trail just south of Yerington, Nevada. However, views of the gen-tie structures would be obscured by topography. During clear atmospheric conditions, the solar panels may be slightly visible in the distant background but would not draw the attention of the casual viewer due to the presence of the city of Yerington located between the trail and the Project solar site in the distant background (Panorama 2023a). Refer to Section 3.13: *Visual Resources* for more information on the visual analysis.

The Project would not be visible from the Pony Express National Historic Trail due to distance (approximately 26 miles) from the Project solar site. The northernmost portion of the proposed gen-tie alignment is approximately 9 miles from the Pony Express Trail but would be located near existing transmission and energy facilities associated with the Fort Churchill Generating Station and the Fort Churchill substation. Other facilities, including the Wabuska geothermal plant, are found between the Pony Express Trail and the gen-tie alignment, as is a mountain range. Given the intervening topography, the gen-tie would not have visual impacts on the corridor of the trail (Panorama 2023a). The Project would not affect the scenic quality and historical significance of the National Trails; therefore, no impacts to National Trails are anticipated.

State Parks and Wildlife Management Areas. The Pitchfork Ranch section of the Walker River State Recreation Area borders East Walker Road, which serves as an access route to the Project. Heavy truck traffic would increase during construction and decommissioning. Dust control would be implemented along East Walker Road during these times to reduce potential impacts to air quality and safety. Road closures along East Walker Road are not proposed during any phase of the Project. Temporary delays or increased travel times due to construction traffic may occur but would not be significant as roads would remain open throughout construction, O&M, and decommissioning phases. Long-term operational traffic would not be expected to be noticeable above current volumes. The Applicant would work with Lyon and Mineral counties in development of a Traffic and Transportation Plan that would address traffic related issues.

On-site reconnaissance was performed for potential visual impacts from the Walker River State Recreation Area Park entrance, looking east toward the Project solar site. It was determined that the natural topography would obscure potential views of any Project components, and the viewpoint (i.e., key observation point, or KOP) was not carried forward for further technical analysis (Panorama 2023a). Refer to Section 3.13: *Visual Resources* for more information on the visual analysis.

Less than 1,000 feet of the proposed gen-tie alignment would cross the Mason Valley WMA. Although the added overhead transmission infrastructure would be visible from points within the WMA, it would be similar to the existing infrastructure related to the Fort Churchill Generating Station. During construction of the gen-tie, potential ground disturbance would comprise less than 1 acre. No new roads would be constructed within the WMA. Existing access roads within the WMA would be used to access the gen-tie. The Applicant would work with NDOW to obtain the appropriate rights from the Nevada Division of State Lands to construct in the WMA on NDOW property.

The Applicant would coordinate with NDOW to avoid and/or minimize any adverse direct effects. The Project would not alter any intrinsic value or use within any state parks or lands. With implementation of a collaboratively developed Traffic and Transportation Plan to address traffic volumes and use of dust suppression, impacts during construction and decommissioning to the State parks and lands would be minor. No long-term impacts would be expected.

American Indian Reservations. Although no Project components are proposed within Reservation boundaries, a section of the proposed gen-tie alignment, at its point farthest northeast, is in close

proximity to the Reservation lands. MM LU-2 would be implemented to realign that section of the gen-tie to ensure it is compatible with Greenlink West and to ensure no portion of the ROW is on the Walker River Reservation (unless otherwise agreed upon). Potential impacts to American Indian reservations would be avoided through implementation of MM LU-2.

Military and Civilian Aviation. *Air Space.* The tallest components within the Project solar site would be poles for the collector lines, which would not exceed 50 feet above ground level (AGL). The proposed gen-tie structure heights may range from 100 feet to just over 200 feet. FAA evaluation for safety hazards pursuant to Title 49 USC, section 44718 would be required since gen-tie components could exceed 200 feet AGL. The expected outcome may include the need for lighting at the top of the facilities.

MM LU-3 requires the Applicant to coordinate with FAA for the airspace evaluation process and to implement the required measures to avoid hazards to airspace. Adverse impacts would be avoided through the appropriate coordination and planning requirements and implementation of the requirements identified by the FAA.

Aviation Emergencies and Dangers from Glint and Glare. PV panels installed for the Project would reflect a greater amount of specular light than the existing desert landscape; however, the amount of reflected light would not reach levels that would create an aviation hazard. Adverse effects are not anticipated. Refer to Section: 3.13 Visual Resources for more information on visual impacts.

Communication System Interference. Project components would not be installed near aviation communication antennas or block transmission signals. Adverse effects are not anticipated.

Mineral Resources. Continued operation of existing mines outside of the Project area would not be impacted by construction or O&M of the Project. The Project includes the temporary withdrawal of 5,141 acres of land from mineral entry (i.e., mining claims cannot be staked under mining law) for a 2-year period from the release of the NOI in April 2023. Should the Project be authorized, the Project solar site would not be available for new mineral entry for the duration of the solar ROW. This withdrawal would limit access to mineral resources if they were to occur under the solar site; however, the withdrawal is allowed under FLPMA multiple-use mandates. Adverse effects would not be expected given no active mineral claims are found within the Project solar site. Mineral resources occur across the Project region in areas that are not affected by the Project.

The gen-tie would have a limited footprint and is not expected to impact claims along its route. Additionally, the majority of the gen-tie alignment is within designated utility corridors. Saleable minerals (e.g., sand, gravel), if encountered during construction, would be used on site. The quantity of excess saleable mineral materials and soil resources that could be removed from the Project area during construction would not be substantial compared to the overall quantity that would remain and be available following decommissioning. No significant adverse direct effects on the availability of mineral resources or mineral extraction would occur.

Operation and Maintenance Impacts

O&M impacts on land use and realty would be limited to the potential for conflict with existing land use programs, plans, policies, or authorizations. The Project would preclude the development of other land uses on the solar site but does not conflict with the BLM's existing solar energy project policies (BLM and DOE 2012) nor would it conflict with any existing land uses in the Project area.

Long-term operation of the Project would remain in conformance with the existing federal, State, and local land use plans and policies for land use and energy corridors. Implementation of the Project would not conflict with existing BLM land use authorizations. No new impacts to land use or realty would occur beyond those discussed under Construction Impacts.

As with the construction, Project O&M would not result in impacts to air space, aviation emergency, and glint and glare, nor would it interfere with communication systems. Adverse effects are not anticipated.

Decommissioning Impacts

Land use and realty impacts associated with decommissioning and reclamation activities for the Project would be similar to those associated with construction. Transportation routes in the region would see an increase in vehicle traffic during Project decommissioning activities (refer to Section 3.17 *Traffic and Transportation*). Traffic and transportation impacts from the Project decommissioning are anticipated to be less than those experienced during construction and would be addressed within a separate Traffic and Transportation Plan for decommissioning. Decommissioning of the Project would occur in conformance with Project reclamation plans, which would be reviewed by the BLM and required to include any new or revised land use policies. Decommissioning activities are therefore not anticipated to result in impacts to surrounding land use and realty.

Decommissioning activities would not adversely affect mineral resources. Once decommissioning is completed and the ROW terminated, the surface would be available for surface extraction of mineral resources again. No direct effects on the availability of mineral resources or mineral extraction would occur during decommissioning.

Following Project decommissioning and reclamation activities, lands associated with the Project would be reclaimed and returned to their pre-Project state to the extent feasible. Lands associated with the Project would remain under the management of the BLM and would be available for use in accordance with the BLM's multiple-use mandate. No long-term impacts to land use and realty from decommissioning activities would result.

3.10.4.3 Cumulative Impacts

Potential cumulative impacts on land use and realty could occur during Project construction, its anticipated 30-year lifespan, and during decommissioning. Other proposed solar developments in the Mason Valley and in Mineral County still need to undergo environmental review and permitting and would require coordination with existing ROW holders and consideration of existing land uses, prior to authorization or construction. This would reduce any cumulative effects to land use and realty. While cumulative adverse land use effect would be minimized, the build-out of the Mason Valley and other areas of Mineral County would result in a moderate loss to other potential land uses over the life of the projects. The cumulative build-out of the Mason Valley and the Highway 95 corridor in Mineral County with solar and mining development would not change the land uses for existing special management areas but would alter the overall cumulative existing conditions in these areas due to visual effects, as discussed in Section 3.13: *Visual Resources*, and change in recreational setting, as discussed in Section 3.12: *Recreation*.

3.10.4.4 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Under Alternative 1, Project construction, O&M, decommissioning, and cumulative impacts related to effects on existing land use and realty, effects on special management areas, and effects on aviation would remain the same as the Proposed Action because the Project components and total acres of disturbance would be only 9 acres less than for the Proposed Action. The same MMs, including MM LU-1, MM LU-2, and MM LU-3 would apply to this alternative to reduce any adverse effects.

3.10.4.5 Alternative 2 – Alternative Supplemental Access During Construction

Under Alternative 2, Project construction, O&M, decommissioning, and cumulative impacts related to effects on existing land use and realty, effects on special management areas, and effects on aviation would remain the same under Alternative 2 as the Proposed Action. The solar site, access road, and gen-tie would be constructed as described for the Proposed Action.

This alternative includes providing supplemental access to the solar site during construction. The access would need to be coordinated with existing land ownerships (e.g., Nevada Copper) and ROW holders (e.g., LADWP) and agreements established prior to authorizing supplemental access uses to ensure no conflicts.

3.10.4.6 Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West

Construction, Operation and Maintenance, and Decommissioning

Impacts would be the same as for the Proposed Action for the solar site and access road since the construction, O&M, and decommissioning phases would be the same as for the Proposed Action. The 24.1-mile-long gen-tie would be reduced to a 0.54-mile-long gen-tie and switching station under the Greenlink West line. The switching station would impact the proposed ROW for Greenlink West and would thus need to be approved by NV Energy in order to implement this alternative. Overall, this alternative would eliminate one of two 525 kV lines up to Fort Churchill substation and would thus not result in conflicts with any other ROWs in the vicinity of the Fort Churchill substation, nor along the gen-tie. The Project would not need to cross US 95A or the UP Railroad. MM LU-1 would still apply, except that the coordination with LADWP and other transmission line ROWs would not be needed. MM LU-2 would not apply since the gen-tie would no longer cross near Reservation lands. MM LU-3 would still apply for the limited number of gen-tie poles needed to connect the solar site to the new switching station.

Cumulative Impacts

The solar site acreage would be the same for Alternative 3 as the Proposed Action and would contribute to the overall increase in utility-scale solar development within the Mason Valley and Mineral County. Cumulative impacts related to Alternative 3 would be similar yet reduced as compared to the Proposed Action because there would be no impacts related to the 24.1-mile gen-tie line.

3.10.4.7 No Action Alternative

Under the No Action alternative, the BLM would not authorize a ROW grant, and the Proposed Action would not be implemented. The public lands in the Project area would continue to be managed by the BLM in accordance with existing land use designations, which may include the construction and operation of a different solar project or other energy development. There would be no use of the land area or designated utility corridors and, therefore, no contribution to cumulative land use impacts.

3.10.4.8 Relevant Required PDFs, the CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Western Solar Plan PDFs

Programmatic design features (PDFs) from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to land uses:

- LR1-1 and LR2-1

The CRMP Standard Operating Procedures

No SOPs from the CRMP are directly applicable to the impact analysis.

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction to minimize impacts to land use and realty:

- Worker Environmental and Awareness Program
- Traffic Management Plan

The Project would comply with the following mitigation measures to minimize adverse impacts on land use and realty:

LU-1: ROW Coordination

The following measures would be undertaken to avoid ROW conflicts:

- Coordination would occur with transmission line ROW holders/applicants to identify potential conflicts between existing and proposed transmission lines and Project gen-tie lines.

- Coordination with NV Energy would occur to reach an agreement for realignment of the existing distribution line through the Project solar site and adjustments to the ROW for the distribution line.
- Facility adjustments would be incorporated into final design and engineering plans through cooperative engineering agreements with LADWP and NV Energy, as needed, to avoid any conflicts, such as adjusting the locations or heights of conductors and support structures, including towers, or by evaluating other means of the Project's gen-tie lines crossing existing transmission line ROWs.
- Construction activities would be scheduled with the appropriate ROW holder/applicant (e.g., NV Energy) in overlapping ROW areas to minimize disruption to construction activities.

LU-2: Avoidance of Reservation Land

The final design of the Project gen-tie shall be subject to micro-adjustments to the alignment to ensure that the ROW of the gen-tie alignment does not cross onto Reservation Lands while ensuring avoidance or minimization of cultural or biological resources from realignment.

LU-3: FAA and DoD Compliance

The Applicant shall apply for the appropriate approvals and clearances under [Title 49 USC section 44718](#) for the FAA and Part 211 of Title 32 CFR for the DoD and shall provide documentation of approvals and clearances to the BLM prior to construction.

3.10.4.9 Irreversible and Irretrievable Impacts and Residual Effects

No irreversible commitments of resources would occur because the Project site would be reclaimed after decommissioning of the Project, and these uses could then be reestablished. No residual effects on land authorizations or transportation corridors would occur as coordination, obtaining permissions and authorizations, and implementing design modifications would avoid conflicts. The Project would not result in residual effects to utility corridors or military and civilian aviation as all impacts would be minimized once mitigation is implemented.

3.11 Rangeland Resources

3.11.1 Introduction

This section summarizes information provided in the Land Use and Corridor Report, Chapter 4: Rangeland Resources (Panorama 2023). The BLM lands within the Project area are available to graze under the current land use plan and are within actively permitted grazing allotments. Grazing on public lands is authorized by the Taylor Grazing Act of 1934. Management of grazing lands is also governed by FLPMA and the Public Rangelands Improvement Act of 1978. The number of livestock authorized per grazing allotment on public land is measured using animal unit months (AUM), which is the amount of forage needed to sustain one cow and calf, one horse, or five sheep or goats for one month. The BLM manages grazing so that the land can attain and maintain the desired condition defined by rangeland health standards and guidelines.

3.11.2 Analysis Area

The area of analysis for rangeland resources is the extent of land that could be directly or indirectly affected by the Project. Direct effects would be limited to designated rangeland that could be disturbed or converted to incompatible uses. Potential indirect effects on rangeland resources would be limited to a few miles or less or to locations where existing grazing activities in the Project area could be diverted due to a loss in grazing land (i.e., other public lands in the vicinity where grazing is allowed).

3.11.3 Affected Environment

The Project (including the solar site, gen-tie, and access road) would intersect five grazing allotments managed by BLM: Gray Hills, Perry Springs-Deadman, Black Mountain, Parker Butte, and Cleaver Peak

(as shown in Figure 3.11-1, and Table 3.11-1). More details on the grazing allotments are included in the Land Use and Corridor Report for the Project (Panorama 2023). The proposed gen-tie line alignment ROW would bisect the Black Mountain, Parker Butte, and Cleaver Peak allotments. The Gray Hills and Perry Deadman Springs allotments overlap with the proposed Project solar site (as shown in Figure 3.11-1).

The Gray Hills and Perry Springs-Deadman allotments overlap with the proposed Project solar site by approximately 1,722 and 3,419 acres, respectively (as shown in Figure 3.11-1). The Talbott Livestock Company LLC currently holds the grazing preferences for the Gray Hills and Perry Springs-Deadman allotments. The Rafter 7 Ranch serves as the base property associated with the permit and was donated to the State of Nevada and is now part of the Walker River State Recreation Area. The Walker Basin Conservancy manages the ranch on behalf of the State as the base property associated with the permit.

Associated grazing infrastructure, also commonly called *range improvements*, within or near the proposed Project solar site include fencing, a cattleguard, surface water spring water sources, well water sources, multiple water pipelines, water troughs, water storage tanks, and corrals (as shown in Figure 3.11-2 and Figure 3.11-3). Access to these allotments and the infrastructure for both allotments is primarily by Reese River Road.

Table 3.11-1 Open Grazing Allotments within the Project Area

Allotment name (BLM allotment number)	BLM field office	Management status	Use	Total active AUMs	Total acres	Proximity
Gray Hills (NV-03539)	Stillwater	Maintain	Active	4,751	105,451	Overlaps 1,722 acres of the Project solar site
Perry Springs-Deadman (NV-03573)	Stillwater	Maintain	Active	2,933	62,830	Overlaps 3,419 acres of the Project solar site and gen-tie alignment
Black Mountain (NV-03507)	Stillwater	Custodial	Active	900	14,320	Gen-tie alignment
Parker Butte (NV-03572)	Stillwater	Maintain	Active	1,669	30,781	Gen-tie alignment
Cleaver Peak (NV-03010)	Sierra Front	Maintain	Active	1,250	51,664	Gen-tie alignment

Source: (BLM 2022)

The grazing operator is currently authorized to allow 603 cattle on the Perry Springs-Deadman and 670 cattle on the Grey Hills allotment. On Perry Springs-Deadman, grazing is authorized between December 1 to March 31. On the Grey Hills allotment, grazing is authorized from October 16 to April 1 and again between June 5 to August 16. Within the Gray Hills Allotment, cattle are moved along the Reese River Road corridor towards the proposed solar site from the west to east, and to areas south of the proposed solar site in the vicinity of the Abraham Spring and Summit Spring.

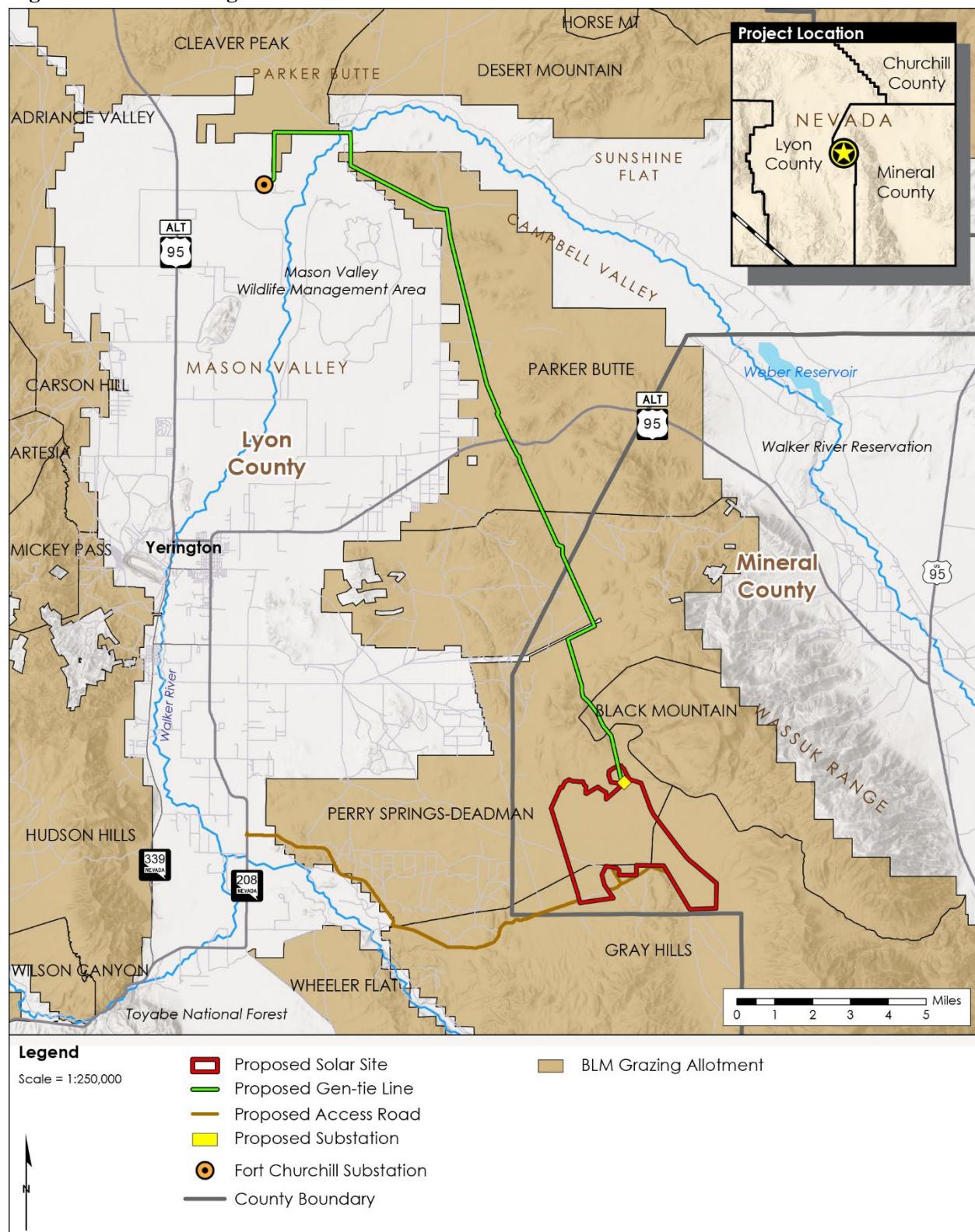
Figure 3.11-1 Grazing Allotments

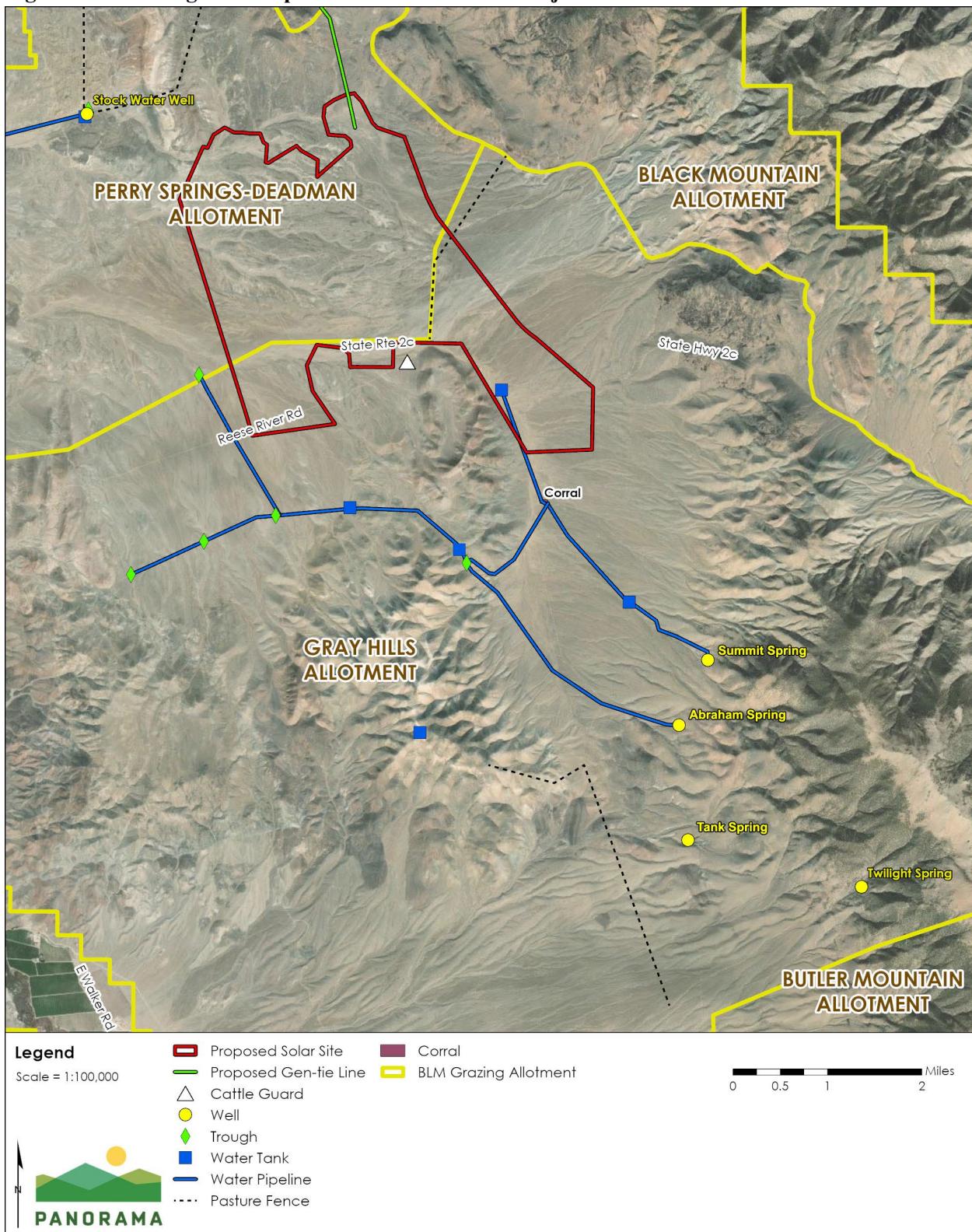
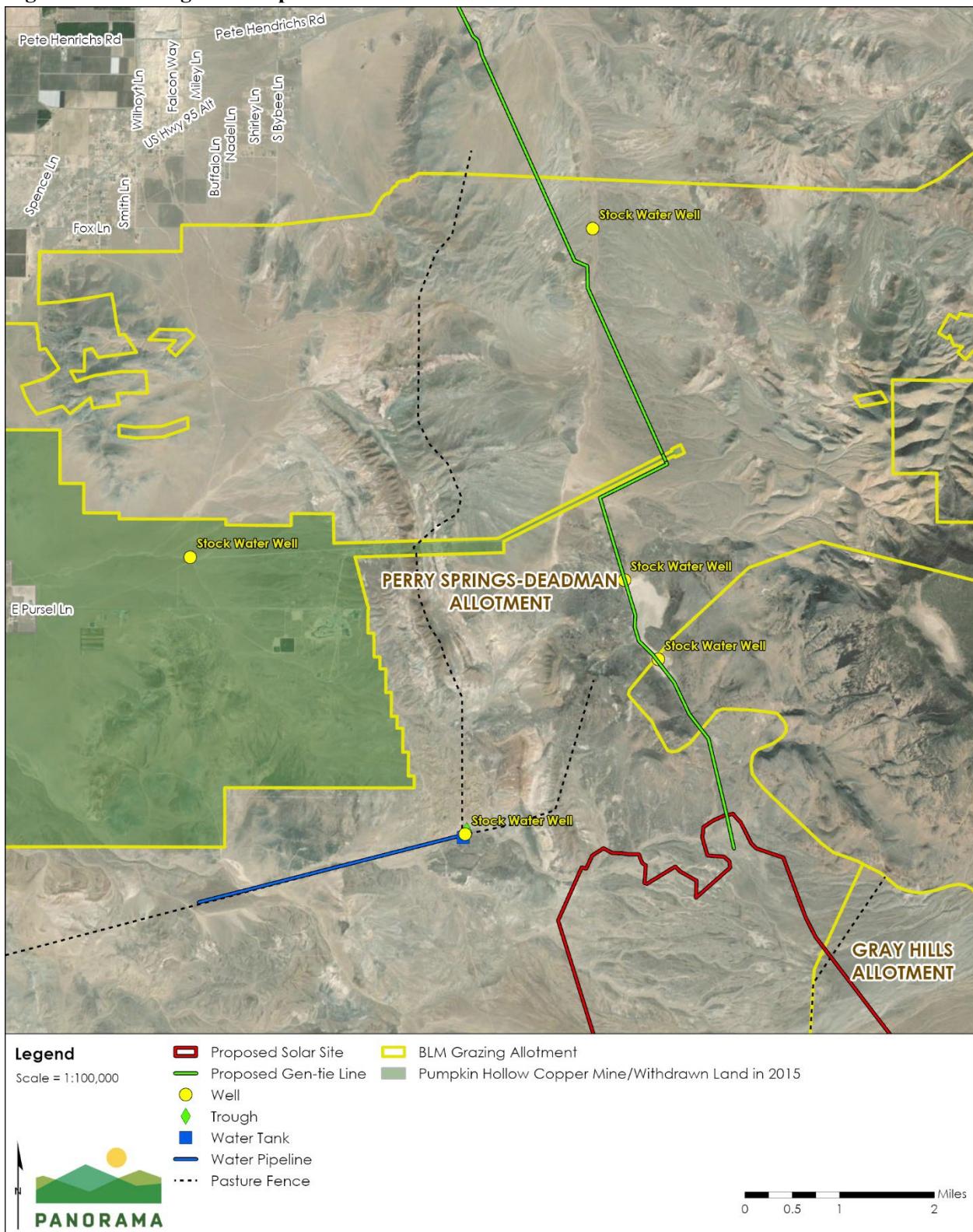
Figure 3.11-2. Rangeland Improvements around the Project Site

Figure 3.11-3 Rangeland Improvements around the Gen-Tie



Access to water influences where cattle can graze within the allotments. Currently, within the Gray Hills Allotment, a pipeline and water tank are located in the southwestern section of the Project solar site (Figure 3.11-2) where an approximately 20-acre section of solar panels is proposed. This water pipeline is sourced at Summit Spring, approximately 3 miles south of the proposed solar site. Another water line extends from the Abraham Spring (approximately 4 miles south of the solar site) to the west, over the adjacent hill, and then into the Mason Valley to the west of the southwestern portion of the solar site (also shown in Figure 3.11-2). A replacement of this pipeline was initiated by the Walker Basin Conservancy. This pipeline flows to a tank, then branches and extends north to a trough and west to another tank at the base of the hills.

The Perry Springs-Deadman Allotment is sourced with water through existing water wells (Figure 3.11-3). Wells to the north of the Project solar site provide water for grazing within the allotment along the proposed gen-tie. The closest well to the solar site is to the west of the northwest corner, approximately 1.25 miles away. This well is serviced by a gas-powered pumpjack motor that is unreliable and thus limits the grazing operator's access to the source of water needed to graze the areas adjacent to and west of the northwest portion of the proposed solar site.

3.11.4 Environmental Consequences

3.11.4.1 Methods

The BLM provided data specific to the affected grazing permit areas, including historical range improvements such as fencing and water infrastructure. Additional field data and information was collected by Panorama on a site visit with the BLM, the Applicant, and the current grazing operator in April 2023 and October 2023. A due diligence report was also performed by EnviroMine that included a review of grazing permits (EnviroMine 2022). The report is included in Appendix B of the Land Use and Corridor Report for the Project (Panorama 2023). Desktop analysis of BLM planning documents and associated GIS data resources were also compiled.

3.11.4.2 Proposed Action

Construction Impacts

Access Road - Access Impacts. The grazing operator currently grazes the solar site area and surrounding areas within the Gray Hills Allotment and the Perry Springs-Deadman Allotment from December to April with a permitted level of 603 head of cattle on Perry Springs-Deadman and 670 on Gray Hills. In accordance with Solar PEIS PDF RG 2-1, access from Reese River Road to both allotments and the associated range infrastructure would remain open and maintained during construction (BLM and U.S. DOE 2012). An existing cattleguard on Reese River Road may need removal during construction to accommodate heavy truck traffic but would be replaced upon completion of the construction phase. Existing fencing alignments, shown in Figure 3.11-2, would be modified around the Project solar site. Construction would require a large number of vehicles, including heavy vehicles delivering construction equipment and solar facility components. The use of East Walker Road and Reese River Road for construction may create conflicts for livestock movement; however, conflict and safety hazards for the grazing operator would be minimized through coordination to ensure safe movement of livestock along these roads to grazing destinations, as defined in Solar PEIS PDF RG2-1.

The construction of the Project could present an impediment to grazing and water access to the south of the Project site. A pipeline and tank is located within a 20-acre area of panels at the junction of Reese River Road and Old State Road 2C (Figure 3.11-2). The grazing operator needs this area to gather cattle, water them, and move them south towards the corral and grazing areas south of the solar site. To reduce impacts to grazing operation access, MM RG-1 includes during final design, removing this 20 acres of panels and redistributing them throughout the other areas of the solar site, minimizing impacts to access.

Solar Site – Loss of Grazing Areas/AUMs. Construction and O&M of the Project solar site would require closure of approximately 1,722 acres from the Gray Hills allotment and approximately 3,419 acres from the Perry Springs-Deadman allotment, representing 1.7 percent and 6.9 percent of the total

allotments, respectively, or a combined 3.1 percent. This loss corresponds to 218 AUMs out of a total of 7,150 AUMs in the two allotments, and the associated forage. The permit holder would be provided a two year notification letter under 43 CFR 4110.4-2 of the Project's need to preclude grazing in accordance with the CRMP Grazing Livestock Management SOP 9 (BLM 2001b). Since the grazing operator currently utilizes the solar site and surrounding area to graze cattle, the loss would be considered an adverse effect.

MM RG-1 would be implemented to reduce the adverse effect of the loss of 3.1 percent of the AUMs in the allotments. The grazing operator has indicated that they could graze other areas of their allotments if existing water sources could be improved, and once the pipeline replacement is completed by the Walker Basin Conservancy. With improvements, including completion of the pipeline replacement, the areas to the southwest of the Project solar site could be grazed. The areas to the northwest of the solar site could also be grazed with improvements to an existing well. These improvements would allow for the grazing operator to maintain their current grazing operations and would not displace or require them to scale down their operations even with the loss of the solar site area, and even at fully permitted grazing levels. MM RG-1 requires the Applicant to work with the grazing operator to fund these water conveyance improvements, thus minimizing impacts to the grazing operations. The Project's construction (and O&M) would still result in the loss of 218 AUMs and forage, but with mitigation, the loss would not make livestock production uneconomical for the grazing operator.

MM RG-1 would minimize effects to grazing operations but could result in other types of impacts. Key impacts from potential improvements to water infrastructure, as identified under MM RG-1, are summarized in the following table. These impacts assume activities such as upgrading the stockwater well with solar panels or additional power, completion of the stockwater pipeline from Abraham Springs and installation of replacement tanks or troughs, and habitat and fence replacements or improvements to Summit and Abraham springs. Other infrastructure improvements may be proposed and may require additional NEPA analysis prior to authorization of the work. The Applicant would assist with additional NEPA approvals for these improvements, if needed.

Table 3.11-2 Summary of Potential NEPA Impacts from Range Improvements

Topic	Summary of potential impacts and analysis
Air Quality and Soils	Air quality and soils impacts from potential water conveyance improvements are expected to be limited in extent, as construction for the types of improvements that may be installed would not require substantial ground and soil disturbance. The replacement of water lines is performed using small equipment, as the lines are typically 1 to 1.5 inches in diameter and installed one to two feet underground. Some soil would be displacement but would be replaced to rebury the lines. Solar panel installation at the stockwater well would not require substantial grading nor would fence improvements at the existing springs. The well is currently operated using a gas engine, and as such, emissions from the engine may be offset with either a higher efficiency engine or solar panels. Air quality impacts exceeding standards are not expected.
Biology and Water Resources	No federal or State-listed threatened and endangered species are found in the area. Special status plants and animals may experience minor disturbance from noise during construction, but it would be similar to that experienced during movement of cattle. Improvements to the springs would benefit big game species, vegetation, and water quality by preventing wild horses from creating sedimentation and ground disruption at the springs. Vegetation and wildlife measures identified in this EIS could be implemented as appropriate to minimize effects. Drainages would not be impacted by the range improvements, since they would largely be maintenance or replacement of existing infrastructure. No changes to landforms or drainages would occur, except to benefit the water quality and habitat around the springs.

Topic	Summary of potential impacts and analysis
Cultural	Most areas are currently disturbed, and the improvements would not involve extensive grading or ground disturbance. Surveys should be conducted for any areas of new ground disturbance and if archaeological or historic resources are found, they should be avoided to minimize effects.
Land Use and Recreation	No impacts to land uses or recreation would occur from any proposed range improvements. Improvements would primarily be to existing infrastructure under maintenance.
Socioeconomics and Environmental Justice	No impacts to socioeconomics or environmental justice would occur as the range improvement work would only require a few workers to complete and would not result in other environmental impacts that could affect environmental justice communities.
Public Health and Safety	No impacts to public health and safety are anticipated from the range improvements, nor any increased risks of fire. The improvements will likely bring water sources to more areas, thus improving potential for extinguishing a fire, should one break out.
Transportation	A few workers would be needed to complete range improvements. These workers would not impact traffic or transportation routes.
Visual Resources	Visual impacts of improvements would likely be minor and would be in character with existing improvements, including tanks, fences, and troughs. Any improvements would likely be in the same area as existing features and thus would not alter the visual character of the area. Improvements to power the grazing operator's stock water well could include placement of solar panels, which would have some visual impacts, but the area of panels would be limited to a few dozen panels in the location of the existing disturbed corral. Visual impacts of panels in this area would not result in contrast given proximity to the solar site, and the general disturbance in the area of the panels.

Gen-tie – Access and AUM Impacts. Short-term construction related impacts would be expected during installation of the gen-tie line poles within the Black Mountain, Parker Butte, Perry Springs-Deadman, and Cleaver Peak allotments. Given heavy equipment travel on small roads, some potential for conflict with moving or grazing livestock is possible, which would be an adverse effect if livestock are injured or killed or if grazing operations are impeded. Prior to construction, the Applicant would communicate the construction schedule and access timing with the grazing permit holders and grazing operator to avoid potential interference with any active grazing in that area, per MM RG-1, minimizing effects. If the grazing operators' fencing is required to be removed or relocated, the Applicant would replace the range infrastructure in cooperation with the grazing operator to maintain existing operation levels. Construction of fencing would be in accordance with the CRMP SOP 3 (Livestock Grazing Management). Existing access roads would be utilized wherever possible. Installation of new access roads to pole locations would likely require minor grading and removal of vegetation within the affected allotments; however, disturbance would result in a small loss of vegetative cover and is not expected to impact forage resources. In the long term, a permanent 150- or 200-foot-wide ROW corridor for the gen-tie would remain; however, grazing could continue within it. Some loss of potential forage would occur around the base of gen-tie poles and new road spurs, totaling approximately 64 acres plus an additional 100 acres for temporary pull and tension sites during construction across the 24.1-mile-long gen-tie. The total acreage for the allotments within which the gen-tie poles and access roads would be located is 58.2 acres, a 0.0004 percent reduction in overall grazing acres. This reduction would not have economic effects on the

allotment holders and thus would not be adverse. Most of the gen-tie alignment is within an existing designated utility corridor.

Operation and Maintenance Impacts

Operation and maintenance activities would have the same impacts as those described for construction. Access from Reese River Road to both allotments and the associated range infrastructure would remain open post construction, and the road would be widened with the surface maintained, likely making access easier for the grazing operator. Modifications to fencing and water infrastructure would be implemented throughout the life of the Project. Under MM RG-1, the 20-acre area of panels near existing water infrastructure and juncture for cattle movement would be removed and redistributed in the main body of the solar site and support would be provided to improve access to water. Grazing infrastructure (e.g., fences) affected by the Project would be replaced or compensation provided. As identified for the construction analysis, the amount of permanent loss of available rangeland that would make livestock production uneconomical would not occur with enhancement of water and infrastructure to allow for grazing of other areas within the allotment. The loss of 218 AUMs, corresponding to 3.1 percent of the existing allotments would still occur.

Decommissioning Impacts

Decommissioning would include removal of the Project fencing. The Applicant would coordinate with BLM and the grazing permit holder to reinstall fencing for grazing activities in accordance with the Allotment Management Plan applicable to the grazing permits at that time. The groundwater well and associated stock water rights may be transferred to the grazing permit holder and would likely remain in operation for future livestock use, a long-term beneficial impact. The solar site would be revegetated in accordance with the CRMP Livestock Grazing Management SOP 6 and the Decommissioning and Site Reclamation Plan, and roads would be rehabilitated in accordance with the CRMP Livestock Grazing Management SOP 2. The site would be eligible for future inclusion for BLM permitted grazing upon complete establishment of vegetation; however, regrowth of vegetation may take many decades to a century or more and thus would be considered a loss even after decommissioning. Due to the additional stock water source, grazing of the allotment would continue after decommissioning as it did during O&M. Decommissioning of the Project is not anticipated to have significant adverse impacts to rangeland resources and eventually the site may be productive again.

Cumulative Impacts

Approximately 18 percent of the Perry Springs-Deadman grazing allotment was closed due to recent expansion of the Pumpkin Hollow Copper mine located immediately north of the proposed solar site (BLM 2015). The closure of an additional 6.9 percent of the permit area due to the Project is recognized as an adverse cumulative impact to the Perry Springs-Deadman grazing allotment. Due to the regional increase in utility-scale solar projects proposed within BLM grazing allotments, the Project also cumulatively contributes an overall reduction in available grazing area. Multiple other proposed utility-scale solar projects are in the early planning stages within and near the Parker Butte and Cleaver Peak allotments. The Project's contribution would be reduced with the provision of additional water sources that would increase grazing opportunities to the area immediately west of the Project site, to offset those lost. The Project would still contribute incrementally to a cumulative loss of grazing lands.

3.11.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction, O&M, decommissioning, and cumulative impacts to rangeland resources under Alternative 1 would be similar as described for the Proposed Action because the same amount of grazing allotment acres would be removed, and the same Project components would be installed. The increase in retained and restored vegetation at decommissioning would reduce the amount of time the land is excluded from future rangeland activity, which would represent a reduced impact to rangeland resources over the long term. The same PDFs and MMs as identified for the Proposed Action would be implemented for Alternative 1 to minimize adverse effects. This alternative removes the 20 acres of panels within the critical area for grazing operations.

3.11.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Construction, O&M, decommissioning, and cumulative impacts to rangeland resources under Alternative 2 would be the same as described for the Proposed Action. This alternative would include utilizing supplemental access routes to the solar site during construction. This alternative would have the same impacts with regard to the solar site and gen-tie as the Proposed Action since these components of the Project are the same under this alternative. Providing some supplemental access during construction could reduce some traffic on East Walker Road and Reese River Road and thus could result in fewer conflicts with livestock and livestock transport. The same PDFs and MMs as identified for the Proposed Action would be implemented for Alternative 1 to minimize adverse effects.

3.11.4.5 Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West

Construction and Operation and Maintenance Impacts

Alternative 3 would have reduced construction and O&M related impacts to rangeland resources overall due to the reduction in construction activity along the gen-tie alignment. There would be no impacts to the Black Mountain, Parker Butte, or Cleaver Peak allotments. Impacts to the Perry Springs-Deadman allotment, however, would increase by approximately 11.8 acres for the 0.54-mile-long gen-tie and switching station. The Proposed Action includes approximately 58 acres of disturbance for new road spurs and transmission poles that would be eliminated, such that the overall impact would be reduced under this alternative for the Perry-Springs-Deadman allotment.

Decommissioning Impacts

Decommissioning impacts to rangeland resources would be reduced overall as compared to the Proposed Action, due to the reduction in length of the gen-tie alignment. Decommissioning impacts at the solar site would be the same as described for the Proposed Action.

Cumulative Impacts

Alternative 3 would contribute the same adverse cumulative impacts to rangeland resources as described for the Proposed Action due to the removal of roughly the same amount of acres from grazing allotments.

3.11.4.6 No Action Alternative

The Project would not be implemented under the No Action alternative. No adverse effects to rangeland and grazing would occur.

3.11.4.7 Relevant Required Solar PEIS Programmatic Design Features, the CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Solar PEIS Programmatic Design Features

Applicable Solar PEIS PDFs are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to rangeland resources:

- RG2-1

The CRMP Standard Operating Procedures

SOPs from the CRMP (BLM 2001b) are listed in Appendix B. The following SOPs would minimize impacts to rangeland resources:

- Livestock and Grazing SOPs 2, 3, 6, 9, 10
- Land Use and Realty SOPs 5, 6

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction, O&M, and decommissioning to minimize impacts to rangeland resources:

- Decommissioning and Site Reclamation Plan

The Project would comply with the following mitigation measures to minimize adverse impacts on rangeland resources:

MM RG-1: Grazing Operator Coordination and Compensation

The existing pipelines, fences, and other water infrastructure shall remain in place and remain accessible to the grazing operator during construction and operation of the solar site and gen-tie. Solar panels located in an approximately 20-acre area at the junction of Reese River Road and Old State Road 2C shall be removed and redistributed throughout the main body of the site to maintain this 20-acre area as an important area for access by the grazing operator. Any pipelines, fences, or other grazing infrastructure shall be avoided during construction or otherwise replaced in the final design of the Project solar site, or compensation shall be provided to the grazing permit holder based on the replacement value of the infrastructure. At a minimum, the Applicant shall also coordinate with the grazing operator to improve livestock watering conveyance to underutilized pastures near the Project area. The support provided (e.g., environmental, financial/funding, and/or construction support scope and term) shall be documented through a written agreement with the grazing operator prior to construction. For infrastructure improvements supported by the Applicant that extend beyond the solar site boundary, (e.g., to the stock water well to the northwest of the Project solar site, to the pipeline and trough and tank infrastructure to the south of the Project solar site, or to the springs to the southeast of the Project solar site) the Applicant shall work with the grazing operator and BLM to ensure the appropriate permitting and documentation of the rangeland improvements is completed.

MM RG-2: Maintain Access to Grazing Allotments

During construction, the Applicant shall coordinate with the grazing permit holder to ensure that access along East Walker Road and Reese River Road to the allotments is open and safe for passage without delays to the permit holder. The Applicant shall include measures in their construction contracts to ensure that workers avoid livestock and follow speed limits on roads to avoid collisions and injury. Any livestock accidentally injured or killed by Project activities shall be compensated for to the permit holder at a market rate.

3.11.4.8 Irreversible and Irretrievable Impacts and Residual Effects

No irreversible or irretrievable impacts that would affect rangeland resources. The loss of 218 AUMs, even though grazing operations could be sustained with mitigation, would represent an adverse, residual impact. The impact would be reduced at decommissioning under Alternative 1.

3.12 Recreation

3.12.1 Introduction

This section addresses potential Project-related physical alterations or other impacts to established, designated, dispersed, or planned recreation areas, resources, experiences, activities, or outcomes. Impacts to public access are evaluated in accordance with Secretarial Order 3373: Evaluating Public Access and the BLM Public Land Disposals and Exchanges. NDOW manages hunting in Nevada through three regional offices, each overseeing hunting in a series of game management units (GMUs) and hunting units (HUs) within each GMU.

3.12.2 Analysis Area

The area of analysis for recreation is the extent of land that could be directly affected by the Project and where access, opportunity, or experience to recreational opportunities could be directly or indirectly affected. Project impacts resulting from construction, O&M, and decommissioning activities have the potential to affect recreational resources both in the Project area and, to some degree, in proximity to the Project area due to indirect impacts such as noise and dust.

3.12.3 Affected Environment

3.12.3.1 Introduction

This section describes the recreational setting in terms of recreational opportunities in the analysis area, including designated recreation sites, recreation access points, designated trails, and dispersed and non-designated recreation activities. Recreational opportunities within the analysis area are administered by the BLM under the CRMP (BLM 2001). Three main categories of recreation are found on BLM-administered lands: dispersed recreation, developed recreation, and SRP. OHV use is a popular dispersed recreation activity on public lands in the Carson City District Office planning area.

3.12.3.2 Recreation Management Areas

Recreation management areas are the BLM's primary means of managing recreational use of public lands. An area of public land may be designated as a special recreation management area (SRMA) or extensive recreation management area (ERMA). The Project area is not located within any SRMA or ERMA.

3.12.3.3 State Designated Recreation Areas

The State-managed Pitchfork Ranch section of the Walker River State Recreation Area is located approximately 5 miles east of the Project area along East Walker Road (as shown in Figure 3.12-1). The Project access road along East Walker Road provides access to and is partially located on the Walker River State Recreation Area.

The Mason Valley WMA is located north of Yerington, Nevada. The proposed gen-tie alignment borders the WMA to the east and south, nearly surrounding the Fort Churchill substation. The proposed gen-tie alignment crosses a small portion of the most northern section of the Mason Valley WMA. No other WMAs are located within or near the Project components (including the Project solar site, gen-tie, and access road).

3.12.3.4 Recreational Uses

Off-highway Vehicles

OHV travel in the Project area occurs on existing roads, trails, and dry washes (as shown in Figure 3.12-1). OHV use falls under *limited use* in the Project area, which means OHV use is limited to existing roads and trails.

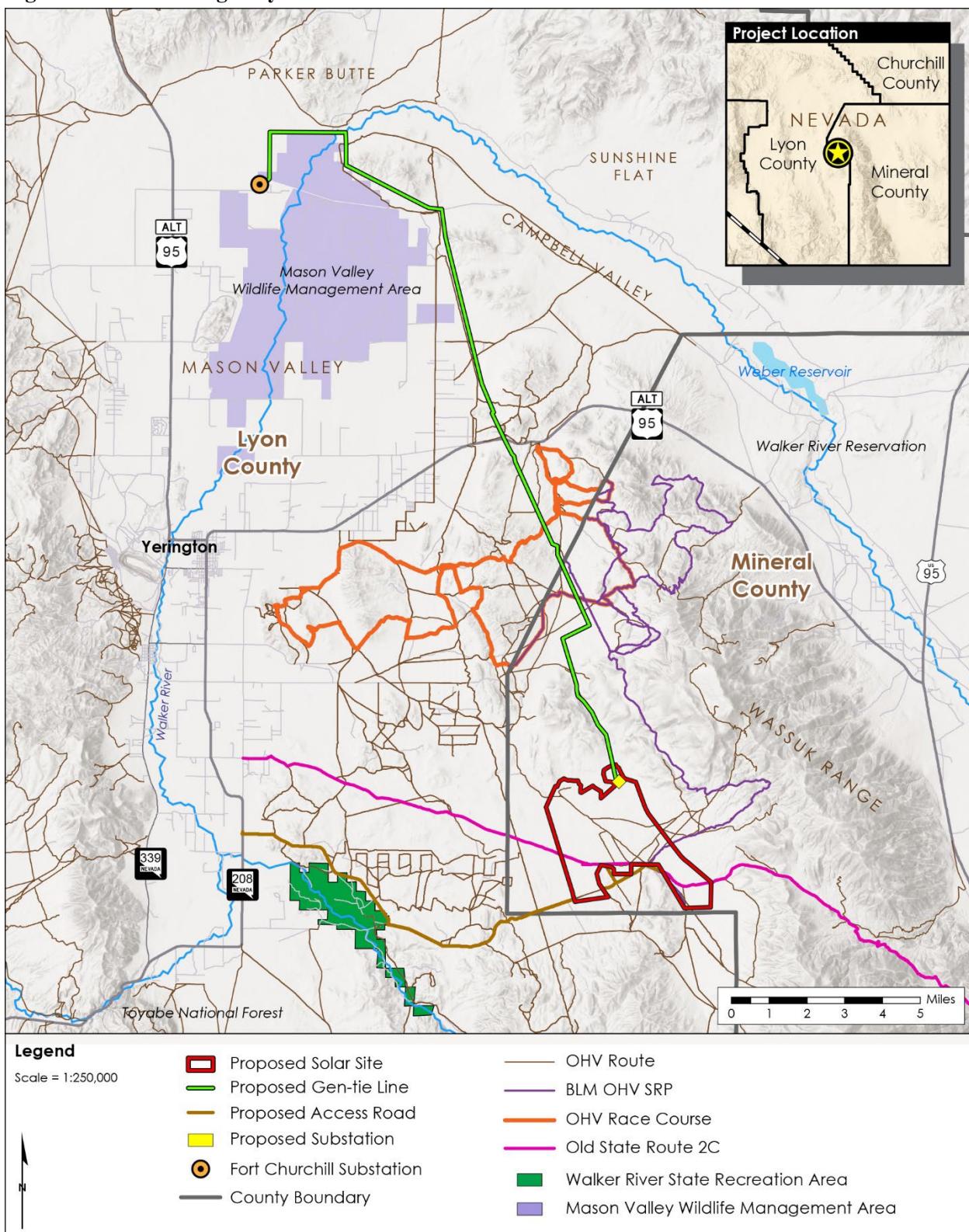
Routes are cooperatively managed between the BLM and the State of Nevada. Four trail types used for recreation purposes are located within the Project boundary: BLM OHV SRP, OHV Route, Old State Road 2C, and Reese River Road (BLM 2023a; 2023b). Table 3.12-1 provides the distances of the trail types within the Project solar site. The BLM Nevada State Office is developing a programmatic Environmental Assessment that will cover a range of SRPs for OHV events in Nevada (BLM 2023c). One of the routes within the Stillwater Field Office crosses through the southeastern Project site along Old State Road 2C. Routes within the Sierra Front Field Office cross the proposed gen-tie alignment, south of US 95A (BLM 2023a; 2023b).

Table 3.12-1 Recreational Trails within the Project Solar Site

Trail type	Total distance of trails (miles)
BLM OHV SRP	2.1
OHV route	14
Old State Road 2C	1.5
Reese River Road	0.8

Source: (BLM 2023a; 2023b; Nevada Offroad Association 2023)

Figure 3.12-1 Off Highway Vehicle Routes



Source: (Nevada Offroad Association 2023)

Old State Road 2C provides access to the Walker Lake SRMA by OHV. The road is unmaintained and is unlikely to be used by passenger vehicles. Consultation with the Executive Director of the Nevada Offroad Association determined that Old State Road 2C provides important access through the western front of the Wassuk Range to the northern end of the Walker Lake area and may be part of future BLM SRP events. The Nevada Offroad Association also identified a racecourse north of the Project solar site that the proposed gen-tie would cross (as shown in Figure 3.12-1) (Nevada Offroad Association 2023).

Hiking

Hiking may occur in limited capacity along the unpaved trails commonly used by OHV users. However, hiking use is likely low due to the lack of sites of interest in the immediate vicinity. Hikers most likely frequent the nearby features such as Walker River SRA and Mason Valley WMA.

Camping

Dispersed camping is currently permitted within the Project analysis area and surrounding areas. However, camping use is likely low due to the lack of designated camping sites and lack of sites of interest in the immediate vicinity. Camping in the area predominately occurs at the Walker River State Recreation Area and Mason Valley WMA.

Hunting and Target Shooting

The solar site and gen-tie fall within GMU 20, which is comprised of eight HUs, two of which cross the Project area (202 and 203). The general hunting season for these game units include:

- Antelope: August 1 to October 30
- Desert Bighorn Sheep: October 15 to January 1
- Mule Deer: August 10 to September 9 and November 5 to January 1

HUs extend up over the Mason Valley WMA, where the gen-tie would be located. Mule deer and antelope can be found in this area, as well as waterfowl. Bighorn sheep are most commonly found at the higher elevations of the Wassuk Range, outside of the Project area (NDOW 2017). No designated shooting areas occur within the Project area, but undesignated target shooting may occur within the Project area or nearby.

3.12.4 Environmental Consequences

3.12.4.1 Methods

Determination of potential impacts to recreation from the Proposed Action and alternatives is primarily based on existing recreation resource management data provided by the BLM CCDO. GIS information and recent aerial images were also used in this analysis to identify potential non-designated recreational opportunities and uses. Adverse impacts were determined based on whether the Project would diminish public or private recreational use of or access to developed recreation sites and undeveloped recreation areas in the Project vicinity.

3.12.4.2 Proposed Action

Construction Impacts

Solar Site. Recreational uses would be prohibited on the 5,141-acre Project solar site during construction. A perimeter fence would be erected that would prohibit public access to the entire Project solar site; however, in compliance with Western Solar Plan PDF R1-1, Reese River Road and Old State Road 2C would remain open through the Project solar site for recreational access throughout all Project phases, including SRP events. Fencing would be placed outside the roadway allowing traffic through the site. The perimeter fence would be an approximately 6- to 7-foot-high chain link fence with 1-foot-high barbed-wire security strands at the top.

Some existing OHV trails within the solar site would be removed from OHV access and use. Approximately 14 miles of OHV routes within the solar site would be closed during construction. The

2.1-mile portion of the BLM's OHV SRP route within the Project area would remain open so that races could continue through the solar site. Also, key OHV routes along Old State Road 2C and Reese River Road would also remain open through the site for OHV use. Per MM REC-1, the Applicant would coordinate with the OHV community during races to ensure safe access since the same roads would also be used for construction traffic.

Hunting, hiking, and camping would be prohibited on the Project solar site during construction; however, the area does not see high use of any of these activities. HU 202, in which the Project solar site is located, is approximately 570,000 acres. The solar site comprises 0.1 percent of the total HU area and thus the loss of this area for hunting during construction would not be adverse.

Potential impacts to visual resources are discussed in detail in Section 3.13: *Visual Resources*. Views of construction of the Project would change the recreational experience from the current natural views of the desert landscape and would appear more industrial and developed. Construction noise might be audible to recreational users during the 16-month construction period. However, construction noise would result in minor impacts to recreation users as construction noise would be temporary, short-term, and dispersed across a large (approximately 5,141 acres) site that would diminish noise impacts.

Access Road. Construction activities would cause a temporary increase in truck traffic along East Walker Road, Reese River Road, and Old State Road 2C. Access to the Walker River State Recreation Area from East Walker Road would remain open throughout all Project phases, but users may be subject to higher levels of traffic and delays along the roadway. Construction would occur between 7 a.m. and 7 p.m., Monday through Friday. Traffic and transportation impacts are addressed in detail in Section 3.17: *Transportation and Traffic*. The increase in vehicle traffic during construction is not expected to create unacceptable delays on East Walker Road, Reese River Road, or Old State Road 2C. Construction activities would typically occur on weekdays when there is less dispersed recreation compared to weekends. A Traffic Management Plan would be prepared for the Project construction phase and would include coordination with State Lands to incorporate any limitations on access to accommodate special events or periods of higher traffic to the State Recreation Area. Implementation of the Traffic Management Plan protocols required as part of any BLM ROW grant would reduce any potential traffic impacts during construction of the Project.

Gen-tie. Gen-tie construction activities would proceed in a linear fashion. Gen-tie construction could have minor and temporary impacts on OHV use as well as hiking and other similar types of activities (e.g., birdwatching) and hunting. Several OHV routes, OHV SRP routes, and OHV designated racecourses cross the proposed gen-tie alignment. If construction were to occur at the same time as a recreation event, the construction activities may present a hazard. Per MM REC-1, the Applicant would coordinate with the OHV community during races to ensure safe access where the routes may cross construction zones. Since the construction proceeds in a linear fashion, only short-term impacts would occur to any particular crossing of OHV tracks.

Hiking and birdwatching occur in the Mason Valley WMA. The gen-tie would cross less than 1,000 feet of the WMA near the Fort Churchill substation gen-tie terminus. Construction activities associated with the gen-tie within the Mason Valley WMA are not anticipated to degrade the recreational experience within the WMA because they are limited in extent and/or would occur near existing transmission infrastructure associated with the Fort Churchill Generating Station.

The gen-tie construction would occur within HUs 202 and 203. The proposed gen-tie alignment is within an area of active hunting for antelope and mule deer. Construction would generate some noise and disturbances that could occur during hunting seasons, which would present temporary disturbance that could push big game away from the immediate area of construction activity. The impacts would be short in duration (a few weeks at any given point) and localized. Hunting would not be adversely affected.

Operation and Maintenance Impacts

Solar Site. Approximately 5,141 acres of land that is currently open to dispersed recreation would be removed from use for a period of approximately 30 years during the estimated life of the Project. The loss

would not be adverse as many other similar areas are available for these activities in the vicinity and greater region. The Project would reduce total available OHV trail miles within the Mason Valley area. Impacts to OHV, hiking, camping, and hunting would be similar to that described for construction, with the closure of some OHV routes, but the primary OHV SRP routes, Old State Road 2C, and Reese River Road would remain open. Reese River Road and Old State Road 2C would be improved and widened making it a more accessible route for use by OHV.

The solar site could be visible to dispersed recreational users when they are in proximity to the site and traveling through the site. Dispersed recreationalists in the Project area may be sensitive to visual changes in the landscape. Developing areas visible from recreational features and roads in the Project area could degrade views that contribute to the recreational appeal of the area, which would have an adverse effect during Project O&M. Visual resource impacts are addressed in detail in Section 3.13: *Visual Resources*. PDFs VR2-1 and VR2-3 would reduce adverse effects through color treatment of Project components and use of anti-reflective coating on solar panels. Some indirect, adverse impacts on recreation from visual changes would occur.

Access Road. The access road to the solar site would have some Project-generated usage during O&M phase. Up to 15 workers may be on site daily and occasional additional traffic may be generated for maintenance or panel washing. No conflicts with OHV use are anticipated. Access for hiking, camping, and hunting and to the Walker State Recreation Area would be unobstructed and unaffected. Access up to the site along Reese River Road would be improved, making travel for these activities easier.

Gen-tie. The gen-tie, once built, would not have adverse effects on OHV uses, hiking, camping, and hunting. The gen-tie would have adjacent access roads, which may provide additional access for OHV users. None of the existing OHV routes, SRP OHV routes, or designated racecourses would be obstructed or impacted by the gen-tie. Few studies have been undertaken to understand if transmission lines, due in particular to the noise they generate, are avoided by large game species such as mule deer and pronghorn. However, there have been anecdotal reports of pronghorns near existing transmission lines. Given that gen-tie generated noise drops off to ambient levels within a few hundred feet, and the gen-tie is sited near existing transmission lines, impacts to the hunting units are not expected to be adverse. The gen-tie access roads may also provide improved access for hunters into hunting territories, which could be a benefit.

Decommissioning Impacts

The effects of Project decommissioning on recreation access and opportunities, including OHV use, hiking, camping, and hunting would be similar to those discussed for construction. Decommissioning typically requires less workforce, time, and resources than construction of a project. Project decommissioning would occur following the Site Restoration and Revegetation Plan and Site Decommissioning and Reclamation Plan required as part of the BLM ROW grant. The plans would outline decommissioning activities, safety and protection measures, reclamation procedures, and measurable performance standards as well as notification and abandonment scheduling. The plans would also include requirements for long-term monitoring and maintenance as needed to ensure that restoration goals are attainable and completed. Visual, noise, and traffic impacts for Project decommissioning experienced by recreational users are anticipated to be similar to those discussed above for construction. Once decommissioned, the previously restricted (for the 30-year Project lease period) solar site would once again become publicly accessible.

Cumulative Impacts

The effects on recreation from cumulative projects in the analysis area include existing transmission lines and corridors, future utility-scale solar projects, Greenlink West, and the Pumpkin Hollow Copper Mine expansion. The Project would contribute to the overall increase in utility development on BLM lands, displacing recreational opportunity for the public.

While the Project would result in the loss of 14 miles of designated OHV trails, this impact is minor because access to the BLM OHV SRP and Old State Road 2C would be maintained for the life of the Project. While proposed future solar projects could also impact access to recreation, no other projects overlap with the designated OHV trails impacted by the Project, which are all located south of US 95A.

There are approximately 12,357 total miles of OHV trails within the Carson City District. The Project's contribution to the loss of 14 miles of trails would not be a considerable contribution to overall recreation access.

Similarly, cumulative impacts to hunting could also occur. Proposed future solar projects are within HU 203 near the Project gen-tie. The Project would contribute to an increase in access roads and transmission infrastructure but would not displace or divert migrating game.

3.12.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction, O&M, decommissioning, and cumulative impacts from Alternative 1 on recreational resources would be similar to the Proposed Action. Avoided drainages as part of Alternative 1 may provide additional OHV access. Approximately 2.25 additional miles of drainages would be left unfenced for access under this alternative, as compared with the Proposed Action. Construction may also take a few months longer under this alternative, which could result in a slightly increased impact on recreation as compared with the Proposed Action. MM REC-1 would be implemented to reduce potential for adverse effects from construction activities on access roads used by recreationalists to and through the solar site.

Decommissioning impacts to recreational resources under Alternative 1 would be slightly reduced due to the increase in vegetative cover, improving the visual quality of the site. The decommissioning schedule may be slightly reduced, allowing for re-entry of recreationalists sooner than for the Proposed Action. Impacts from the gen-tie construction, O&M, and decommissioning would be the same as for the Proposed Action.

3.12.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Compared to the Proposed Action, Alternative 2 would slightly reduce impacts to recreational uses associated with access, primarily to the Walker River State Recreation Area, by moving some construction traffic away from East Walker Road. Effects from the solar site and gen-tie construction, O&M, decommissioning and cumulative impacts would be the same as described for the Proposed Action. MM REC-1 would remain applicable to minimize traffic conflicts and ensure safety of recreationalists traveling on the same roads as being used for construction of the Project.

3.12.4.5 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Construction, Operation and Maintenance, and Decommissioning Impacts

Construction, O&M, and decommissioning impacts from this alternative would be the same as described for the Proposed Action for the solar site and the access road. MM REC-1 would remain applicable to minimize traffic conflicts and ensure safety of recreationalists traveling on the same roads as being used for construction of the Project.

The gen-tie would be reduced from a 24.1-mile-long line from the solar site to the Fort Churchill substation to a 0.54-mile-long line extending from the eastern boundary of the solar site to a new switching station under the Greenlink West line. The gen-tie and switching station would not intersect with any OHV routes, SRP OHV routes, or race routes, thus reducing impacts to these uses as compared with the Proposed Action. Disturbances to hiking, camping, and hunting from construction, O&M, and decommissioning would be reduced, given the much smaller impact footprint and acreages of the gen-tie under this alternative as compared with the Proposed Action.

Cumulative Impacts

Under Alternative 3, there would be no construction of the 24.1-mile gen-tie line, which would eliminate the Project's contribution to the increase in planned transmission infrastructure within the Mason Valley. The Project would have the same loss of 14 miles of designated OHV trails. As described for the Proposed Action, the loss of 14 out of 12,357 miles of designated OHV trails would not be a considerable contribution to an overall potentially adverse effect. With the elimination of the 24.1-mile gen-tie line, Alternative 3 would not contribute to cumulative effects to hunting within HU 203.

3.12.4.6 No Action Alternative

Under the No Action alternative, the Project would not be constructed, operated, maintained, or decommissioned; therefore, existing recreational uses would continue on the Project site and adjacent public lands. The landscape and existing non-designated roads and trails would not be altered, and there would be no changes to the scenery, traffic, or levels of noise. Therefore, the existing recreation activities, settings, and experiences would remain the same, with no change from baseline conditions.

3.12.4.7 Relevant Required Western Solar Plan Programmatic Design Features, the CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Western Solar Plan Programmatic Design Features

Programmatic design features from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to recreation resources:

- R1-1
- VR 2-1; VR 2-3

The CRMP Standard Operating Procedures

SOPs from the CRMP are listed in Appendix B. The following SOPs would minimize impacts to recreation resources:

- Recreation SOP 6

Management Plans and Mitigation Measures

The following management plans required by the BLM ROW grant would be relevant and implemented during Project construction, O&M, and decommissioning to minimize impacts to recreation resources:

- Traffic Management Plan
- Site Restoration and Revegetation Plan (*Draft is available on the Project website*)
- Decommissioning and Site Reclamation Plan

The Project would comply with the following mitigation measures to minimize adverse impacts on recreation resources:

MM REC-1: OHV and Recreational Safety

The Applicant shall ensure that during construction, OHV users can safely pass through East Walker Road, Reese River Road, and Old State Road 2C. The Traffic Management Plan shall include measures to ensure safety, including flagging and escort, as needed. The Traffic Management Plan shall also address potential impacts to access to the Walker State Recreation Area from heavy traffic and may include limitations on deliveries or other measures during times of expected higher use (e.g., special events) at the Walker State Recreation Area.

3.12.4.8 Irreversible, Irretrievable, and Residual Impacts

Recreation opportunities that occur during the lifespan of the Project would be reinstated after Project reclamation is complete, which means that the loss would not be irreversible or irretrievable. However, it could take years before the reclaimed site is open to recreational uses.

Some residual effects to recreational access would occur even after application of mitigation due to the increases in traffic and hazards from construction on East Walker Road, Reese River, and Old State Road 2C. These residual effects would be minor.

3.13 Visual Resources

3.13.1 Introduction

Visual resources (the landscape) consist of landforms (topography and soils), vegetation, bodies of waters (lakes, streams, and rivers), and human-made structures (roads, buildings, and modifications of the land, vegetation, and water). These elements of the landscape can be described in terms of their form, line, color, and texture. This section is based on information provided in the Visual Resources Technical Report (VRTR) (Panorama 2023). The VRTR was prepared to inventory and analyze visual resources and views that could be adversely affected by the Project and to provide recommendations to minimize effects. The inventory and analysis in the VRTR were prepared in accordance with the BLM VRM system.

FLPMA provides for the management and protection of public lands, including their scenic quality. Per section 505a of FLPMA, ROW grants on federal lands must stipulate terms and conditions that would minimize damage to scenic quality and aesthetic values. The BLM manages land under its jurisdiction according to the goals and policies outlined in their RMPs. The CRMP identifies the components of the VRM system that apply to lands within the Carson City District. The VRM system provides a means to identify visual values, establish objectives through the RMP process for managing these values, and provides timely inputs into proposed surface-disturbing projects to ensure that these objectives are met. The CRMP requires that visual design considerations be incorporated into all surface-disturbing projects regardless of size or potential impact.

3.13.2 Analysis Area

The area of analysis for visual resources is the Project's visual sphere of influence (VSOI), which is the extent that the Project could visually degrade the visible landscape.⁶ The threshold for VSOI is the viewshed within approximately 15 miles of the Project area. A viewshed analysis was undertaken, as shown in Figure 3.13-1.

3.13.3 Affected Environment

3.13.3.1 Visual Environment

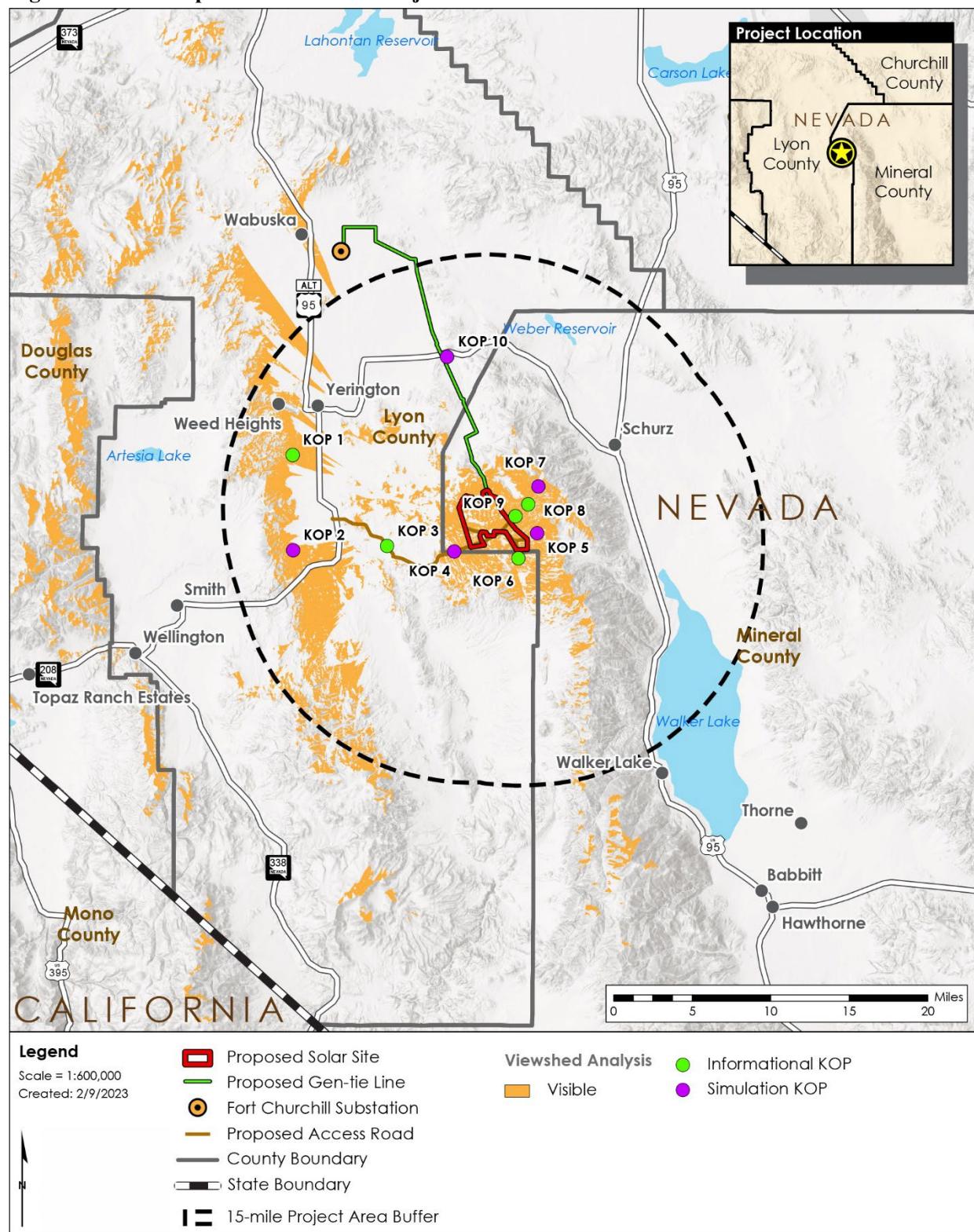
The Project site is located along the lower part of a gently sloping *bajada*, or series of coalescing alluvial fans, which extends up into the Wassuk Range, located approximately 6 miles to the east. Multiple braided, ephemeral washes flow westward through the Project site and connect to the Walker River. Black Mountain, a named peak, is located to the east of the Project site.

Beyond Black Mountain, the Walker River Indian Reservation is located on the eastern portion of the Wassuk Range, extending into the next valley to the east. The Project solar site diminishes from view as the canyon is traversed before reaching Black Mountain. Southeast of the Project site, on the other side of the Wassuk Range, is Walker Lake. Walker Lake, while located 10 miles from the Project site, is neither visible nor in the same viewshed, the two being separated by the Wassuk Range.

The western Project area lies within a lowlands known as Pumpkin Hollow. Adjacent to the site to the west is LADWP's 750 kV north-south transmission line. The East Walker River flows in a northerly

⁶ VSOI is a similar concept as viewshed but takes other environmental and qualitative factors into consideration that are not addressed in the viewshed model, such as the presence of intervening topography, vegetation, or structures that may obstruct considerable views; the amount of or perceptibility of the project that may be visible from a location; and viewing angles or atmospheric conditions that would limit viewing distance thresholds.

Figure 3.13-1 Proposed Libra Solar Project Area Viewshed



Source: (ESRI® 2012; ESRI 2011; U.S. Geological Survey 2016; 2020)

direction approximately 5 miles to the west of the Project area. The Walker River State Recreation Area is located along East Walker Road, approximately 5 miles to the west of the Project area. The agricultural and residential areas of the city of Yerington are also located across the valley, to the west of the East Walker River, and to the north of the Walker River State Recreation Area. Yerington comprises many agricultural operations that use water from the East Walker River and a small, but denser, commercial, and residential downtown located off of SR 208. A large historic pit-mining operation is located to the west of the downtown area (Anaconda Copper Mine). Also, in Yerington and approximately 3 miles north and west of the Project solar site is the Pumpkin Hollow Copper Mine and its associated industrial facilities.

The Project area, including the gen-tie and access road, and the majority of the immediate vicinity are undeveloped except for some unpaved access roads and limited rangeland features, both new and in disrepair including fences, watering troughs, pipelines, and other storage structures. The vegetation types found in the Project area are characteristic of local vegetation types and include shrublands associated with arid valley floors and alluvial slopes.

3.13.3.2 Visual Resources Inventory

Visual conditions, viewer experience, and viewer response are studied through the identification and selection of the most critical and representative viewpoints, referred to as key observation points (KOPs). Preliminary KOPs were selected within the Project viewshed in coordination with the BLM and were refined following a field investigation. The selected 10 KOPs are identified on Figure 3.13-1 and described in Table 3.13-1. Of the 10 KOPs, five were selected in coordination with the BLM for full analysis. The remaining five KOPs were not carried forward for full analysis but are included for informational purposes and used to extrapolate anticipated visual impacts.

The BLM's assignment of VRM classes and associated management objectives are informed through a visual resource inventory (VRI) process, as defined in the BLM Manual Handbook H 8410-1, which involves evaluating a landscape's visual values at a specific point in time (BLM 1986). VRI classifications, with Class I representing the most visual value and Class IV representing the least visual value, are assigned to landscapes by applying a three-factor rating system of scenic quality, viewer sensitivity, and distance zones. Additional detail on the evaluation of those three factors is included in Section 3.2 of the VRTR. VRI classes are merely informational and do not assign management objectives. VRM classes, in contrast, define the BLM's RMP management decisions to preserve the existing landscape characteristics or allow for landscape modifications, in some cases despite high visual value.

The BLM Carson City District Office conducted a visual resources inventory that included the Project area, published in November 2022 with the data most recently updated in September 2023 (BLM 2023). Scenic quality across all Project components are rated as C, which is the lowest-value designation. All Project component locations have a viewer sensitivity designation of low or medium. The eastern portions of the Project solar site adjacent the mountain ranges are designated as background, indicating some level of visibility from public observation points, but scenic quality of the entire Project solar site is low (C) due to commonness of the landscape for the region. The BLM VRI classifications for the Project area are shown in Figure 3.13-2. The entirety of the Project site is within VRI Class IV, which is the lowest overall visual value.

The Project area has no assigned VRM class. Therefore, the BLM Manual H-8410-1 guidance was followed to assign an interim VRM class to the Project area. In conformance with the BLM Manual H-8410-1, the Project area was evaluated using the VRI ratings along with RMP objectives to assign an interim VRM class. The Project area is within a scenic quality rating unit (SQRU) with a rating of C, the lowest rating. Viewer sensitivity was determined to be low to medium for the entire Project area. Scenic quality and viewer sensitivity rating forms are included in Appendix C of the VRTR. Distance zones were evaluated in Section 4.2.2 of the VRTR and inform the VRI Class determination.

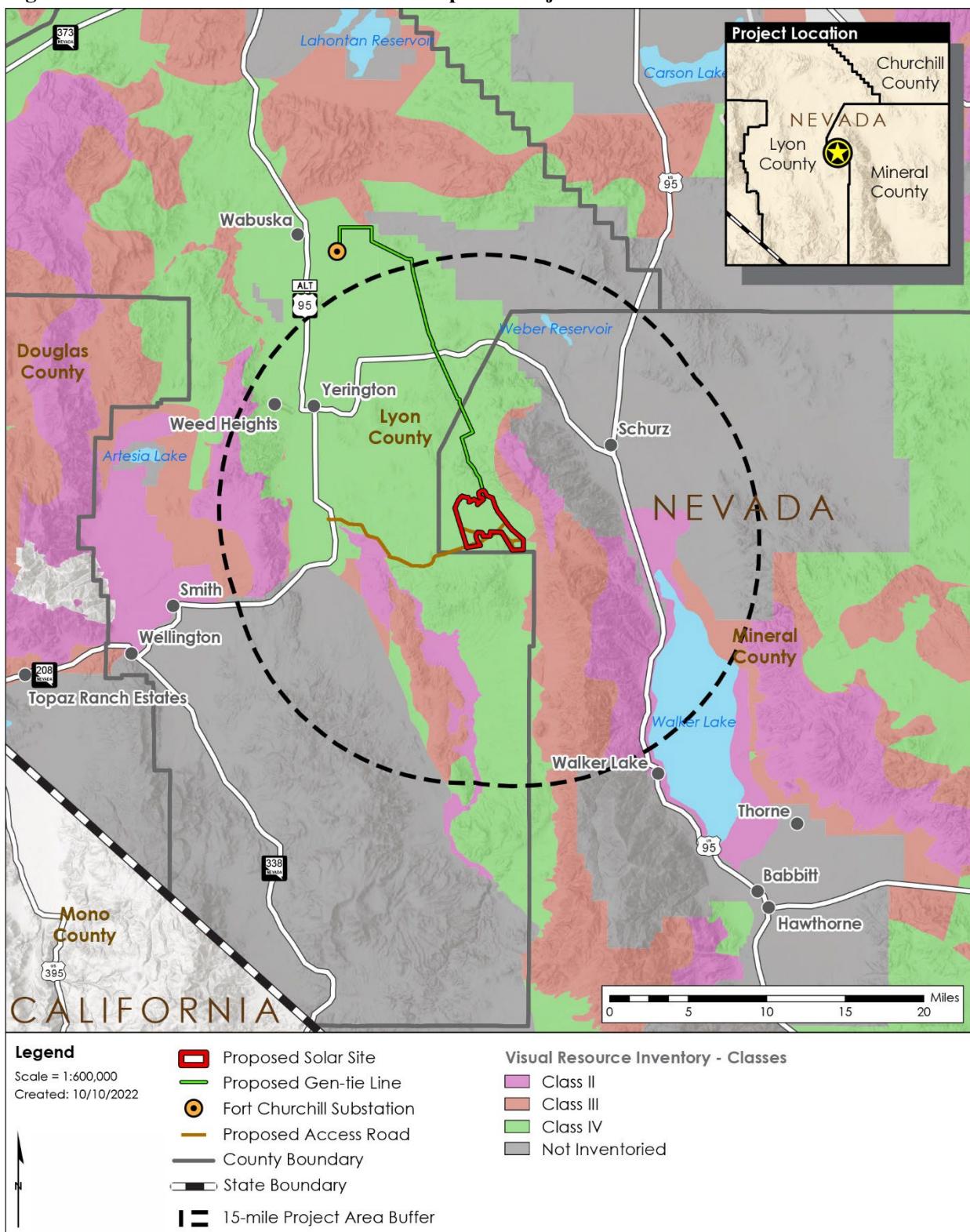
With consideration of the above listed factors, the Project area has been assigned to VRM Class IV, which allows for landscape alterations with a high level of changes to the landscape characteristics.

Table 3.13-1 KOP Descriptions

KOP ID	Simulated or informational	Location	Description	Viewers
2	Simulated	Hwy 339/CA-NHT	This viewpoint is along a major highway in the vicinity of farms and residential land uses as well as just west of the California National Historic Trail corridor. It is elevated above the valley floor and has eastern views of the mountains surrounding the Project solar site. Noticeable views of the Project components are not expected due to distance (approximately 11 miles).	Motorists, national trail, residential concerns
4	Simulated	Reese River Road	This viewpoint is along a well-established unpaved road approximately 1 mile west of the Project solar site, at the intersection of Reese River Road and an existing transmission line corridor. Reese River Road is the proposed Project access road.	Recreation/OHV
5	Simulated	Old State Road 2C	This viewpoint is along a well-established unpaved road approximately 1 mile east of the Project solar site and from an elevated position.	Recreation/OHV
7	Simulated	Pistone-Black Mountain NCA	This viewpoint is within the Pistone-Black Mountain NCA and in the vicinity of Black Mountain. The location also offers representative views from OHV roads in the area. The surrounding topography would likely screen the majority of the Project from view. The conditions of access to the location are unknown, and roads in the area are steep.	Recreation/OHV, cultural conservation, tribal concerns
10	Simulated	US 95A (gen-tie only)	This viewpoint provides a view of the gen-tie line route from approximately 600 feet east, where the line crosses US 95A. This viewpoint is not within the Project viewshed model. This viewpoint would also include views of the Greenlink West line.	Motorists

KOP ID	Simulated or informational	Location	Description	Viewers
1	Informational	SR 339/CA-NHT/Residential	This viewpoint is similar to KOP 2, SR 339/CA-NHT, but at a greater distance from the Project area.	Motorists, national trail, residential concerns
3	Informational	Walker River State Recreation Area	This viewpoint is from Reese River Road at the entrance to the Walker River State Recreation Area. The viewpoint is not within Project viewshed model, so views are not expected. Included to verify viewshed model.	Recreation/OHV
6	Informational	Ranch structure	This location is at a historic ranching structure approximately 3,000 feet south of the solar site. Similar to Old State Road 2C but expected to have less visibility.	Historic resources, visual character, recreation/OHV
8	Informational	Eastern OHV Road A	This viewpoint is from a representative OHV road approximately 0.5 mile east of the Project solar site. It is at an elevated position with clear views of the majority of the Project area, similar the viewpoint of Old State Road 2C and Reese River Road.	Recreation/OHV, tribal concerns
9	Informational	Eastern OHV Road B	Similar to KOP 9 – Eastern OHV Road A, but at a slightly greater distance from the Project solar site. Included as informational to determine whether greater elevation changes visibility and to include views from closer to the mountains and western edge of the Walker River Reservation. The viewpoint would also include views of the Greenlink West line.	Recreation/OHV

Figure 3.13-2 VRI Classification for the Proposed Project Area



Source: (USEPA and the USGS 2012; ESRI® 2011; 2012; BLM 2023)

Development may attract attention and even dominate the landscape so long as the changes repeat the basic elements found in the landscape character.

3.13.3.3 Night Sky Qualities

The Project solar site is in an undeveloped area and devoid of significant sources of nighttime lighting, except for potentially some lighting associated with the Pumpkin Hollow Copper Mine to the north of the solar site. Night sky qualities refer to conditions that affect nighttime visibility and the opportunity for stargazing, which are affected by both natural atmospheric conditions and lighting associated with human activities. The most desirable night sky qualities occur in undeveloped areas, far away from urban areas where lower levels of nighttime sky glow occur (also known as light pollution). Yerington's night sky is affected by the regional proximity to the Reno and Carson City metropolitan areas. The Bortle scale is a 9-level numeric scale that measures the night sky's brightness of a particular location. The scale ranges from Class 1, the darkest skies available on Earth, to Class 9, inner-city skies. The Bortle scale value in Yerington is Class 4; however, the solar site is a Class 2, indicating limited light pollution and strong brightness (Danko 2023).

3.13.4 Environmental Consequences

3.13.4.1 Methods

Overview

The impacts on visual resources and existing landscape conditions are based on the evaluation of adverse visual change that would result from the Project for three primary factors: (1) scenic quality, (2) viewer sensitivity levels (expectations of viewer response to landscape changes), and (3) the extent of visual contrast and whether that contrast would conflict with the BLM's VRM class objectives. Table 3.13-2 summarizes the impact analysis considerations for visual resources.

Table 3.13-2 Impact Analysis Considerations for Visual Resources

Impact factor	Impact threshold
Scenic quality (scenic landscape features and rating criteria)	Visually obvious degradation of the foreground character or scenic quality of a visually important landscape
Viewer sensitivity levels (expected viewer response to landscape changes)	The degree to which visual change in the landscape would elicit an adverse response from most viewers, depending on visibility and distance
Consistency with the BLM's class-designation management objectives	The degree to which visual change in the landscape for one or more rating factors would create contrast that would conflict with the BLM's management objectives according to the VRM classes assigned at the Project component location. Specific thresholds for each VRM class are provided in Table 3.13-4

Scenic Quality

Scenic quality impacts are determined based on the comparison of change caused by the Project with the scenic quality rating of the affected environment. The results are based on consideration of existing scenic quality ratings, existing landscape character, presence, or absence of existing industrial development (e.g., transmission lines, pipelines, similar energy developments), and the effect of introducing the Project components into the landscape as either a new or additional cultural modification.

The scenic quality impact thresholds are as follows:

- Strong contrast: moderate impact
- Moderate contrast: low impact

- Weak contrast: low impact

Viewer Sensitivity and Distance Zones

Adverse effects on viewer sensitivity could occur, depending on the visual contrast and distance zone in which it is perceivable. Table 3.13-3 defines visual impacts to sensitive viewers based on contrast level.

Table 3.13-3 Impacts to Sensitive Viewers Based on Visual Contrast for Areas with Moderate to Low Viewer Sensitivity

Distance zone	Strong Visual Contrast	Moderate Visual Contrast	Weak Visual Contrast
Immediate Foreground (0–0.5 mile)	High visual impact	Low visual impact	Low visual impact
Foreground-Middleground (0.5–5.0 miles)	Moderate visual impact	Low visual impact	Low visual impact
Background (5– 15 miles)	Low visual impact	Low visual impact	Low visual impact
Seldom seen > 15 miles	Low visual impact	Low visual impact	Low visual impact

BLM Management Objectives

Impacts on adopted BLM management objectives are determined by evaluating contrast caused by the Project. The BLM's contrast rating process is used, which evaluates contrast rating changes from pre-project to post-project conditions in terms of form, line, color, and texture, with consideration to land/water features, vegetation features, and structures.

As previously stated, the entire Project area (i.e., Project solar site, gen-tie lines, and access roads) has no VRM class designation but has been given an interim designation of VRM Class IV. As stipulated in the BLM Manual H-8410-1, the management objective for this class is to allow for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements. Projects resulting in high contrast and major modifications can remain consistent with management objectives. A significant level of landscape alteration or contrast would remain consistent with VRM Class IV.

3.13.4.2 Proposed Action

Construction Impacts

Visual Impacts. Temporary adverse impacts to visual resources due to construction would be anticipated from the use of construction equipment, staging, and ground disturbance. Visual impacts from these activities are expected to be short-term (16 months). Impacts to scenic quality and viewer sensitivity are expected to be similar to that described for the O&M phase of the Project, as discussed in the following section. Construction activities occurring in the immediate foreground and foreground-middleground of the observer's view would result in higher contrasts and greater impacts on scenic quality and sensitive viewers than those at a farther distance. The greatest impacts would be on users of OHV roads in the immediate vicinity of the Project solar site and gen-tie alignment, with construction occurring in close proximity on either side of the roads.

During construction, short-term direct impacts on viewer sensitivity and scenic quality in the landscape are anticipated to be minor to moderate from all KOPs, similar to that of the long-term O&M phase of the Proposed Action. Refer to the discussion of O&M in the VRTR for an in-depth analysis of scenic quality, viewer sensitivity, and VRM management objective consistency. Visual contrast for the construction phase would be consistent with Class IV VRM management objectives. Implementation of Western Solar Plan PDFs, including VR 2-4, would further reduce contrast during construction through a pre-

construction meeting with the BLM or other designated visual/scenic resource specialist to coordinate the Project-construction VRM mitigation strategy.

Night Sky Impacts. Nighttime construction activities are not anticipated. In the event isolated nighttime construction is required, it would require illumination to meet State and federal worker safety requirements. To the greatest extent possible, the nighttime construction lighting would be directed downward or toward the area to be illuminated and would be shielded from public view. Task-specific lighting would be used to the greatest extent practicable while complying with worker safety regulations. Due to the limited time and locations where nighttime work would occur, the effects on night sky would not be adverse.

Operation and Maintenance Impacts

Visual Impacts. The Project would result in major landscape modifications and the introduction of permanent facilities to a primarily undeveloped area. Following construction, during the O&M phase, the extent of visual contrast due to landscape alterations, and how noticeable those changes would be to the casual viewer, would vary by viewing location.

Table 3.13-4 summarizes the Project's level of impact to scenic quality and viewer sensitivity, predominantly from the presence of the Project components in the landscape. Impacts to scenic quality and viewer sensitivity would be minor from all KOPs. The level of impact from each KOP, presented below in Table 3.13-4, was determined using the impact thresholds for a scenic quality rating of C (discussed in Section 3.2 of the VRTR) and impact levels according to visual contrast and distance zones, as shown in Table 3.13-3.

The Project would result in weak to moderate contrast when viewed from the KOPs, due to the introduction of the solar arrays and associated structures into an undeveloped area. Simulations from the five KOPs are shown in Figure 3.13-3 through Figure 3.13-12. The Project would not attract or focus attention of the casual viewer from most of the KOPs that were evaluated, with the exception of views along portions of Reese River Road and Old State Road 2C (KOPs 4 and 5) where the Project solar site is in close proximity, and where the gen-tie line crosses US 95A (KOP 10). Moderate contrast at KOPs 4 and 5 is expected to draw the attention of casual viewers but would not dominate attention within the viewshed and would be consistent with VRM Class IV management objectives. The gen-tie, where it crosses US 95A, would present new head-on views but due to the existing poles and transmission lines that run concurrently, the varying topography and landscape beyond the gen-tie, and the relatively short viewing time, visual impacts would be minor. The gen-tie also crosses and is located within the vicinity of the Mason Valley WMA and would be visible in this area. The Project would be discernible by the casual viewer but would not attract attention in the middleground of the Mason Valley WMA because it would be partially screened by the dense vegetation associated with the Walker River riparian corridor and the various sloughs of the WMA.

Given the viewing distance and low to medium viewer sensitivity, moderate contrast at these locations is a minor impact. At the other evaluated KOPs, the Project components would be partially or completely screened from view by topography and vegetation, and/or views of the Project components (including the solar site and gen-tie) would not be prominent. The Project would not draw attention due to various factors such as separation distance, viewing angle, or proximate natural landscape features that tend to draw attention away from the Project. Implementation of the Western Solar Plan PDFs, including VR3-1 and VR4-1, would further reduce contrast. PDFs include surface and color treatment and the retention of native vegetation, as approved by the BLM, as well as continued consultation with the BLM throughout O&M. Site restoration activities would begin immediately following construction to reduce the likelihood of visual contrasts associated with erosion and invasive weed infestation.

Table 3.13-4 Summary of Contrast Rating Results and Conformance with VRM Objectives

KOP ID	KOP description	Degree of visual contrast	Viewing distance	Scenic quality rating	Scenic quality impact	Viewer sensitivity rating	Viewer sensitivity impact	Conforms with VRM Class IV?	Discussion
2	Hwy 339/CA-NHT	Weak	11 miles (BG)	C	Low	Medium	Low	Yes	KOP 2 is located approximately 11 miles from the solar site and 13 miles from the gen-tie alignment. Solar arrays are expected to be slightly visible at this location if clear atmospheric conditions are present but would not draw the attention of the casual viewer. The gen-tie line structures would be obscured by the natural topography and would not be visible from this location. Weak contrast would be expected, and no mitigation is proposed. Views of the Project from KOP 2 would conform with VRM Class IV objectives.
4	Reese River Road	Moderate	1 mile (FM)	C	Low	Low	Low	Yes	KOP 4 is located approximately 1 mile from the solar site and 4 miles from the gen-tie alignment. The solar arrays would be visible due to the proximity to the solar site. The solar arrays are expected to appear as horizontal lines on the landscape. Small, enclosed electrical housing structures are also expected to be noticeable. Western Solar Plan PDF VR 2-3 would be implemented, specifically to include design of the solar arrays to follow the natural contour of the land and painting of electrical housing units to reduce color contrast. Moderate contrast would be expected due to the visibility of the solar arrays in a previously undeveloped area although the Project would not dominate views of the natural landscape within the viewshed. No mitigation is proposed. Views of the Project from KOP 4 would conform with VRM Class IV objectives.
5	Old State Road 2C	Moderate	1.7 miles (FM)	C	Low	Low	Low	Yes	KOP 5 is located approximately 0.7 mile from the solar site and 4 miles from the gen-tie alignment. The dark solar panels would be noticeable due to the elevated position of KOP 5 being approximately 150 feet higher than the nearest array and nearly 600 feet higher than the furthest likely visible array. Views of the Project from KOP 5 are expected to draw attention from the casual viewer, and moderate contrast would be expected due to the viewing position and visibility of the solar arrays in a previously undeveloped area, although they would not dominate the natural characteristics of the landscape within the viewshed. Western Solar Plan PDF VR 2-3 would be implemented, specifically to include design of the solar arrays to follow the natural contour of the land and painting of electrical housing units to reduce color contrast. No mitigation is proposed. Views of the Project from KOP 5 would conform with VRM Class IV objectives.
7	Pistone-Black Mountain NCA	Weak	2.75 miles (FM)	C	Low	Medium	Low	Yes	KOP 7 is located approximately 2.75 miles from the solar site and 3.25 miles from the gen-tie alignment. The solar arrays would be visible through a minor gap in the mountain range due to the elevated viewing position, which is approximately 1,223 feet greater in elevation than the average Project elevation (5,234 feet). The gen-tie line would not be visible due to the natural topography. Weak contrast would be expected due to the elevated viewing position and visibility of the solar arrays in a previously undeveloped area, although the solar arrays would not dominate the natural characteristics of the landscape within the viewshed. Views of the Project from KOP 7 would conform with VRM Class IV objectives.
10	Alternate US Hwy 95 (gen-tie Only)	Moderate	0.25 miles (IF)	C	Low	Low	Low	Yes	KOP 10 is located approximately 9 miles from the solar site and 0.25 mile from the gen-tie alignment. The solar arrays would not be visible from this location as the solar site would be completely obstructed by topography. Gen-tie poles and transmission lines would be visible on the skyline and head-on views. Moderate contrast would be expected due to proximity of viewers, but the gen-tie line is not anticipated to draw attention at KOP 10 due to the multiple other existing poles and transmission lines that would run concurrently and the varying topography and landscape beyond the gen-tie. Views of the Project from KOP 10 would conform with VRM Class IV objectives.

Figure 3.13-3 KOP 2 Existing Conditions



Figure 3.13-4 KOP 2 – Visual Simulation of the Proposed Action



Figure 3.13-5 KOP 4 Existing Conditions



Figure 3.13-6 KOP 4 – Visual Simulation of the Proposed Action



Figure 3.13-7 KOP 5- Existing Conditions



Figure 3.13-8 KOP 5 – Visual Simulation of the Proposed Action



Figure 3.13-9 KOP 7 – Existing Conditions



Figure 3.13-10 KOP 7 – Visual Simulations of Proposed Action



Figure 3.13-11 KOP 10 – Existing Conditions



Figure 3.13-12 KOP 10 – Visual Simulation of the Proposed Action



Night Sky Impacts. Task-specific lighting would be used to the greatest extent practicable in compliance with worker safety regulations. Implementation of PDFs, including VR2-2 and VR3-1, would further minimize effects on night sky qualities and would not be adverse.

Decommissioning Impacts

Impacts on visual resources during the decommissioning phase of the Project would reduce contrasts associated with the Project components, although bare ground contrast may be visible for decades to a century or longer. Site reclamation would be implemented to reduce impacts but would not fully eliminate them. While natural recovery from disturbance in deserts is slow and can take decades, re-seeding applicable areas with native plant seed would assist with accelerating some revegetation. Revegetation monitoring would be implemented, as described in the Decommissioning and Site Reclamation Plan. Remediation measures may be implemented if revegetation does not meet the success criteria. The Project solar site may appear disturbed and contrast with the surrounding vegetated areas for several years, with soils visible against the surrounding landscape; however, impacts would be similar to the O&M phase and would be considered low given low to medium viewer sensitivity and low visual quality, and would remain in conformance with VRM Class IV. Visual impacts would diminish over time as the landscape starts to return to a more natural condition. Implementation of PDFs, including VR4-1, would minimize adverse visual effects through reclamation with the BLM-approved on-site visual/scenic resource specialists, such as a landscape architect, in advance of final reclamation activities.

Cumulative Impacts

Multiple cumulative projects would involve installation of energy and transmission line facilities in the Mason Valley area, including Greenlink West, located immediately adjacent the Project solar site and gen-tie line alignment. Other cumulative projects considered include the Pumpkin Hollow Copper Mine Expansion on nearby private land and the existing LADWP transmission line immediately west of the Project. The change in character from a natural landscape to one including views of solar panels and other industrial facilities would constitute an adverse cumulative impact to the existing landscape. The Project's facilities and gen-tie line would contribute to the adverse cumulative effect, including from Greenlink West, which is another proposed 500 kV line that would likely be located within 1,000 feet of the proposed gen-tie alignment. Greenlink West would add another large-scale transmission line at the crossing location of US 95A (KOP 10), which would compound the contrast and adverse visual effects at that location. However, the area is within an existing utility corridor and also falls within an area that is consistent with VRM Class IV, which allows for major visual changes and, thus, impacts are not considered cumulatively adverse.

3.13.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction and Operations and Maintenance Impacts

Alternative 1 would have similar impacts to the Proposed Action, as solar arrays would be present on roughly the same acreage of land. Impacts to scenic quality and viewer sensitivity would be slightly less than the Proposed Action due to vegetation preservation and restoration under the solar arrays. The increase in vegetated area and avoided drainages may reduce contrast, although this condition would only be slightly noticeable within some immediate foreground views. Visual contrast would be the same. Implementation of Western Solar Plan PDFs for color treatments on facilities, maintenance and restoration of vegetation and natural topography, and a Lighting Management Plan would reduce adverse impacts.

Decommissioning Impacts

Impacts from decommissioning would be similar to those of the decommissioning phase of the Proposed Action although reduced due to an estimated 65 percent of the application area being vegetated by the time of decommissioning (as compared with 36 percent under the Proposed Action). Revegetation would be required for Alternative 1, although at a reduced scale than for the Proposed Action. A Site Decommissioning and Reclamation Plan and revegetation monitoring would be implemented as described

in the Proposed Action. Measures to minimize adverse visual effects from decommissioning would be the same as for the Proposed Action.

Cumulative Impacts

Future solar projects on BLM lands in the vicinity of the Project would likely incorporate similar vegetation maintenance measures as prescribed under Alternative 1. The cumulative visual impacts, however, would remain similar to those described for the Proposed Action.

3.13.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Alternative 2 involves using supplemental access routes during the construction and, potentially, decommissioning phase. No new roads or major road improvements would occur. Construction of the solar site, gen-tie, and primary access roads would be the same as for the Proposed Action. Use of supplemental access routes for a portion of the construction vehicle trips would not have visual impacts. Impacts and applicable PDFs would be the same as described for the Proposed Action.

3.13.4.5 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Alternative 3 would eliminate the visual impacts associated with the 24.1-mile-long gen-tie that is routed north past US 95A and over the Mason Valley to the Fort Churchill substation. The elimination of this gen-tie line would result in a reduced visual impact. This gen-tie would be replaced, however, with a 0.54-mile-line gen-tie and access road to a new approximately 10-acre switching station to the east of the Project, between the solar site and the Greenlink West line.

The switching station would include a fenced area for transmission equipment. The equipment could be as high as 30 feet. The Project under this alternative would also introduce new transmission structures between the solar site and the Greenlink West line, in the existing designated Section 368 utility corridor. The site proposed for the switching station would be in an area of more level topography on the bajada, but at the base of a steep topographic increase. It would be approximately 1.5 miles north of the nearest access route for recreationalists through the solar site and 2.5 miles north of Old State Road 2C. This alternative would have new visual impacts and would represent a major change in the landscape, but visibility would be consistent with the developed nature of the solar facility and Greenlink West line. The area is consistent with VRM Class IV, and the Project under Alternative 3 would be consistent with VRM Class IV management objectives. Western Solar Plan visual resources PDFs would apply to Alternative 3 for both the solar site and the gen-tie. Visual impacts would not be considered adverse.

Impacts from decommissioning Alternative 3 would be reduced as compared to the Proposed Action although similar due to the majority of disturbance being at the solar site. Reclamation would proceed at the solar site as described for the Proposed Action, with visual contrast diminishing over time.

Alternative 3 would have reduced adverse cumulative impacts by not contributing to the existing and planned transmission line facilities within the area. The adverse cumulative impact due to the increase in solar and industrial facilities within the Mason Valley would remain, as described for the Proposed Action.

3.13.4.6 No Action Alternative

Under the No Action alternative, no changes would be implemented on the site and the existing environmental setting would be maintained. The Project solar site would not be expected to change noticeably from existing conditions and would not result in the visual impacts described for the Proposed Action or alternatives. No new disturbance to the characteristic landscape would occur, and no new elements or patterns would be introduced to the area. Therefore, there would be no new visual impacts.

3.13.4.7 Relevant Western Solar Plan Programmatic Design Features, the CRMP Standard Operating Procedures, Management Plans, Design Features and Mitigation Measures

Western Solar Plan Programmatic Design Features

Programmatic design features from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to visual resources:

- VR1-1; 2-2; 2-3; 2-4; 3-1; 4-1

The CRMP Standard Operating Procedures

SOPs from the CRMP (BLM 2001) are listed in Appendix B. The following SOPs would minimize impacts on visual resources:

- Visual Resource Management SOP 2, 3

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction, O&M, and decommissioning to minimize impacts to visual resources:

- Lighting Management Plan (Draft is available on the Project website)

No additional mitigation measures are prescribed for the Project under the Proposed Action or the alternatives since no adverse effects to visual resources are expected.

3.13.4.8 Irreversible or Irretrievable Impacts and Residual Effects

Changes to the characteristic landscape would occur over the 30-year lifespan of the Project and would represent an irretrievable impact but would not create irreversible impacts. Beyond the life of the Project, the visible structures and materials would be removed from the Project area. However, it could take decades to a century or more before the Project footprint is no longer visible and the vegetation returns to its pre-construction condition. The vegetation that would be established during reclamation efforts would take several growing seasons to establish, and the composition of species in the recovery area would for several seasons be visibly different from the original and surrounding vegetation communities. This visible difference would allow for the Project footprint to be visible for many years beyond the Project lifespan and would represent an irreversible impact. Alternative 1 reduces this adverse effect. No mitigation is proposed; therefore, there would be no residual effects.

3.14 Socioeconomics

3.14.1 Introduction

This section analyzes the impacts of the Project and alternatives on socioeconomic issues, which include Project-related economic expenditures and job creation, population and housing impacts, effects on tourism and recreation economies, and effects to property values. This section relies on the technical report entitled Economic and Fiscal Impacts, Socioeconomic Assessment, Libra Solar Project (Triple Point 2022).

3.14.2 Analysis Area

Workers needed for the Project would be sourced from a seven-county area in Nevada, including Mineral County, Lyon County, Washoe County, Carson City,⁷ Douglas County, Churchill County, and Storey County, with a small percentage potentially relocating closer to the Project area (mostly in Lyon County). The analysis area for the socioeconomic analysis, therefore, encompasses this seven-county area. The analysis is more heavily focused on direct impacts to Lyon and Mineral counties since the Project components fall within these counties, including for employment, income, housing, and public services.

⁷ Carson City is an independent city that is not incorporated into any county.

3.14.3 Affected Environment

3.14.3.1 Demographics

Population

The Project site is located in Mineral County adjacent to the Mineral County and Lyon County border in Nevada. The proposed gen-tie alignment for the Project is located in both Mineral and Lyon counties. The city of Yerington is the closest city to the Project area, with a population of 3,190 in 2020, and is located approximately 11 miles northwest of the Project solar site in Lyon County (U.S. Census Bureau 2021a). Lyon County has a population of 55,667 and is twelve times Mineral County's population of 4,487 (U.S. Census Bureau 2021a). When combined, the population of Lyon County and Mineral County is approximately 60,000⁸, which is approximately 1.9 percent of the overall population in Nevada in 2020 (America Counts Staff 2021). The population of the two-county region increased at an average annual growth rate of 0.1 percent from 2010 through 2017, with a more rapid average annual growth rate increase of 1.9 percent after 2017. Overall, the two-county region's population has grown at an annual rate of 0.7 percent over the past decade to reach a total of 60,154 in 2020 based on migration into Lyon County. Figure 3.14-1 presents the population growth data for Lyon County and Mineral County from 2010 to 2020.

The Washoe County boundary is located approximately 57 miles northwest from the Project site and contains the largest population of the seven-county region, with almost half of the population located in the City of Reno. Washoe County had a population increase of 12.4 percent from 2010 to 2020. Douglas County and Storey County are located 21 miles west and 45 miles northwest, respectively, from the Project site. Douglas County and Storey County had a population increase of 3.1 percent and 1.7 percent, respectively, from 2010 to 2020. Carson City is located south of Reno and approximately 45 miles northwest from the Project site. The Churchill County boundary is approximately 17 miles northeast from the Project site. Carson City and Churchill County had a population decrease of 0.2 and 1.4 percent, respectively, from 2010 to 2020.

Table 3.14-1 lists the seven-county region population changes from 2010 to 2021.

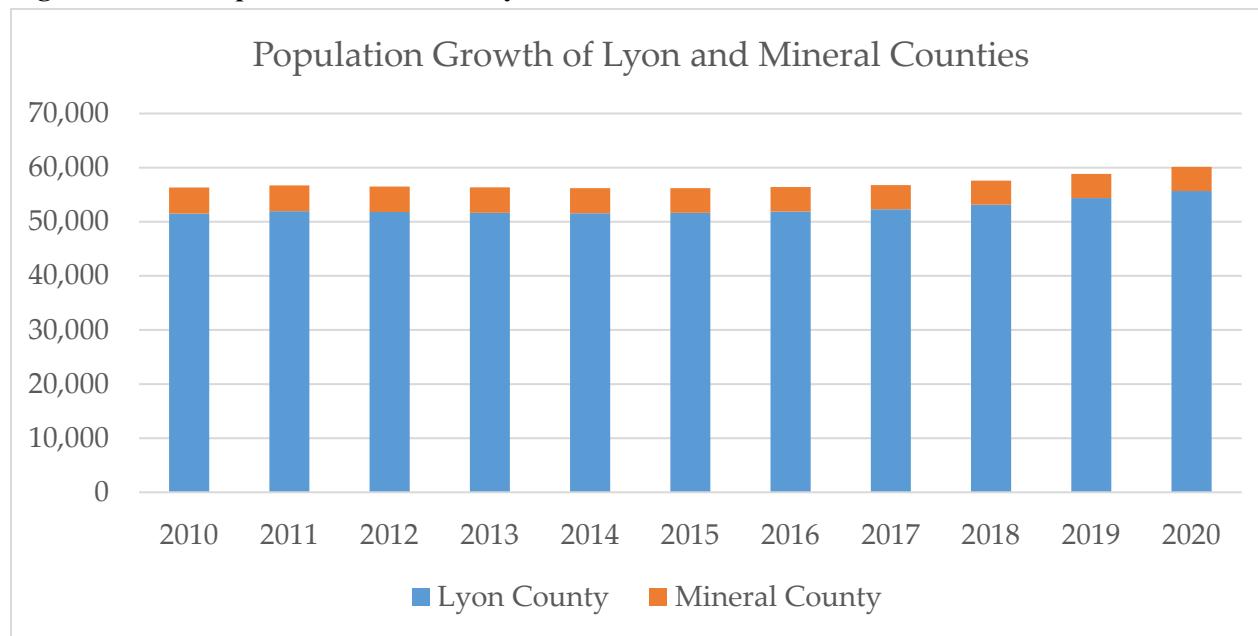
Employment and Income

The median household income in Lyon County grew at an annual average growth rate of 2 percent through the last decade, reaching \$58,814 in 2020. In contrast, Mineral County's median household income declined at an annual average rate of 0.8 percent to \$31,500 in 2020. In both cases, mean income is greater than median income, which is an indication of income disparity; however, that disparity does not appear to be increasing except over the past 2 years in Mineral County. Figure 3.14-2, below, shows the mean and median household incomes within Lyon County and Mineral County. The combined output (the value of all products and services produced) for Lyon and Mineral counties was \$3.7 billion in 2020, including \$1.9 billion of gross domestic product. Table 3.14-2 lists the top 15 industries as measured by total economic output.

Housing

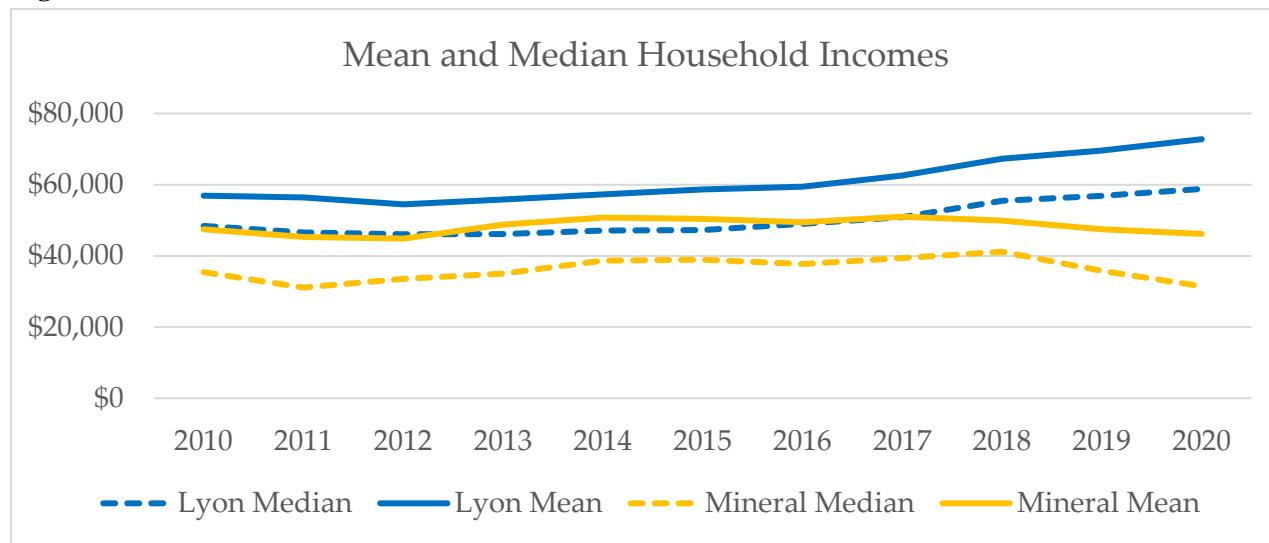
The total number of housing units across Lyon and Mineral counties increased from 24,770 in 2010 to 26,394 units in 2020, for an annual average growth rate of 0.6 percent. Almost three-quarters of the 26,394 housing units are single-family detached, and the balance largely comprises mobile homes. The number and share of vacant units declined over the past decade, from 4,673 in 2010 (or 19 percent) to 2,730 (or 10.3 percent) by 2020. The majority of the vacant housing units (2,108 units or 77 percent of the total housing units) are rental units and are either single-family detached or mobile homes; however, mobile homes comprised the greatest share of vacant housing units at 29 percent. Since 2010, the rental

⁸ The Decennial Census redistricting data found the total population to be 63,789; however, American Community Survey (ACS) data is relied upon to analyze trends over time.

Figure 3.14-1 Population Growth of Lyon and Mineral Counties**Table 3.14-1 Analysis Area Population (2010 to 2020)**

Analysis area	Population 2010	Population 2020	Percent change 2010 to 2020
Mineral County	4,812	4,487	-6.8
Lyon County	51,515	55,667	+8.1
Washoe County	412,844	464,182	+12.4
Carson City	55,375	55,244	-0.2
Douglas County	47,042	48,486	+3.1
Churchill County	24,946	24,606	-1.4
Storey County	4,016	4,086	+1.7
Nevada	2,633,331	3,030,261	+15.1

Source: (U.S. Census Bureau 2020; 2010)

Figure 3.14-2 Household Income**Table 3.14-2 Top 15 Lyon County and Mineral County Industries by Total Economic Output, 2020 (dollars)**

Industry description	Total output
Owner-occupied dwellings	\$287,799,352
Secondary processing of other nonferrous metals	\$168,217,384
Other real estate	\$110,534,606
Employment and payroll of local government (education)	\$102,011,829
Asphalt shingle and coating materials manufacturing	\$90,116,192
Gold ore mining	\$81,998,006
Fabricated structural metal manufacturing	\$79,008,159
Metal mining services	\$78,666,645
Employment and payroll of local government (other services)	\$75,256,370
Paint and coating manufacturing	\$70,189,979
Copper, nickel, lead, and zinc mining	\$66,726,778
Warehousing and storage	\$63,358,269
Gambling industries (except casino hotels)	\$61,849,024
Limited-service restaurants	\$57,722,001
Cement manufacturing	\$55,545,878

share of vacant units has remained relatively consistent; however, the quantity has decreased from 3,753 units in 2010. Figure 3.14-3 presents the housing units and vacancy rates within Lyon and Mineral counties.

Figure 3.14-4 presents the distribution of total housing units and vacant housing units by type within Lyon and Mineral counties. Table 3.14-3 lists the transient lodging inventory within roughly a 1-hour drive from the Project site.

Figure 3.14-3 Vacant and Occupied Housing Units in Lyon and Mineral Counties

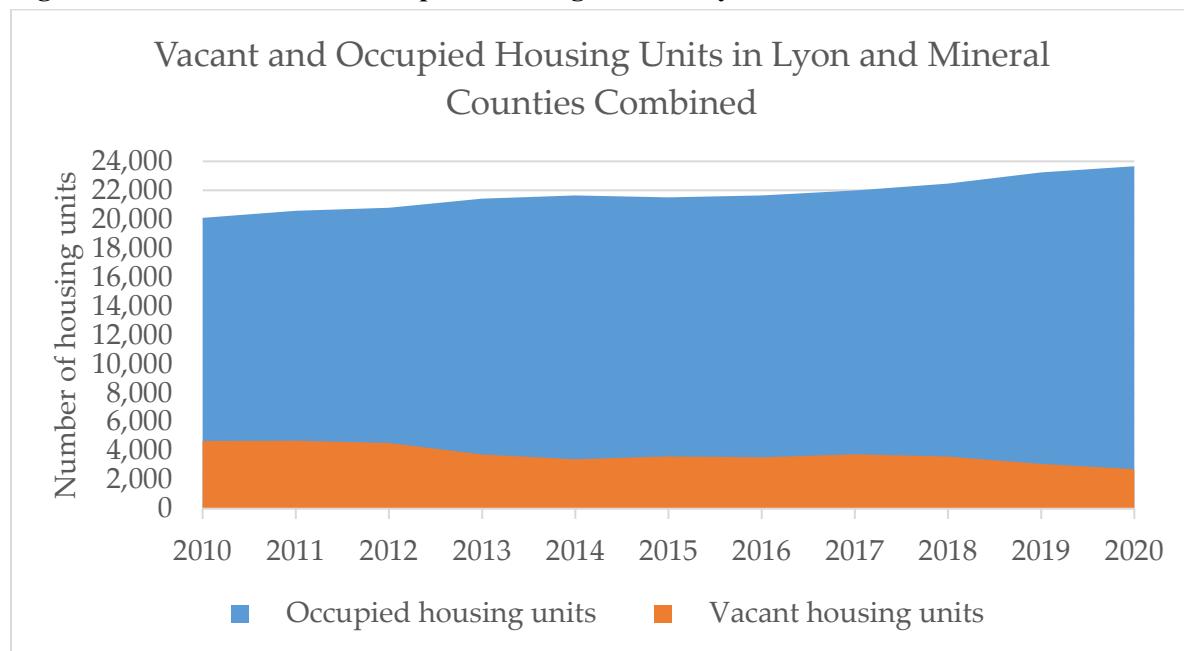


Figure 3.14-4 Distribution of Housing Units by Type in Lyon and Mineral Counties (2020)

Housing description	Total count	Vacant housing count	Total share ¹	Vacant housing share
1-unit, detached	19,382	950	73%	49%
1-unit, attached	408	48	2%	2%
2 units	372	100	1%	5%
3 or 4 units	531	75	2%	4%
5 to 9 units	385	66	1%	3%
10 to 19 units	91	55	0%	3%
20 or more units	415	12	2%	1%
Mobile home	4,772	566	18%	29%
Boat, RV, van, etc. ²	38	691	0%	4%
Total	26,394	1,941	100%	100%

Notes:

1. Vacant higher than total count for unknown reasons but could be due to different methods of counting the inventory.
2. Table percentages may not total due to rounding.

Table 3.14-3 Transient Lodging Inventory in Proximity to the Project Site

Location	Rooms
Fernley	243
Hawthorne	223
Topaz Lake	125
Virginia City	252
Yerington	109
Total	952

3.14.3.2 Tourism and Recreation Economy

In 2021, tourism generated an economic impact of approximately 62.5 billion dollars and employed over 350,000 workers (Tourism Economics 2022). The majority of Nevada's tourism and recreation industry is concentrated in Clark County within the Las Vegas metropolitan area, which provided 258,390 jobs in 2021. In comparison, Lyon and Mineral counties provided 1,608 jobs in tourism or approximately 0.41 percent of Nevada tourism jobs in 2021 (Nevada Governor's Office of Economic Development 2023). In Mineral and Lyon counties, gambling industries (except casino hotels) and limited-service restaurants were both within the top 15 industries for economic output, together generating over 119 million in annual sales in 2021 (see Table 3.14-2).

OHV use is a common recreational activity occurring within Mason Valley, including the Project site; however, OHV recreation was not identified as one of the top 15 industries for economic output. For additional discussion on OHV use in the area, refer to Section 3.12, *Recreation*.

3.14.3.3 Access to Local Emergency Services

Police

The Project solar site is located within BLM-administered land in Mineral County and would likely be serviced by the Mineral County Sheriff. The Mineral County Sheriff's office is located at 205 A Street, in Hawthorne, Nevada, approximately 28 miles southeast of the Project solar site. The BLM's Law Enforcement and Security Region 3 provides services related to natural resource crimes on BLM land. Yerington police provides the closest police service.

Fire Protection

The BLM is responsible for responding to wildfires on the BLM-managed public land. However, the BLM is not responsible for responding to fires that are not considered wildfires. Fires not considered wildfires (e.g., structural fires, hazardous materials fires) would be responded to by the local jurisdiction. The proposed Project would fall within the jurisdiction of the Mineral County Fire Department for the Project solar site and the Mason Valley Fire Protection District for the majority of the gen-tie line, which services the city of Yerington and greater Mason Valley. The closest Mineral County Fire Department station is in Schurz, approximately 8.1 miles east of the Project solar site. The closest Mason Valley Fire Protection District station is in Yerington, approximately 11.1 miles northwest of the Project solar site on SR 208.

Hospitals

The closest hospital to the Project solar site is the South Lyon Medical Center located in Yerington, approximately 11.2 miles northwest. The South Lyon Medical Center serves as a public hospital district for Lyon County and is the sole provider of health care in the area (South Lyon Medical Center, n.d.).

3.14.3.4 Social

The Northern Paiute occupied the Mason Valley since around 1,000 after death (A.D.) (Nevada Expeditions, n.d.). In 1881, N.H.A. "Hock" Mason drove cattle through the valley and returned in 1859 to

settle along the Walker River north of the city of Yerington. Agricultural crops were produced, including barley, potatoes, and grain. Through the twentieth century and into the twenty-first, the city of Yerington has remained a modest but important agricultural center (Nevada Expeditions, n.d.). In the 1900s, mining became a major industry in Mason Valley with the establishment of the Mason Valley Mine producing copper, gold, silver, gypsum-anhydrite, and iron (Mining Town Archive, n.d.). Mining has continued to be an important economic driver in the region as well as government, some manufacturing, and gambling. Mineral County is also home to a large army ammunition depot (Hawthorne Army Depot). The primary industries in the Lyon and Mineral counties are shown in Table 3.14-2.

3.14.4 Environmental Consequences

3.14.4.1 Methods

Economic Impact Analysis for Planning (IMPLAN) modeling was used to estimate the economic impact of construction, O&M, and decommissioning of the Project over its planned 30-year lifetime within the context of the regional economy. The assessment estimated the direct impacts resulting from the development of the Project, as well as the indirect and induced impacts. Direct effects represent the initial change in the industry in question while indirect effects are changes in inter-industry transactions as supplying industries respond to increased demands from the directly affected industries. Induced effects reflect local spending changes resulting from income changes in the directly and indirectly affected industry sectors. Temporary impacts are those occurring within the approximate 2-year construction period. Long-term impacts are those that would occur during the 30-year operation period.

This analysis uses the latest version of IMPLAN, which currently incorporates 546 industry sectors as defined by the U.S. Bureau of Economic Analysis (BEA). The latest IMPLAN datasets are from 2020; however, as result of the global pandemic, the 2020 data contains various anomalies and is less representative than the 2019 data for modeling economic impacts. Thus, 2019 is used as the “data year” of this IMPLAN model. The modeling outcome and detailed methodology are provided in the technical report entitled Economic and Fiscal Impacts, Socioeconomic Assessment, Libra Solar Project (Triple Point 2022).

Because Project construction would require more power-generation construction workers than were available in Lyon and Mineral counties in 2019, the model assumes construction would draw labor from the seven-county region, with the majority of workers sourced from Washoe County. The assumptions are based on the amount of energy construction employment available in each county.

3.14.4.2 Proposed Action

Construction Impacts

Employment and Income. The workforce at the Project site during the 16-month construction period would vary; however, a peak of up to 700 workers would occur during the most intensive construction activity. As of March 2022, there were 54 unemployed people in Mineral County and 825 in Lyon County. By August, these figures climbed to 89 and 1,174, respectively (BLS 2023a; 2023b). Given these unemployment numbers and the number of technically qualified employees needed, Project construction would be expected to require workers to be drawn from outside the two-county region. Construction of the Proposed Action would temporarily decrease the level of unemployment in Mineral and Lyon counties. Most construction staff and workers would be expected to come from the labor pool present within Washoe County, but would also be sourced from Lyon County, Douglas County, Carson City, Churchill County, Storey County, and Mineral County. Table 3.14-4 presents the employment sourcing for the Project during construction and the estimated share of the Project employment. Table 3.14-5 summarizes the direct, indirect, and induced economic impacts during construction of the Project. The Project would employ approximately 1,155 workers, with the majority (786) sourced from Washoe County. Note that this value is total jobs whereas the average number of workers on site at any one time is assumed to be 400 workers, with a peak of 700 workers. The total economic output from Project construction is approximately \$656,100,000 in the seven-county region.

Table 3.14-4 Assumed Distribution of Employment by County

County	Project employment	Share of Project employment
Mineral	13	1.1%
Lyon	102	8.7%
Washoe	786	67.2%
Carson City	100	8.5%
Douglas	101	8.6%
Churchill	34	2.9%
Storey	34	2.9%

Table 3.14-5 Total Construction Impacts by Type and Category, 2022 Dollars (thousands)

Type impact	Labor incomes	Average annual jobs	Intermediate expenditures	Other property income	Taxes on production	Total output
Direct	\$196,800	1,155	\$135,900	\$85,000	\$9,500	\$427,200
Indirect	\$26,900	224	\$36,700	\$12,700	\$8,700	\$85,100
Induced	\$41,700	416	\$57,600	\$33,700	\$10,900	\$143,900
Total	\$265,400	1,795	\$230,200	\$131,400	\$29,100	\$656,100

Source: (Triple Point 2022)

The indirect and induced labor income spending impacts would be major, accounting for 10.1 percent and 15.7 percent of total labor income spending impacts, respectively. The total output for indirect and induced impacts would be even larger, accounting for 13.0 percent and 21.9 percent of total output, respectively. The effects on the seven-county economy as a result of the Project would be beneficial.

Tourism and Recreation-related Economic Impacts. The Project site is occasionally used for recreation. The Mason Valley and surrounding areas are used for recreation and tourism. Nearby recreational activities, such as OHV recreation or hiking, may be impacted by the Project due to the visual change from undeveloped land to a renewable development facility. Impacts to recreation are analyzed in Section 3.12.

Two major recreational trails crossing the Project site and would remain open for recreational use (Reese River Road and Old State Road 2C). Views of the Project when on these roads within the Project solar site would be changed; however, ample recreational opportunities and trails are available within the vicinity of the Project area and regionally. Traffic increases generated by Project construction could temporarily affect access to recreational opportunities near the Project site by causing traffic delays. The increase in vehicle traffic and traffic delays during Project construction would be temporary, and a Traffic Management Plan would implement protocols to reduce any potential traffic impacts during construction. See Section 3.17 *Traffic and Transportation* for additional measures and analysis regarding traffic increases. Given the other OHV trails that are located in more desirable locations of Mason Valley due to topography, the Project would not be expected to induce a meaningful loss of recreation and tourism and associated economic loss. The Project is also subject to the Western Solar Plan PDF S1-1, which includes methods to minimize socioeconomic effects, such as developing a community monitoring program to gather data regarding the economic, fiscal, and social effects of a project or establishing vocational

training programs to promote development of skills required by the solar industry. Adverse effects to tourism and recreation-related economic inputs from the Project are not expected.

Housing. Construction of the Project would support 1,155 jobs from the seven-county region. Most of these jobs are expected to be filled by workers commuting from nearby communities, while some workers could seek housing near the Project site. It is assumed that workers relocating for the Project would relocate to areas within a 45-minute drive or less to the site, which would include communities in and around Yerington and along the I-50 and I-95 corridors, including the communities of Stagecoach and Silver Springs. Relocation is expected to occur predominantly in Lyon County, with some relocation potentially expected to communities in Mineral County.

Many labor force housing options would need to be pursued, including using transient lodging inventory during part or all of the 16-month construction period. Only about 10 percent of the new power generation facility construction workers required for the Project construction are estimated to currently reside within Lyon and Mineral counties, as presented within

Table 3.14-4. The majority of workers (67 percent) are expected to commute from Washoe County. The remainder would commute from the other counties within the area or relocate near the Project site. The availability of vacant housing would support the workers who would choose to relocate closer to the Project site either permanently or temporarily. Long-term rental of transient and short-term units are additional housing options. The number of workers that would move closer to the Project site is unknown but would not likely be more than 10 percent of the workforce.

Regardless of the actual distribution of the workforce, Project construction would reduce the limited supply of vacant housing units and likely put temporary upward pressure on home values and rental rates, which would be considered a negative socioeconomic effect; however, housing availability would likely return to pre-construction levels once the construction is complete. If an estimated 10 percent of the workforce relocated to either Lyon or Mineral counties, the impact would be on the order of a 6-percent reduction in vacancy, which would be minor. If 20 percent relocated, vacancies would be reduced by 11 percent. Impacts to transient lodging could be similar or greater. The localized impacts in terms of demand on rental and transient housing would likely be greater in areas of Yerington versus further locations within Lyon and Mineral counties.

The impact of construction worker influx on housing would be reduced through development of a Workforce Housing and Transportation Plan, which would identify the housing options for workers and could include new options such as recreational vehicles that could add transient housing options to relieve housing pressures. With the implementation of the Workforce Housing and Transportation Plan, impacts would be reduced, but a potential adverse impact to housing could still occur.

Access to Local Emergency Services. The BLM and local emergency services would have emergency access to the Project site via a locked gate to facilitate response time for wildfire and non-wildfire incidents. Emergency services may be required in the event of a worker accident or injury, hazardous material spill, or wildfire ignition. As discussed in Section 3.17: *Public Health and Safety*, US 95, and US 95A as well as SR 339 and SR 208 are designated as major evacuation routes in the area and would also be used by Project employees and emergency service providers in the event of an emergency. Western Solar Plan PDF HMW1-1 requires preparation of an Emergency Action Plan. The Emergency Action Plan would identify evacuation routes for construction personnel during an emergency, communication protocols, and notifications. Per MM SOC-1, the Applicant would work with Nevada Copper to develop an emergency access cooperative agreement to address access to the north of the solar site through the mine's private property during construction (and O&M) in the event of an emergency and evacuation through Reese River Road is not possible. This option has been discussed with Nevada Copper and determined feasible (Nevada Copper 2023). Evacuation could also include airlift, as needed. Per MM SOC-3, the Project Applicant would be required to coordinate with Mineral and Lyon counties, including Mineral County Fire Department and the Mason Valley Fire Protection District or other responsible fire authority to determine increased demands for fire protection. A cooperative service agreement would also need to be established with the entities, if the entities determine it is necessary. The

agreement may include an added fee based on the likely point of service and estimated increases in service needs during construction.

A Fire Prevention and Safety Plan/Management Plan would be implemented for the life of the Project to reduce fire risks. During Project construction, aboveground water trucks would be kept on site in the event of a small human-caused fire. The BLM may implement fire restrictions during Project construction to reduce the risk of human-caused fires during periods of high fire danger; however, fire risks are low in the Project area due to limited fuel (i.e., vegetation). All wildland fires would be reported to the BLM via the Lyon County Emergency Sheriff's Communications Division or local 911 emergency services.

The estimated number of jobs needed for the construction phase is 1,155 persons (again noting this value is the total number of jobs while at any one time the average number of workers expected on site is estimated to be around 400), equivalent to 1.9 percent of the combined populations of Lyon and Mineral counties. Presumably, the Project would increase the demand for law enforcement, fire protection, and emergency medical services by at least a 1.9 percent proportion on average across the two-county region and perhaps higher for individual communities and neighborhoods. To mitigate these effects, prior to construction, per MM SOC-2, the Applicant would be required to coordinate with Mineral and Lyon counties to determine increased demands for fire protection, law enforcement, and emergency medical services through a Cooperative Service Agreement with the counties. The agreement may include an added fee based on likely point of service and estimated increases in service needs.

Property Values. The solar site is not located in proximity nor is it visible from any homes and thus is not expected to have any impact on property values. In specific reference to transmission lines, the Western Solar Plan cites several studies attempting to measure the impact of transmission lines on property values; however, the results have been inconclusive. The PEIS finds that “perception” and “negative imagery” are often temporary, especially at times associated with announcements related to specific project phases. Construction of the Project would be temporary and last approximately 16 months. Only a few homes are located near the gen-tie, including in an area just north of US 95A within approximately 0.5 mile, and one home is at the northern extent of the gen-tie, before the gen-tie line crosses the Walker River.

Social Impacts. Construction of the Project would have short-term beneficial contributions to the local and regional economy. Workers would support local businesses in the city of Yerington and other communities during construction along worker commute routes. While only 8.7 percent of the construction workers would be sourced from Lyon County, including the city of Yerington, the increased local employment would improve residents’ standard of living. Construction would generate traffic that could be perceived as an inconvenience. The city of Yerington, however, has developed around heavy industrial mining and agriculture, which has involved industrial traffic. Adverse social impacts are not anticipated.

Operation and Maintenance Impacts

Employment and Income. Project O&M would require an average of 15 permanent highly compensated employees on an annual basis for 30 years. The increase in permanent jobs would reduce unemployment in Mineral and Lyon counties. The Project would require recurring maintenance, security, and other investments during O&M. The ongoing activities at the Project site would generate annually recurring economic effects. The total annual economic output from the Project operations would be approximately \$19.3 million in the seven-county area. The effects on the seven-county regional economy as a result of the construction of the Project would be beneficial. Table 3.14-6 presents the Project’s total annual operational impacts in the seven-county area.

Table 3.14-6 Total Annual Operational Impacts, 2022 Dollars (thousands)

Type impact	Labor incomes	Intermediate expenditures	Other property income	Taxes on production	Total output
Direct	\$1,911	\$7,663	\$3,717	\$1,885	\$15,176
Indirect	\$717	\$1,722	\$766	\$280	\$3,485
Induced	\$125	\$259	\$191	\$69	\$644
Total	\$2,753	\$9,644	\$4,674	\$2,234	\$19,305

Tourism and Recreation-Related Economic Impacts. Similar to Project construction, effects to tourism and recreation-related economic inputs during O&M would be driven by the change in visual setting from an undeveloped area to a solar facility. The Project would not be expected to induce a substantial loss of recreation and tourism and associated economic loss, given the focus and availability of recreation in the Mason Valley. No adverse effects to tourism and recreation-related economic inputs from Project O&M would occur.

Housing and Property Values. Project O&M would require an average of 15 permanent employees on an annual basis for 30 years, which would not have adverse impacts on housing. Given no homes are near the solar site, no impacts to property values are expected, as discussed under Construction.

Access to Local Emergency Services. The BLM and emergency responders would have access to the Project site via a locked gated. Project O&M would pose a low risk of fires due to the majority of materials within the solar arrays being non-combustible. The Project BESS would include individual batteries within climate-controlled enclosures that undergo thermal propagation tests and comply with the latest codes and standards for accident conditions and fire safety. A Fire Prevention and Safety Plan/Management Plan would be implemented for Project O&M. MM SOC-1 would also apply to O&M regarding an agreement with Nevada Copper for emergency access during the O&M phase. Vegetation around buildings and equipment would be maintained, and fire protection systems would be included for the administration/O&M building. The Mineral County Fire Department and the Mason Valley Fire Protection District would provide firefighting services for non-wildfire emergencies at the Project site. Fencing and controlled access gates would provide security for the Project site and would minimize the need for police services.

Social Impacts. Project O&M would require on average 15 permanent employees. The influx of approximately 15 workers would not adversely contribute to local or regional economies. Workers would likely commute daily from nearby communities or relocate to the Project area. If workers were to relocate into the analysis area, there would be a minor increase in support for local businesses. Employees living in the analysis area may require social services; however, approximately 15 permanent employees would be accommodated by existing social services, and new or additional social services would not be required. The solar site is remote and thus not expected to have much impact on social values and characteristics of Yerington, as previously discussed under Construction.

Decommissioning Impacts

At the end of the Project's 30-year life, decommissioning would require an expenditure having economic impacts, just as impacts would occur from constructing and operating the Project. The workforce and length of time required for decommissioning activities is expected to be less than that for the construction period. Although it is difficult to forecast employment conditions 30 or more years into the future, according to growth projections, it is expected that the available labor pool would be greater than under existing conditions. Decommissioning is expected to temporarily decrease unemployment in the Project area, similar to construction. The effects on regional employment from decommissioning of the Project would be beneficial. Economic output would be beneficial during decommissioning; however, after

decommissioning, the jobs associated with O&M would be lost. No new impacts to housing or public services would occur.

Cumulative Impacts

Cumulative impacts associated with socioeconomics could occur within the region due to construction or O&M schedule overlaps, which would require a large construction workforce and temporary housing. Cumulative impacts largely stem from the potential for increased mining activity as well as additional solar and transmission projects in various planning phases. The Pumpkin Hollow Copper Mine Expansion is not expected to start construction of their pit mining operations until after mid-2026, once the construction of the Project is complete. Other solar generation and transmission projects have been proposed in the region and are under review and consideration and would not likely have overlapping construction schedules since these projects have not even commenced NEPA review. The exception would be the 60 MW Luning Solar 2 project, approximately 50 miles away from the Libra Solar site, along Highway 95 near Mineral City, which may be developed before the construction of Libra begins. Depending on if and when those solar facilities are actually developed, the cumulative impacts would either be sequential or additive. Operationally, and as with the Project, these projects would generate incremental tax revenue available for mitigating additive impacts, in each of the respective counties (including Lyon, Mineral, Esmerelda, Nye, and others) and the region as a whole through possible cooperative agreements.

Cumulative impacts could occur to the various community services from increased mining operations or other projects and construction of the Project. Additional law enforcement personnel may be required to respond to the needs of a temporary expansion of the workforce. Fire and emergency medical services departments would likely see an increase in calls, which would increase their level of activity and associated costs. Cumulative projects that bring additional transient and permanent workers to the area may also increase costs and demands, notably, with most of the increase being in Lyon County. Local and regional roads would accrue additional traffic to accommodate the transient workforce needed. Housing demand within the area would also increase and cumulative impacts on housing would be expected. A Workforce Housing and Transportation Plan, per MM SOC-2, would allow the Applicant to plan construction housing needs and identify options that could alleviate the Project's contribution to housing impacts. Adverse effects, however, could still occur. Cumulative impacts to transportation could also occur, given the location of cumulative projects in Lyon County. All projects could potentially utilize the same regional transportation networks. The Project's Workforce Transportation and Housing Plan would potentially reduce the Project's contribution to cumulative impacts although impacts could remain adverse.

The combined economic activity would correspondingly increase tax revenues during operation of the projects. Personal property tax on Project equipment alone would roughly double Mineral County's budget on average over the Project's lifespan. General funds revenues support law enforcement and other services. Sales tax revenues would accrue to both counties (Lyon and Mineral) based not only on direct spending but on indirect and induced spending from Project construction and O&M as well as mining and other sectors of the economy that may expand. Cumulative projects would likewise create tax revenue increases for Lyon and Mineral counties. Cumulative impacts would include an increased number of jobs and demand for workers in the region, which may result in a combined positive impact. Worker shortages may also result in increased wages due to increased labor demand but also slower construction timelines for projects, or workers commuting from further away.

3.14.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction under Alternative 1 is anticipated to take additional time (18 months versus 16 months), which would temporarily increase the length of time that housing and services would be needed in the area. The same PDFs, the CRMP SOPs, MMs, and required management plans as identified for the Proposed Action would be implemented for this alternative to minimize adverse effects. These include the preparation and implementation of a Workforce Housing and Transportation Plan to identify the housing options for workers, as well as a cooperative service agreement with Mineral and Lyon counties, and an

added fee based on service needs. The additional construction timeframes under Alternative 1 would also bring beneficial effects to the area including extended employment opportunities and increased indirect and induced labor spending. O&M impacts and decommissioning impacts would be the same as described under the Proposed Action. Cumulative impacts would also cause potential increased impacts to temporary housing and services due to the increased construction schedule, which may overlap longer with other projects. PDFs, CRMP SOPs, MMs, and required management plans would reduce effects related to services and housing, but potential adverse cumulative impacts could still occur.

3.14.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Under Alternative 2, utilizing supplemental access routes to the Project solar site would have similar impacts to socioeconomics as the Proposed Action. The solar site and other component construction, workforce, and schedule would be the same. The additional access route could reduce traffic along East Walker Road that is used to access a tourism and recreational area (Walker River State Recreation Area). No new or greater impacts would occur from diverting some traffic along other routes to the Project site. The same PDFs, MMs, and required plans would apply to reduce adverse effects as identified for the Proposed Action. Cumulative impacts to employment, income, tourism and recreation, housing, access to local emergency services, property values, and social impacts would be the same as for the Proposed Action.

3.14.4.5 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Alternative 3 would eliminate construction of the proposed 24.1-mile gen-tie line and replace it with a 0.54-mile-long gen-tie and switching station located under the Greenlink West line. No new or greater socioeconomic impacts would occur from Alternative 3. The same PDFs, MMs and required plans would apply to reduce adverse effects as identified for the Proposed Action. Cumulative impacts to employment, income, tourism and recreation, housing, access to local emergency services, property values, and social impacts would be the same as under the Proposed Action.

3.14.4.6 No Action Alternative

The Project would not be constructed under the No Action alternative. No socioeconomic impacts would occur; however, the economic benefits the Project could bring to the seven-county region also would not occur.

3.14.4.7 Relevant Western Solar Plan Programmatic Design Features, the CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Western Solar Plan Programmatic Design Features

PDFs from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize socioeconomic impacts:

- S1-1
- HMW 1-1

The CRMP Standard Operating Procedures

SOPs from the CRMP (BLM 2001) are listed in Appendix B. The following SOPs were identified as relevant to socioeconomics:

- Recreation SOP 2

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction, O&M, and decommissioning to minimize socioeconomic impacts:

- Emergency Action Plan
- Fire Prevention and Safety Plan/ Management Plan
- Traffic Management Plan

The Project would comply with the following mitigation measures to minimize adverse impacts on socioeconomics:

MM SOC-1: Nevada Copper Cooperative Agreement

The Applicant shall develop a cooperative agreement with Nevada Copper regarding construction and O&M emergency only access in the event of an emergency that requires ingress or egress of the Project solar site, and Reese River Road cannot be used.

MM SOC-2: Workforce Housing and Transportation Plan

The Applicant shall prepare a Workforce Housing and Transportation Plan, which shall identify the housing options for workers and include new options such as recreational vehicles that could add transient housing to relieve housing pressures. Alternative transportation options including carpooling, park-and-ride, bus, shuttle, and other forms shall be included.

MM SOC-3: Cooperative Services Agreement

Prior to the NTP, the Applicant shall coordinate with both Mineral and Lyon counties, including the Mineral County Fire Department and the Mason Valley Fire Protection District or other responsible fire authority, to determine increased demands for fire protection, law enforcement, and emergency medical services during construction and shall establish a Cooperative Services Agreements with both counties, if determined necessary by both counties. The responsible fire authority shall be determined. An added fee to each entity based on the likely point of service and estimated increases in service needs for the construction of the Project shall be determined, if needed. The increase in service would likely be due to increased workers travel in Lyon County, increased emergency medical services from worker injury either on the job or traveling to the job, and increased fire risks at the Project site.

3.14.4.8 Irreversible and Irretrievable Impacts and Residual Effects

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. There are no irreversible or irretrievable impacts that would affect socioeconomic conditions. Residual effects are those effects that remain after mitigation has been applied. Residual economic effects in relation to housing and services during the construction phase and decommissioning phase could remain under the Proposed Action, even after application of mitigation. Until the Workforce Housing and Transportation Plan is developed, it is assumed that impacts would still occur to housing and transportation given the large number of workers needed for construction of the Project.

3.15 Environmental Justice

3.15.1 Introduction

This section analyzes the impacts of the Project on environmental justice (EJ) communities in the vicinity of the Project Area. Consistent with Executive Order (EO) 12898 Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations (EOP 1994) and EO 14096 Revitalizing Our Nation's Commitment to Environmental Justice for All EOP 2023), this section identifies and analyzes the potential for adverse health or environmental effects, including those related to climate change and cumulative impacts, on EJ communities as they are defined by the BLM (BLM 2022).

3.15.2 Analysis Area

The analysis area for impacts to EJ communities is a 6-mile radius around the Project area and cities and census designated places (CDPs) within a 55-mile radius of the Project area, including the Walker River Indian Reservation and the city of Yerington (shown in Figure 3.15-1). Due to data availability, demographic data for census tracts that fall partially or wholly within the 6-mile proximity radius and Yerington have been used for this analysis. The 55-mile analysis area conservatively represents the densely populated communities that could experience construction impacts due to temporary worker

commute trips, hauling of construction equipment or debris, and permanent impacts due to operational worker commute trips. Due to the broad range of communities within the 55-mile-radius area, including urban, suburban, and rural communities, the analysis for the 55-mile-radius communities and Walker River Indian Reservation uses the state of Nevada, as a whole, as the geographic reference area.

The 6-mile proximity analysis area is intended to account for low-density and rural settings proximate to the Project solar site that could experience construction or decommissioning impacts similar to those within the 55-mile analysis area as well as other construction, O&M, and decommissioning impacts associated with dust, noise, air quality, and aesthetics. This analysis uses non-metropolitan Nevada as the reference area.⁹ The EJ analysis includes communities within Mineral, Lyon, Washoe, Storey, Churchill, and Douglas counties, Nevada, as well as Carson City, Nevada.¹⁰ Approximately 37 cities and CDPs are within 55 miles of the Project area, including, but not limited to, Yerington, Schurz, Fallon, Carson City, Wadsworth, the Reno Metropolitan area, and the Walker River Indian Reservation. Within Yerington and 6 miles of the Project area, seven census tracts were identified for analysis: 9602.03, 9602.06, 9608.01, 9608.02, 9609.01, 9609.02, and 9708.

3.15.3 Affected Environment

The purpose of the EJ analysis is to identify EJ communities within the analysis area and determine whether they would be disproportionately impacted by adverse effects of Project activities. An EJ community is an area of geographic concentration of people who are low income (EJ low-income) or of people considered to be racial minorities (EJ minority). An EJ minority community is identified by the BLM as one in which the percentage of minority persons is 50 percent or greater than that of the reference area (threshold analysis) or meets or exceeds 110 percent of the reference area's minority percentage (meaningfully greater analysis). An EJ low-income community is identified as one in which the percentage of people living at or below 200 percent of the poverty line is 50 percent or greater than that of the reference area (threshold analysis) or is equal to or greater than that of the reference area (low-income threshold analysis) (BLM 2022). An EJ tribal/indigenous community is identified as one in which the percentage of the population who are members of a state or federally recognized tribe, or who identify as American Indian or Native Alaskan, Hawaiian, or Pacific Islander, is equal to or greater than that of the reference population. EJ communities in the analysis area are identified in Table 3.15-1 and Table 3.15-2. The following communities within the 55-mile-radius area were identified as EJ low-income communities of concern: Fallon, Hawthorne, Mina, Nixon, Schurz, Silver Springs, Stagecoach, Stateline, Sun Valley, Topaz Ranch Estates, Wadsworth, Walker Lake, Walker River Indian Reservation, Zephyr Cove, Wabuska, and Luning. The following census tracts within the 6-mile-proximity area were identified as EJ low-income communities of concern: 9602.03, 9602.06, 9608.01, 9609.01, 9609.02, and 9708.00. One of these, Census Tract 9609.01, encompasses the center of Yerington. Two of these, Census Tract 9608.01, and Census Tract 9609.02, are located just west and north of the city of Yerington, respectively. Figure 3.15-2 shows the EJ low-income communities of concern within the analysis area. The following communities within the 55-mile-radius analysis area were identified as EJ minority communities of concern: Nixon, Schurz, Stateline, Sun Valley, Wadsworth, Wabuska, and Luning. Census tracts 9609.01, 9609.02 and 9708.00 within the 6-mile-proximity analysis area and Yerington were identified as EJ minority communities of concern. Figure 3.15-3 shows the EJ minority communities of concern within the analysis area.

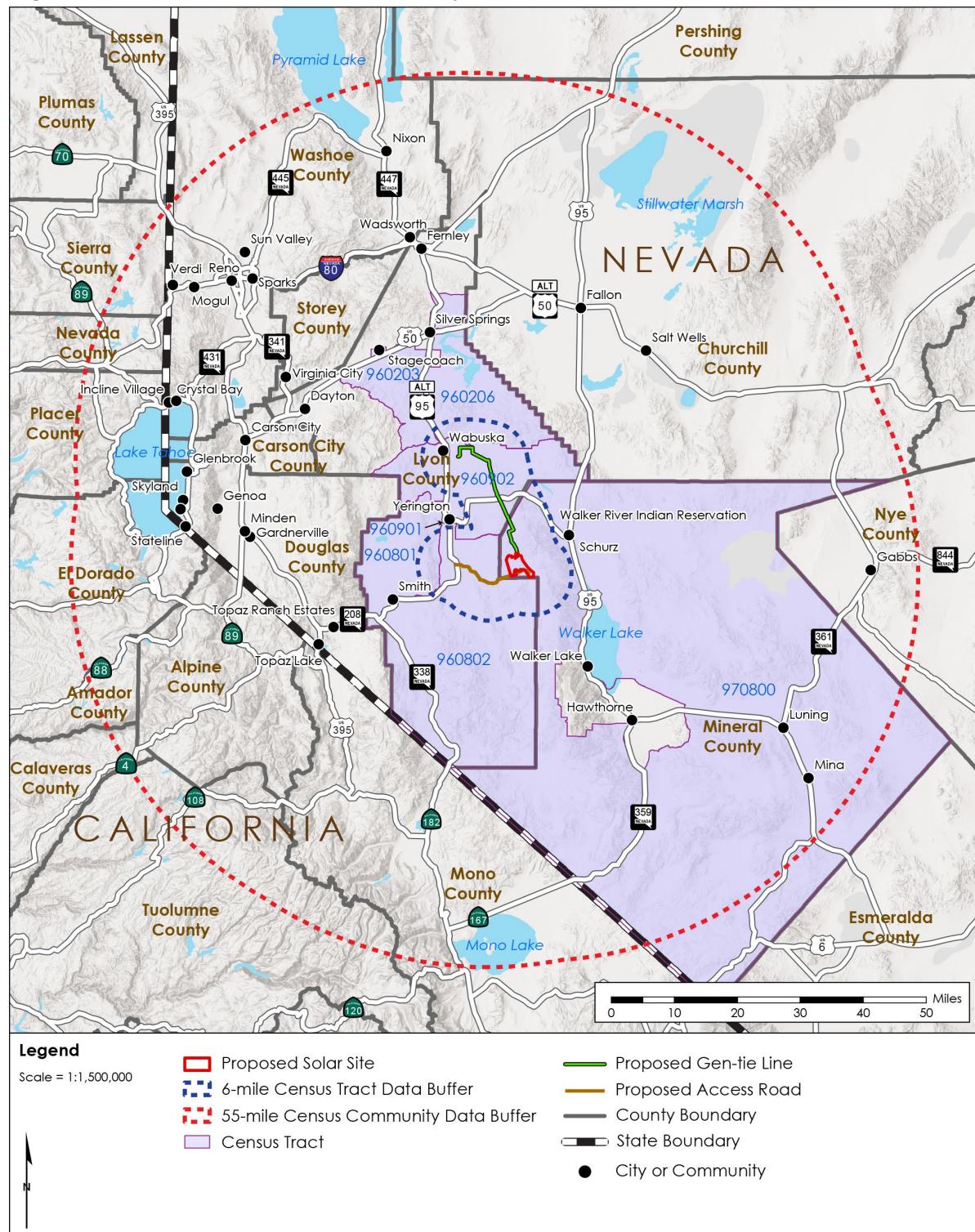
The following communities within the 55-mile-radius analysis area were identified as EJ tribal/indigenous communities of concern: Carson City, Dayton, Fallon, Fernley, Hawthorne, Mina, Nixon, Schurz, Skyland, Sparks, Stagecoach, Sun Valley, Topaz Lake, Topaz Ranch Estates, Virginia City, Wadsworth, Walker River Indian Reservation, Yerington, Zephyr Cove, Salt Wells, and Luning. Census tracts

⁹ Demographic data for non-metropolitan Nevada was calculated by omitting the data from Clark County, Washoe County, and Carson City from Nevada county-level data provided by the U.S Census Bureau.

¹⁰ Carson City is an independent city that is not incorporated into any county.

9609.01, 9609.02 and 9708 within the 6-mile-proximity analysis area and Yerington were identified as EJ tribal communities of concern. Figure 3.15-4 shows the EJ tribal/indigenous communities of concern within the analysis area. The distances of all EJ communities from the Project site and proposed gen-tie alignment are provided in Table 3.15-3.

Figure 3.15-1 Environmental Justice Analysis Area



Source : (U.S. Census Bureau 2022; ESRI® 2012b)

Table 3.15-1 Cities and CDPs within the 55-mile-radius Area

Study area	Low-income	EJ low-income community of concern?	Minority	EJ minority community of concern?	Tribal/indigenous	EJ tribal/indigenous community of concern?
Carson City	30.06%	no	35.07%	no	3.54%	yes
Crystal Bay	25.58%	no	0.00%	no	0.00%	no
Dayton	12.73%	no	29.58%	no	3.54%	yes
Fallon	28.91%	yes	26.47%	no	2.98%	yes
Fernley	22.01%	no	30.23%	no	5.01%	yes
Gabbs	19.82%	no	0.00%	no	0.00%	no
Gardnerville	26.94%	no	23.36%	no	0.51%	no
Genoa	5.43%	no	12.84%	no	2.19%	no
Glenbrook	0.00%	no	28.46%	no	0.00%	no
Hawthorne	41.35%	yes	24.01%	no	3.48%	yes
Incline Village	14.02%	no	28.56%	no	0.67%	no
Lakeridge	14.90%	no	10.20%	no	0.00%	no
Mina	34.81%	yes	6.96%	no	6.96%	yes
Minden	15.17%	no	16.64%	no	0.51%	no
Mogul	10.70%	no	10.20%	no	1.34%	no
Nixon	52.30%	yes	95.39%	yes	86.18%	yes
Reno	30.79%	no	39.87%	no	2.32%	no
Schurz	62.08%	yes	91.15%	yes	83.85%	yes
Silver Springs	52.05%	yes	11.02%	no	1.73%	no
Skyland	11.85%	no	32.83%	no	3.65%	yes
Smith Valley	19.94%	no	13.07%	no	1.31%	no
Sparks	26.09%	no	45.99%	no	3.38%	yes

Study area	Low-income	EJ low-income community of concern?	Minority	EJ minority community of concern?	Tribal/indigenous	EJ tribal/indigenous community of concern?
Stagecoach	34.54%	yes	9.34%	no	3.03%	yes
Stateline	54.57%	yes	61.35%	yes	0.00%	no
Sun Valley	41.53%	yes	57.38%	yes	3.65%	yes
Topaz Lake	27.51%	no	26.64%	no	5.68%	yes
Topaz Ranch Estates	37.22%	yes	22.37%	no	3.93%	yes
Verdi	15.17%	no	9.51%	no	1.28%	no
Virginia City	11.81%	no	2.99%	no	2.73%	yes
Topaz Ranch Estates	37.22%	yes	22.37%	no	3.93%	yes
Verdi	15.17%	no	9.51%	no	1.28%	no
Virginia City	11.81%	no	2.99%	no	2.73%	yes
Wadsworth	35.92%	yes	65.88%	yes	52.84%	yes
Walker Lake	61.66%	yes	29.39%	no	0.00%	no
Walker River Indian Reservation	56.68%	yes	36.40%	no	83.19%	yes
Yerington	18.58%	no	26.89%	no	5.72%	yes
Zephyr Cove	58.76%	yes	89.84%	yes	0.00%	no
Salt Wells (Block Group 1, Tract 9501, Churchill, NV)	26.17%	no	20.81%	no	4.36%	yes
Wabuska (Block Group 2, Tract 9609.02, Lyon, NV)	50.50%	yes	66.00%	yes	53.75%	yes
Luning (Block Group 2, Tract 9708, Mineral, NV)	50.36%	yes	50.18%	yes	32.30%	yes

Note: Data for U.S. Census block groups was used for the CDPs of Salt Wells, Wabuska, and Luning due to the unavailability of 2021 5-year ACS data for those CDPs.

Source: (U.S. Census Bureau 2021b; 2021c; 2021d; 2021e)

Table 3.15-2 Census Tracts within the 6-mile-proximity Analysis Area

Study area	Low-income	EJ low-income community of concern?	Minority	EJ minority community of concern?	Tribal/indigenous	EJ tribal/indigenous community of concern?
Census Tract 9602.03, Lyon County, Nevada	37.19%	yes	12.58%	no	2.89%	no
Census Tract 9602.06, Lyon County, Nevada	43.90%	yes	14.76%	no	0.00%	no
Census Tract 9608.01, Lyon County, Nevada	36.14%	yes	23.22%	no	1.55%	no
Census Tract 9608.02, Lyon County, Nevada *	22.57%	no	17.47%	no	2.84%	no
Census Tract 9609.01, Lyon County, Nevada *	64.75%	yes	32.73%	Yes	10.07%	yes
Census Tract 9609.02, Lyon County, Nevada *	54.92%	yes	32.67%	yes	17.45%	yes
Census Tract 9708, Mineral County, Nevada	52.80%	yes	70.02%	yes	55.69%	yes

Note:

* City of Yerington and immediate vicinity

Source: (U.S. Census Bureau 2021f; 2021g; 2021d; 2021e)

Figure 3.15-2 EJ Low-income Communities of Concern within the Analysis Area

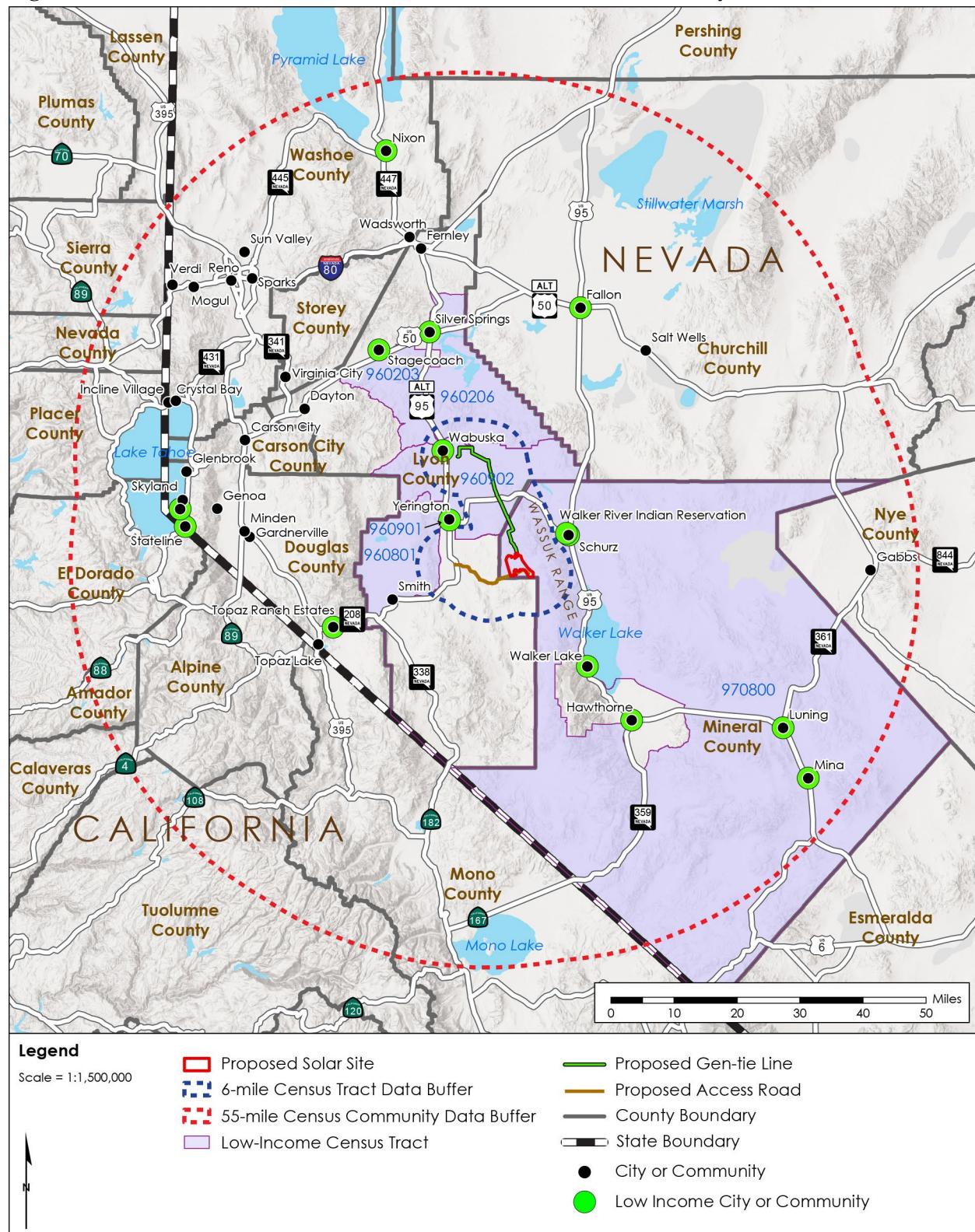
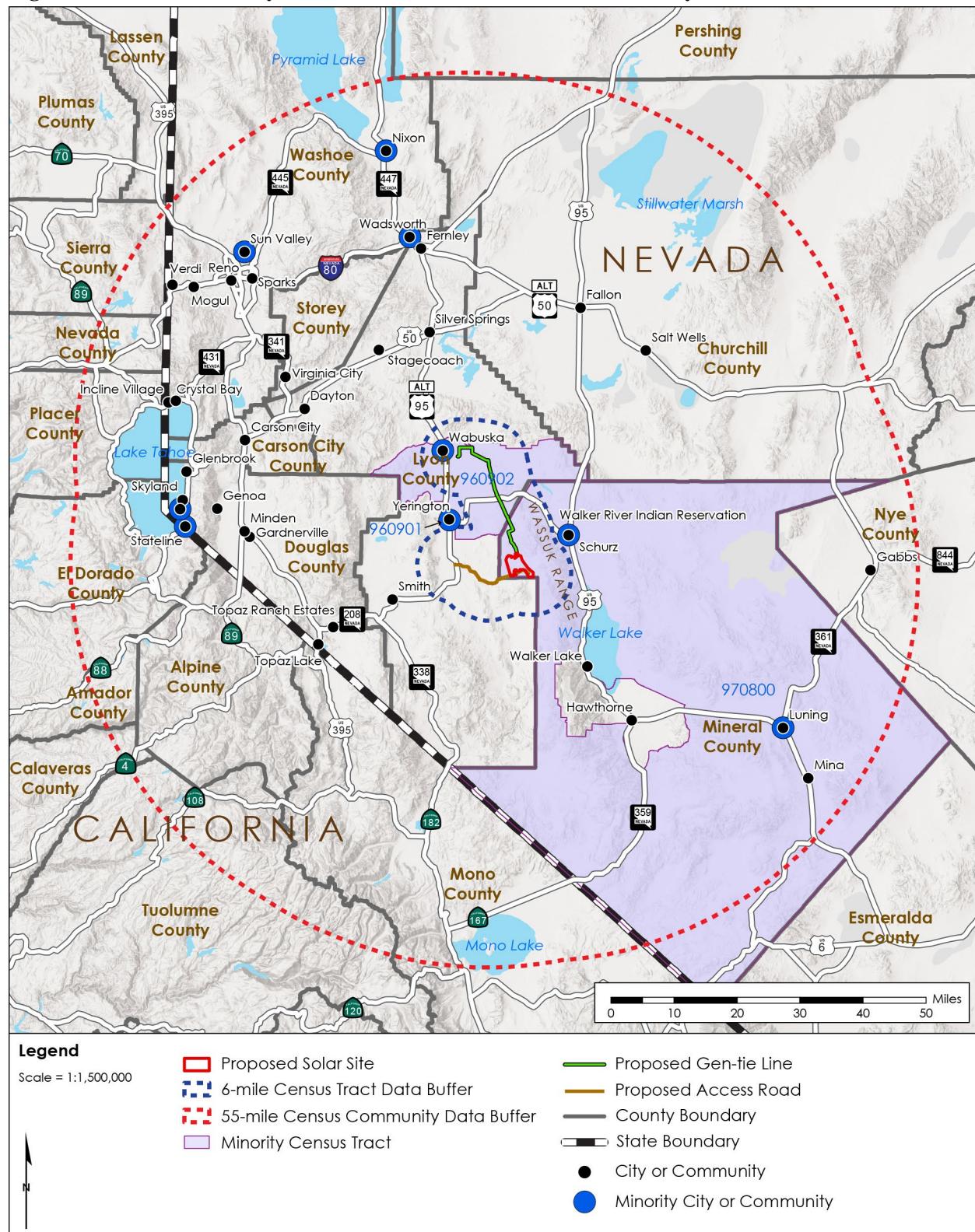
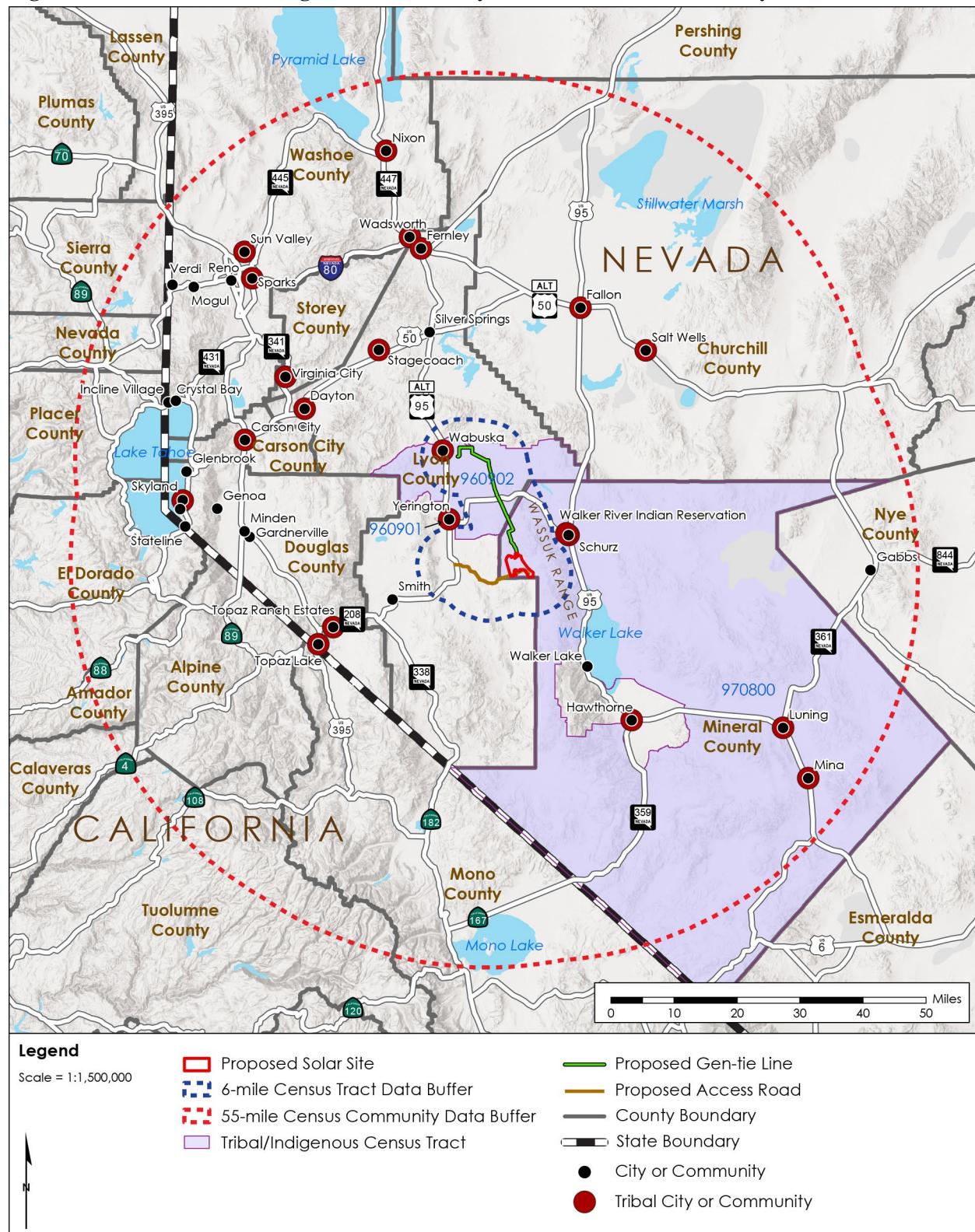


Figure 3.15-3 EJ Minority Communities of Concern within the Analysis Area



Source: (U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS) 2012; Tele Atlas North America, Inc. 2018; Esri 2018; U.S. Census Bureau 2022)

Figure 3.15-4 EJ Tribal/Indigenous Community of Concern within the Analysis Area



Source: (U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS) 2012; Tele Atlas North America, Inc. 2018; Esri 2018; U.S. Census Bureau 2022)

Table 3.15-3 EJ Communities of Concern within the 55-mile Radius Area

EJ community of concern*	EJ designation(s)*	Distance from solar site	Distance from gen-tie
Carson City	tribal/indigenous	45.5 miles north	33.4 miles west
Dayton	tribal/indigenous	39.5 miles north	25.2 miles west
Fallon	low-income, tribal/indigenous	40.1 miles north	28.0 miles north
Fernley	tribal	50.0 miles north	31.6 miles north
Hawthorne	low-income, tribal/indigenous	27.6 miles south	32.0 miles south
Mina	low-income, tribal/indigenous	54.8 miles south	59.0 miles south
Nixon	low-income, minority, tribal/indigenous	66.5 miles north	48.0 miles north
Schurz	low-income, minority, tribal/indigenous	8.1 miles east	8.1 miles east
Silver Springs	low-income	37.5 miles north	18.7 miles north
Skyland	tribal/indigenous	52.1 miles west	43.4 miles west
Sparks	tribal/indigenous	60.0 miles north	42.2 miles north
Stagecoach	low-income, tribal/indigenous	38.7 miles north	19.8 miles north
Stateline	low-income, minority	51.0 miles west	51.0 miles west
Sun Valley	low-income, minority, tribal/indigenous	63.1 miles north	45.6 miles north
Topaz Lake	tribal	32.65 miles west	34.4 miles west
Topaz Ranch Estates	low-income, tribal	29.3 miles west	31.2 miles west
Virginia City	tribal/indigenous	44.7 miles north	29.4 miles north
Wadsworth	low-income, minority, tribal/indigenous	52.0 miles north	34.3 miles north
Walker Lake	low-income	16.8 miles south	20.7 miles south
Walker River Indian Reservation	low-income, minority, tribal/indigenous	3.1 miles east	3.1 miles east
Yerington	tribal/indigenous	11.0 miles north	8.0 miles west

EJ community of concern*	EJ designation(s)*	Distance from solar site	Distance from gen-tie
Zephyr Cove	low-income, tribal/indigenous	51.8 miles west	44.3 miles west
Salt Wells (Block Group 1, Tract 9501, Churchill, NV)	tribal/indigenous	36.2 miles north	32.3 miles north
Wabuska (Block Group 2, Tract 9609.02, Lyon, NV)	low-income, minority, tribal/indigenous	13.5 miles north	0.25 mile west
Luning (Block Group Tract 9708, Mineral, NV)	low-income, minority, tribal/indigenous	46.5 miles south	50.4 miles south

Note:

*EJ community of concern and designations were identified through U.S. Census Bureau CDPs and ACS 5-year estimates.

Source: (Google Earth, n.d.; U.S. Census Bureau 2021b; 2021c; 2021d; 2021e)

Table 3.15-4 Rural and Low-density EJ Communities of Concern Proximate to the Project Area

EJ community of concern	EJ designation(s)	Distance from solar site	Distance from gen-tie
Census Tract 9602.03, Lyon County, Nevada	low-income	32.7 miles north	13.9 miles west
Census Tract 9602.06, Lyon County, Nevada	low-income	30.0 miles north	11 miles north
Census Tract 9608.01, Lyon County, Nevada	low-income	10.6 miles west	12.3 miles west
Census Tract 9609.01, Lyon County, Nevada	low-income, minority, tribal/indigenous	11.0 miles north	8.0 miles west
Census Tract 9609.02, Lyon County, Nevada 2	low-income, minority, tribal/indigenous	8.4 miles north	0.25 mile west
Census Tract 9708, Mineral County, Nevada	low-income, minority, tribal/indigenous	7.0 miles east	7.0 miles east

Notes

* EJ community of concerns and designations were identified through U.S. Census Bureau CDPs and ACS 5-year estimates.

Source: (U.S. Census Bureau 2021f; 2021g; 2021d; 2021e)

1. The distances to the census tracts are measured to the locations in which the closest residence is located and not to the geographic boundary of the census tract.
2. City of Yerington and immediate vicinity.

3.15.4 Environmental Consequences

3.15.4.1 Methods

The EJ analysis identifies EJ communities in the analysis area and assesses potential disproportionate adverse effects. According to the CEQ's Environmental Justice Guidance Under NEPA, agencies should consider the composition of the affected area to determine whether minority populations or low-income populations are present in the area affected by the Project and, if so, whether those human health or environmental effects may be adverse and disproportionately high (CEQ 1997). Additional details on the methods of analysis and specific effects related to these resource topics are provided in the Libra Solar Environmental Justice Report (Panorama 2023).

The BLM provided opportunities for affected communities to be meaningfully involved in the NEPA process during scoping. Flyers in English and Spanish were publicly posted at four separate locations in the Yerington area, including the BLM Carson City District Office, the Lyon County Library, the Mineral County Public Library, and the Schurz Tribal Community Center, during the Project's 30-day public scoping period after release of the NOI. Paper copies of the NOI and Project information were made available and included directions of where and how to comment, and to inform the public of the additional translation services available upon request. The BLM hosted a virtual public scoping meeting for the Project to solicit feedback from attendees.

Proposed Action

Overview

Any Project-related impacts could disproportionately affect vulnerable low-income, minority, and tribal/indigenous EJ communities of concern identified in the analysis area. Western Solar Plan PDFs, CRMP SOPs for these resource areas are presented in Appendix B and Project-specific MMs are presented in Appendix C of this Draft EIS. The relevant required management plans are listed in the POD and resource topic sections.

Construction Impacts

Summary. Adverse effects on the physical environment or human quality of life could be disproportionately higher for EJ communities of concern within proximity to the Project site, particularly along commuter and delivery truck routes, and within communities where Project construction workers might be housed temporarily. These populations may be more sensitive and vulnerable to impacts than the general population due to economic and health conditions, including housing costs and availability, and health care. Death rates for heart disease, cancer, chronic lower respiratory disease, accidents, stroke, diabetes, and other causes are all statistically significantly higher in Lyon County and Mineral County than the State rate. Mineral County also ranks lowest for county health in Nevada (South Lyon Medical Center 2022a) (South Lyon Medical Center 2022a). Impacts to housing, transportation, and health may occur to these populations, as described in the following analysis.

Housing. The Project would employ approximately 1,155 workers during construction. The number of workers that would emigrate within Mineral and Lyon counties is unknown but would not likely be more than 10 percent of the workforce (or an estimated 115 people). An estimated 26,394 housing units are available in Lyon and Mineral counties, with approximately 1,941 vacant. Project impacts to housing inventories would be on the order of a 6-percent reduction in vacancies over a two-county regional area (Triple Point 2022). However, localized pressure on the housing rental market and demand for short-term housing is expected to be greater within and near the city of Yerington, where EJ communities of concern were identified and could be more sensitive to the impacts than the general population due to lower incomes and limited housing stocks. CDPs within the 55-mile radius area identified as low-income communities of concern, including Fallon, Silver Springs, and Stagecoach, may also see increased pressures on short-term housing supplies, which could put upward pressure on rental rates. EJ tribal/indigenous communities of concern residing within Silver Springs, Fallon, Wabuska, the city of Yerington and Census Tract 9609.01, and to the east of the city of Yerington, within Census Tract 9609.02, may also experience increased pressures on short-term rental housing supplies, which could put

upward pressure on rental rates. The Applicant would be required to prepare a Workforce Housing and Transportation Plan under MM SOC-2 to anticipate housing needs for transient workers and identify options to reduce the Project's adverse effects on housing availability and affordability. Even with mitigation, adverse, disproportionate effects to EJ communities of concern could still occur.

Economic Conditions. The temporary construction workforce would increase the demand for services near the Project area and commuter routes, including law enforcement, fire protection services, emergency medical services, and health care. This increase in demand could place additional pressure on these services, adversely affecting service ratios to EJ communities of concern in the Project area, including Luning, Wabuska, Hawthorne, Mina, Fallon, the city of Yerington and Census Tract 9609.01, and Census Tract 9609.02. The Applicant would be required to prepare a cooperative service agreement, per MM SOC-3, with Lyon and Mineral counties that includes an added fee based on likely point of service and estimated increases in service needs, to reduce effects.

Ecological and Cultural Conditions. The Project would alter an area of natural habitat that contains two vegetation types associated with Bailey's greasewood, the dominant vegetation cover within the Project area. Bailey's greasewood is less common than other on-site vegetation types, and little information regarding the distribution and extent of Bailey's greasewood is available. However, unlike the more common greasewood (*Sarcobatus vermiculatus*), whose flowers are edible and which plant has been used in weaving objects and fashioning scrapers, arrow points, and digging sticks, limited evidence exists to support the use of Bailey's greasewood by Native American tribal groups (NPS 2022). Therefore, the vegetation loss from construction would not constitute a disproportionate adverse effect to tribal communities of concern. During Class III surveys, few pre-historic and Paleoindian archaeological sites were found. Solar array blocks and other components were removed from the design in the area of these resources to avoid impacts (see Section 3.5 *Cultural Resources*).

Public Health and Social Conditions – Solar Site. The closest EJ community of concern to the solar site is the Walker River Indian Reservation with its boundary located approximately 3.1 miles to the east of the Project site and 0.1 mile north of the gen-tie line. Within the Reservation, EJ communities of concern were also identified in Schurz CDP, approximately 8.1 miles east of the solar site. The Project construction would not be visible from the Schurz and communities along US 95 due to the Wassuk Mountain Range's intervening location. Fugitive dust generated during construction is not anticipated to affect the Schurz CDP community, which could otherwise be more vulnerable given health conditions more prevalent in these EJ population. Due to the extensive intervening distance and topography between the Schurz and the Project area, which are in different air basins, disproportionate effects would not occur. EJ communities of concern were also identified within Census Tract 9609.02, in the Wabuska CDP just north of Yerington, approximately 8.4 miles north of the solar site, and within Census Tract 9608.01. These communities, while also are potentially more vulnerable than the general population to air impacts, are not within the viewshed of the Project and would not be disproportionately affected by fugitive dust due to distance, intervening topography, and the use of dust control measures. Views in the background distance zone are possible from Yerington and Census Tract 9609.01, but the distance of 10 miles or more minimizes visual contrast and, therefore, visual impacts.

Public Health and Social Conditions – Gen-tie. The closest EJ community of concern to the gen-tie alignment and access road is Census Tract 9609.02, with the closest residence located 0.5-mile west. Potential adverse effects on local air quality from combustion and fugitive dust emissions could occur. The Project would implement measures through the implementation of a Dust Control and Air Quality Plan during construction, which would reduce emissions and concentrations of particulate matter below federal and State air quality standards for all criteria. Adverse impacts related to views of the gen-tie line and fugitive dust emissions during construction would occur over small geographic regions over short periods in time and would not be adverse with implementation of Western Solar Plan PDFs and MMs.

Public Health and Social Conditions – Transportation Routes. The EJ communities of concern identified in or near the city of Yerington; Schurz CDP; Wabuska CDP, Fallon CDP, Silver Springs CDP, and Stagecoach CDP could experience disproportionate adverse impacts related to temporary construction-generated traffic along US 95, US 95A, and US 50. Identified rural, low-density EJ

communities of concern within Census Tract 9708; Census Tract 9608.01; and Census Tract 9609.02; as well as Yerington within Census Tract 9609.01 may also experience disproportionate impacts from construction-generated traffic (along with noise and dust impacts in proximity to the solar site). These EJ communities of concern may be particularly vulnerable to the impact due to proximity to the roadway. Most workers are expected to commute from Carson City, Fallon, Mina, and Luning to the Project area. Figure 3.15-5 shows the anticipated construction worker commute. Measurable impacts related to dust would not be expected along any of the above-mentioned paved roadways since commuters would use paved highways. Project construction would temporarily increase vehicle trips on highways and local roads near or within these EJ communities of concern. Potential disproportionate and adverse impacts include increased commute times from traffic delays, wear and tear on local roads, and increased service ratios at gas stations, food establishments, or other community resources.

Operation and Maintenance Impacts

Housing. The Project would create up to 15 long-term, full-time-equivalent high-paying O&M jobs, mostly for workers located in the Lyon and Mineral County region. Some of the permanent positions could be filled by migrating workers; however, due to the small number of permanent workers needed during O&M, no disproportionate housing affects are expected to EJ communities of concern in the Project area. Due to the Project site's remote location, the solar facility is not expected to impact neighboring property values of EJ communities of concern; however, residences are in proximity to the proposed gen-tie alignment. The Western Solar Plan confirms there is very little research into and no evidence of solar facilities impacting local property values (BLM and U.S. DOE 2012).

Economics. The Project is not anticipated to result in a negative economic impact during Project O&M. Project O&M would require an average of 15 locally employed workers. In the event that all 15 workers relocate to the Project area, the population increase would not be substantial enough to affect service ratios.

Ecological and Cultural. Potential ecological and cultural impacts from O&M of the Project would remain the same as or be reduced compared with the construction phase. No new disturbance footprint would be required, and therefore, O&M is not expected to result in impacts to previously undiscovered archaeological resources. The Project would maintain access along Old State Road 2C through the solar site, which could be utilized to access the Piston-Black Mountain NCA, a site of cultural importance to Tribes in the region, including the Walker Paiute Tribe; however, the terrain is too rough to access via vehicle.

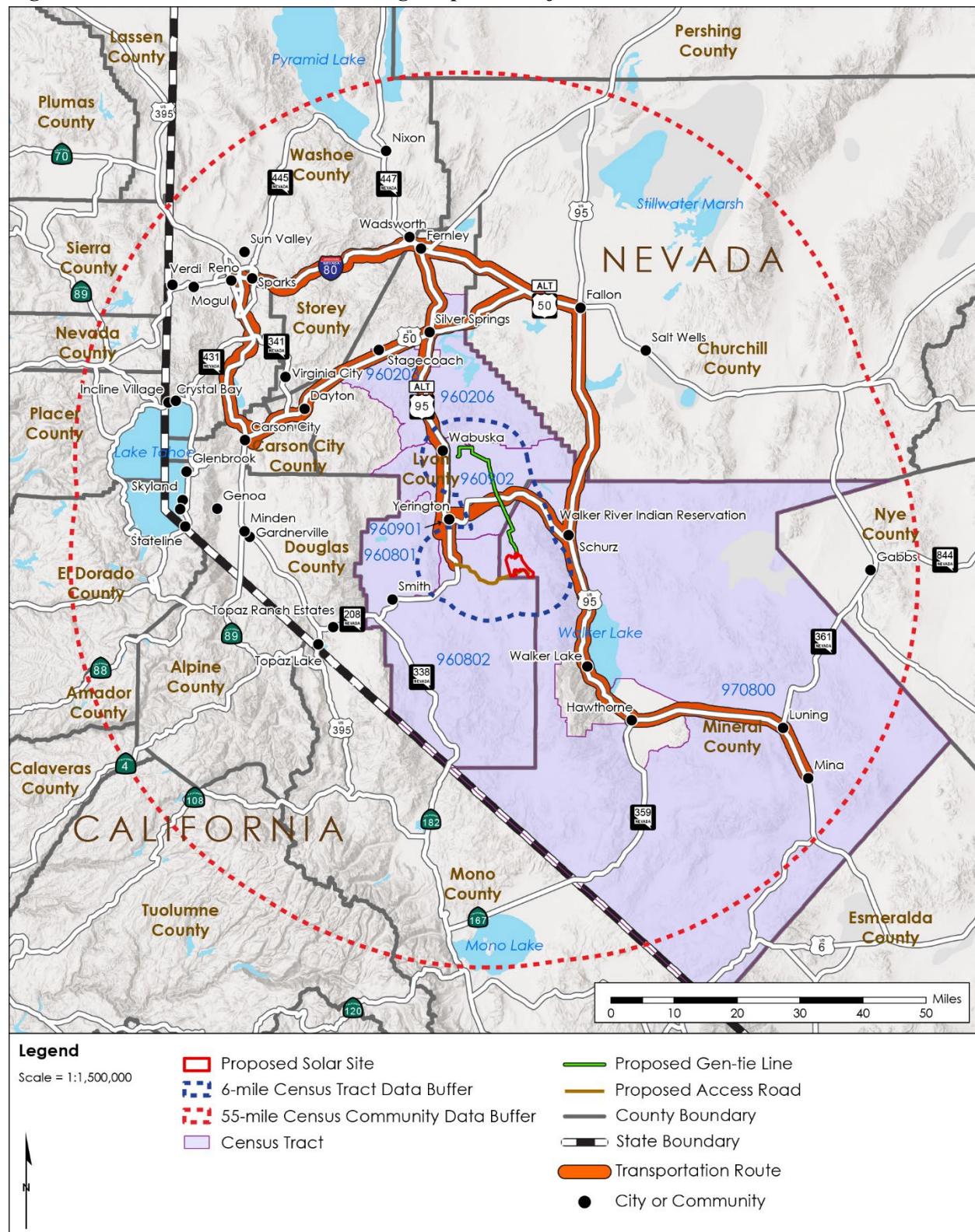
Public Health and Social Conditions. Project O&M would not result in new ground disturbance, and the number of workers on site would not surpass approximately 15 daily. Similar to construction, adverse impacts related to air quality or visual resources would be minor. Disproportionate adverse impacts related to human health and social conditions affecting EJ communities of concern are not anticipated.

Decommissioning Impacts

Decommissioning is expected to have similar impacts as construction, with a similar workforce size and duration of work. The influx of workers is anticipated to be similar to that for the construction phase and would not result in disproportionate adverse effects to EJ communities of concern due to the short duration (less than 2 years) of decommissioning activities; however, localized pressure on short-term rental housing would be greater in Yerington and the immediate vicinity, where some of the EJ communities of concern were identified. Communities identified as EJ low-income communities of concern such as Fallon, Silver Springs, and Stagecoach may also experience increased pressures on short-term rental housing supplies, which could put upward pressure on rental rates.

Project decommissioning would increase the number of vehicle trips on highways and local roadways, which could result in similar impacts to those for construction, including increased commute times from traffic delays, wear and tear on local roads, and increased service ratios at gas stations, food establishments, or other community resources such as health care. EJ communities of concern could experience disproportionate adverse impacts to human quality of life from construction worker travel.

Figure 3.15-5 Commuter Routes during Proposed Project Construction



Source: (U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS) 2012; Tele Atlas North America, Inc. 2018; Esri 2018; U.S. Census Bureau 2022)

Given the uncertainty in predicting local socioeconomic conditions 30 years into the future, predicting adverse effects to EJ communities of concern during decommissioning is difficult. MMs SOC-2 and MM SOC-3 would require a Housing Workforce and Transportation Plan and a cooperative services agreement with the counties to reduce potential adverse effects in response to analysis of conditions at the time of decommissioning.

Cumulative Impacts

Cumulative impacts to EJ communities could occur within the analysis area from construction or O&M schedule overlaps that would require a large workforce to be accommodated. Cumulative impacts largely stem from the potential for increased mining activity as well as additional solar and transmission projects in various planning phases. The Pumpkin Hollow Copper Mine Expansion is not expected to start construction until after mid-2026, following the construction phase of the Project. Other solar facilities and transmission projects have been proposed in the region and are under review. Some of the projects are proposing near-term schedules (e.g., Greenlink West); however, the majority of the solar development projects have not even entered environmental review, and construction periods are therefore not expected to overlap. The 60 MW Luning Solar 2 project, approximately 50 miles along Highway 95 in Mineral County was approved in December 2021 and may be built within the next year, prior to the construction of Libra. Depending on if and when those solar facilities are actually developed, the cumulative impacts would either be sequential or additive. In O&M, the Project would not contribute a cumulatively considerable adverse impact to EJ communities of concern related to housing, traffic, air quality and dust, or visual resources given few to no impacts associated with O&M. The solar site would also be located within an area that is consistent with VRM Class IV, which allows for major visual changes.

Cumulative adverse impacts from construction and decommissioning would include potential adverse impacts to EJ communities from pressure on the rental housing market, increased service ratios, including to emergency response and health care services, air quality and fugitive dust impacts, and traffic impacts. The Project's Workforce Housing and Transportation Plan, per MM SOC-2, would require the Applicant to plan construction housing needs and identify options that could alleviate the Project's contribution to adverse housing impacts. Alternative transportation options including vanpooling, park-and-ride, bus, shuttle, and other forms of transportation would also be included. The Applicant would also be required to prepare a cooperative service agreement, under MM SOC-3, with Lyon and Mineral counties that includes an added fee based on likely point of service and estimated increases in service needs. Other solar projects may require similar plans, but adverse cumulative effects are still likely to occur that could disproportionately affect EJ communities. The Project would also implement Western Solar Plan PDFs and the CRMP SOPs during construction to reduce potential impacts to air quality and from traffic that could affect EJ communities of concern, a considerable contribution to overall cumulative effects could still occur.

3.15.4.2 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction of the Project under Alternative 1 is anticipated to take additional time (18 months versus 16 months), which would increase the duration of impacts to housing, traffic, and services. Similarly, decommissioning under Alternative 1 is also anticipated to take additional time. The same PDFs, CRMP SOPs, MMs, and required plans as identified for the Proposed Action would be implemented for Alternative 1 to minimize adverse effects. These include, under MM SOC-2 and MM SOC-3, the Workforce Housing and Transportation Plan to identify the housing options for workers as well as a cooperative service agreement with counties and an added fee based on service needs. O&M impacts would be the same as under the Proposed Action. Cumulative adverse impacts to housing, services, and traffic could increase due to the increased construction schedule, which may overlap longer with other projects. PDFs, MMs, and required plans would reduce these effects, but potential adverse cumulative impacts could still occur.

3.15.4.3 Alternative 2 – Supplemental Access During Construction

Utilizing supplemental access routes to the Project solar site would have similar impacts to EJ communities of concern as the Proposed Action. The proposed construction area, workforce, and schedule would be the same. No new or greater impacts would occur from diverting some traffic along other routes to the Project site because no new EJ communities of concern would be adversely impacted. The additional routes still require traffic to travel through Yerington or along US 95A and would not change the location from which workers originate. The same PDFs, MMs, and required management plans would apply to reduce adverse effects as identified for the Proposed Action. Cumulative impacts to EJ communities of concern would be the same as for the Proposed Action.

3.15.4.4 Alternative 3 – Alternative Gen-tie Connecting to Greenlink West

Alternative 3 would eliminate construction of the proposed 24.1-mile gen-tie line and replace it with a 0.54-mile-long gen-tie and switching station located under the Greenlink West line. No new or greater adverse impacts to EJ communities of concern would occur under this alternative. Impacts associated with the 24.1-mile-long gen-tie in Lyon County would be eliminated, including potential generation of dust near residences along the alignment. The Project under this alternative would remove gen-tie construction activities entirely from Lyon County, which would result in reduced impacts to certain EJ communities. The same PDFs, MMs, and required management plans would apply to reduce adverse effects as identified for the Proposed Action; however, since the solar site construction would be the same under this alternative as the Proposed Action, impacts would be similar and potentially adverse. Cumulative impacts to EJ communities of concern would, thus, be similar to those for the Proposed Action.

3.15.4.5 No Action Alternative

The Project would not be constructed under the No Action alternative. No impacts to EJ communities of concern would occur.

3.15.4.6 Relevant Western Solar Plan Programmatic Design Features, the CRMP Standard Operation Procedures, Management Plans, Design Features and Mitigation Measures

Western Solar Plan Programmatic Design Features

All of the Western Solar Plan PDFs that would apply to the Project are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to EJ communities:

- EJ1-1
- HMW1-1
- T2-1
- AQC1-1, AQC2-1, AQC3-1, and AQC4-1
- VR1-1, VR2-1, VR2-2, VR2-3, VR2-4, VR3-1, VR4-1

The CRMP Standard Operating Procedures

All of the SOPs from the CRMP (BLM 2001) that would apply to the Project are listed in Appendix B. The following SOPs would minimize impacts to EJ communities:

- Common to All SOP 2
- Soil, Watershed, and Air SOPs 1, 2 and 4
- Visual Resource Management SOPs 2 and 3
- Rights-of-Way Corridors SOPs 4 and 5

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction, O&M, and decommissioning to minimize impacts to EJ communities:

- Fire Prevention and Safety Plan/Management Plan

- Dust Control and Air Quality Plan (Draft available on the project website)
- Traffic Management Plan
- Site Restoration and Revegetation Plan (Draft available on the project website)
- Decommissioning and Site Reclamation Plan
- Workforce Housing and Transportation Plan
- Lighting Management Plan (Draft outline available on the project website)

The Project would comply with mitigation measures MM SOC-2 and MM SOC-3 from Section 3.14 Socioeconomics to minimize adverse impacts on EJ communities.

3.15.4.7 Irreversible or Irretrievable Impacts and Residual Effects

An irreversible or irretrievable effect resources refers to impacts on or losses to resources that cannot be recovered or reversed. There are no irreversible or irretrievable impacts that would affect EJ communities of concern. Residual effects are those effects that remain after mitigation has been applied. Some disproportionate and adverse residual effects in relation to housing, economic, and environmental impacts to EJ communities during the construction phase and decommissioning phase could persist. Residual effects from impacts to recreational access due to increases in traffic from construction and long-term impacts to wildlife and vegetation could also result in disproportionate adverse effects to EJ communities of concern.

3.16 Public Health and Safety

3.16.1 Introduction

This section addresses public health and safety topics related to the construction, O&M, and decommissioning of the Project. This section is based on the Public Health and Safety Report (Panorama 2023), which also includes a Phase I Environmental Site Assessment by McGinley & Associates (McGinley 2023). Health and safety topics addressed include:

- Occupational health and safety
- Public health and safety
- Electric and magnetic fields (EMFs)
- Hazardous wastes and materials
- Solid waste management
- Emergency response
- Intentionally destructive acts
- Fire

3.16.2 Analysis Area

The analysis area for impacts on public health and safety is the Project site (i.e., solar site, gen-tie alignment, and access road) under the Proposed Action and alternatives. Existing adverse public health and safety conditions could coincide with the Project. The term hazardous materials refer to both hazardous substances and hazardous wastes. The analysis area is limited to a buffer of 1 mile around of the Project area, as any accidental release would be localized and would not disperse farther than 1 mile from the Project site or off-site components. The area of analysis for emergency response includes the Project area within Mineral County as well as access roads within Lyon County and the city of Yerington.

3.16.3 Affected Environment

3.16.3.1 Occupational Safety

Most of the occupational hazards associated with solar energy projects are similar to those of heavy construction associated with power-generating facilities. These occupational considerations include physical hazards associated with equipment and machinery use, construction operations, working at heights, electrical hazards, lightning, fire, exposure to weather extremes, harmful interactions with plants and animals, and exposure to hazardous substances. At solar power generation and transmission facilities, induced current and electrical arcing pose a potential occupational hazard.

3.16.3.2 Public Health and Safety

Exposed Populations and Sensitive Receptors. Sensitive receptors are population types that are at greater risk from exposure to hazardous materials or emitted pollutants. Sensitive receptors include the very young, the elderly, and those with existing health conditions. No sensitive receptors are in the vicinity of the Project solar site. The closest sensitive receptor to the solar site is a residence located near the Walker River State Recreation Area southwest of the city of Yerington, approximately 5 miles west of the solar site. Additional residences are located farther west and northwest, approximately 8.5 miles from the proposed solar site, within and scattered in the outskirts of the city of Yerington.

The closest sensitive receptors to the proposed gen-tie alignment are located 0.5 mile to the west, just east of the city of Yerington, near US Route 95A. The Walker River Reservation is approximately 3.6 miles east of the proposed solar site and immediately east of the northeastern extent of the proposed gen-tie alignment. The sensitive receptors within the Walker River Reservation are in Schurz, approximately 8 miles east of the Project solar site.

Existing Public Health and Safety Conditions. Statistics related to the public health and safety conditions of Mineral and Lyon counties' residents were obtained through the Nevada Health Response Office of Analytics. Mineral and Lyon counties have a higher mortality rate¹¹ from heart disease, cancer, chronic lower respiratory disease, influenza and pneumonia, and diabetes than the U.S. average (NDHSS 2019a; 2019b; NVSS 2019). Existing conditions related to public health and safety in proximity to a proposed site are commonly considered as baseline conditions for evaluating potential health and safety impacts, including the risk for increased rates of respiratory diseases (e.g., asthma), cancer, and heart disease. However, public health and safety conditions were not considered in the analysis area as no human communities are located within 1 mile of the solar site.

Vector-Borne Diseases. Blood-feeding arthropods such as mosquitoes and ticks can transmit viruses when they bite susceptible humans and animals. Four main virus agents of encephalitis are found in the U.S., all of which are transmitted by mosquitoes: eastern equine encephalitis, western equine encephalitis, St. Louis encephalitis, and La Cross encephalitis. West Nile Virus (WNV) and Zika virus are related to the St. Louis virus and cause similar symptoms. Most human infections are asymptomatic or result in nonspecific flu-like symptoms, but infection may also lead to encephalitis, an inflammation of the brain, with a fatal outcome or permanent neurologic damage in a small portion of infected persons. Occurrences of West Nile virus and Zika in Mineral and Lyon counties are very low, and the risk to public health from these vector-borne diseases is extremely low. In 2021, Mineral County had no confirmed cases of any vector-borne diseases, and Lyon County had 1 confirmed case of WNV (Sepcic 2022).

Valley Fever. Coccidioidomycosis, commonly known as valley fever, is primarily a disease of the lungs that is common in the southwestern U.S. and northwestern Mexico. Valley fever is caused when susceptible people and animals inhale spores of the fungus coccidioides, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. The spores become airborne when the soil is disturbed by winds, construction, farming, and other activities. People working in certain occupations who are exposed to disturbed soils are at greater risk of infection. Valley fever is not

¹¹ Data reflect causes of deaths that occurred between 2015 and 2017.

contagious, and most cases are very mild; about 60 percent or more of infected people never seek medical attention. However, extreme cases can cause death, usually among patients with compromised immune systems. More than 4 million people live in areas where valley fever fungus is prevalent in the soils. In 2021, Mineral County had no confirmed cases of Valley Fever and Lyon County had 1 confirmed case of Valley Fever (Sepcic 2022).

3.16.3.3 Electric and Magnetic Fields

Electromagnetic Fields (EMFs) are created whenever power lines are energized. The strength of the field depends directly on the voltage of the line creating it, and the field attenuates rapidly with increasing distance from the source. Electric fields are reduced in many locations because they are effectively shielded by objects or materials such as trees or houses and distorted by any object that is within the electric field, including the human body. Like electric fields, magnetic fields from power lines are created whenever current flows through them at any voltage, the strength of the field is directly dependent on the voltage of the current, and the field strength attenuates rapidly with distance from the source. However, unlike electric fields, magnetic fields penetrate almost everything and are unimpeded by buildings, trees, people, or other obstacles. The Project region contains several high-voltage transmission lines in established energy corridors. EMFs are commonly at background levels approximately 300 feet from a source (California EMF Program 2022).

3.16.3.4 Hazardous Materials and Wastes

Project construction would involve the use of hazardous materials typical of most types of construction, (e.g., fuels, oils, adhesives, solvents, pesticides). Under federal and State laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic, ignitable, corrosive, or reactive. If improperly managed, hazardous materials can cause public health hazards when released to the soil, groundwater, or air. The Libra Solar Project Health and Safety Report provides the regulatory environment as it relates to hazardous wastes and materials (Panorama 2023).

A Phase I Environmental Site Assessment was prepared for the Project by McGinley & Associates (McGinley 2023). The Phase I ESA did not identify any recognized environmental conditions (RECs),¹² controlled recognized environmental conditions (CRECs),¹³ known spills or uncontrolled releases of hazardous materials or wastes, or oil or gas wells within the Project area. An underground storage tank and State Hazardous Waste Site, as well as multiple mineral oil spills, were identified at the Fort Churchill substation through a database search. Multiple soil excavations and remediations, as well as water testing, have been conducted at the Fort Churchill substation to the satisfaction of NDEP.

3.16.3.5 Solid Waste Management

The closest operating landfill with the potential to serve the Project is the Hawthorne Landfill, located approximately 28 miles southeast of the Project solar site. This Class IV landfill primarily serves Mineral County and has a permitted disposal capacity of 1,249,000 cubic yards (NDEP 2002). Other landfills, including the Carson City Landfill and the Lockwood Regional Landfill, all have confirmed capacity for solid waste collection (NDEP 2017; 2018; 2009).

3.16.3.6 Emergency Evacuation

The Project area has designated major evacuation routes in the event of a large-scale evacuation: Hwy 95 North towards Fernley, US 95A north towards Silver Springs, US 95A east towards Schurz, SR 339 towards Smith, and State Route 208 towards the 95A (NDOT 2022).

¹² The term REC means the presence or likely presence of any hazardous substances or petroleum products in, on, or, at a property due to any release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment.

¹³ A CREC is an REC that has been addressed to the satisfaction of the applicable regulatory authority with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

3.16.3.7 Intentionally Destructive Acts

The Project site is in an undeveloped desert area away from populations and infrastructure where intentionally destructive acts could be anticipated. Where it is possible to estimate event probabilities for industrial hazards, collisions, and natural disasters using historical statistical data and information, it is not possible to accurately estimate the probability of an act of terrorism or sabotage. Therefore, the discussion on potential effects regarding intentionally destructive acts is focused on the consequences of sabotage or a terrorist attack on a solar facility. Such consequences would be expected to be similar to those for an industrial accident or natural disaster that could result in an interruption of power service, fire, or hazardous materials release.

3.16.3.8 Fire Risk and Protection

Data modeled using the Nevada Division of Forestry's Natural Resources and Fire Information Portal (NDF 2022) classifies the wildfire risk on the Project solar site and in the immediately surrounding area as "very very low" to "very low". However, northeast of the city of Yerington and Fort Churchill Generating Station, a segment of the gen-tie alignment is within an area of "moderate" to "extreme" fire risk (Nevada WRA 2021). Nine wildfires were documented within 10 miles of the Project site (including the gen-tie and access roads). Two were attributed to natural causes, three were of unknown cause, and less than half were attributed to human-caused ignition sources. None of the ignition points occurred within the Project site. The closest ignition point was approximately 3 miles south of the proposed gen-tie connection into the Fort Churchill Substation, just north of the city of Yerington. The closest ignition point to the Project solar site was approximately 8 miles southwest along the Walker River east of Cambridge Hills (NIFC 2023).

The BLM is responsible for responding to wildfires on BLM-managed public land. However, the BLM is not responsible for responding to fires that are not considered wildfires. Fires not considered wildfires (e.g., structural fires, hazardous materials fires) would be responded to by the local jurisdiction. The proposed Project would fall within the jurisdiction of the Mineral County Fire Department for the Project solar site and the Mason Valley Fire Protection District for the majority of the gen-tie line, which services the city of Yerington and greater Mason Valley. The closest Mineral County Fire Department station is in Schurz, approximately 8.1 miles east of the Project solar site. The closest Mason Valley Fire Protection District station is in Yerington, approximately 11.1 miles northwest of the Project solar site on SR 208.

3.16.4 Environmental Consequences

3.16.4.1 Methods

This analysis was conducted through publicly available data accessed by GIS mapping tools, Project data provided by the Applicant, and an on-site assessment of existing environmental conditions.

3.16.4.2 Proposed Action

Construction Impacts

Occupational Safety. Occupational hazards during construction of the Project would include heat stress or stroke, exposure to hazardous materials, electric shock, and accidents or injuries. Occupational hazards would be minimized with the implementation of BMPs, safety standards, and the use of appropriate protective equipment as required under law, including all federal Occupational Safety Health Administration (OSHA) and Nevada-OSHA requirements. Employees would be trained in monitoring, proper notification, and containment following a hazardous materials release as detailed in the SPCCP, as required by law. However, as adverse effects to workers could still occur, preparation of a Hazardous Materials and Waste Management Plan would be required as part of the BLM ROW grant.

Western Solar Plan PDF HMW1-1 requires the preparation and implementation of a Hazardous Materials and Waste Management Plan that outlines the training of personnel on all appropriate OSHA and Nevada OSHA guidelines. The CRMP SOP 23 (Common to All) requires compliance with State standards for public health and safety, environmental protection and siting, construction, and O&M when those standards are more stringent than federal standards. Adverse effects from construction-related

occupational hazards would be minimized through the implementation of the Western Solar Plan PDF and the CRMP SOP.

Public Health and Safety. Unintentional ponding and the use of above-ground water tanks for fire protection could result in breeding opportunities for mosquitoes and an increased risk of WNV and Zika. Implementation of the Health and Safety Program, SPCCP, and SWPPP, covering the water tanks, and implementing a PUP, if needed to control mosquitoes, would reduce the potential for mosquito breeding and consequently the risk of WNV and Zika. With these measures, the Project would not increase the risk of vector-borne disease or bring WNV and Zika to the area.

The occurrence of valley fever in Mineral and Lyon counties, caused by inhaling coccidioides fungal spores, is very low. Fugitive dust generated during construction and decommissioning could expose workers to spores that may be present in these desert soils. Using water and the BLM-approved dust palliatives to control fugitive dust during construction would minimize the potential for the Project to increase human exposure to the coccidioides fungal spores. With these controls in place, the Project would not have an adverse impact on the occurrence of valley fever in the area. Analysis of dust emission and numerous minimization measures are presented in Section 3.3 *Air Quality and Climate Change*.

Electric and Magnetic Fields. EMFs impacts are related to energized lines and therefore there would be no EMF-associated construction impacts.

Hazardous Wastes and Materials. Constructing the Project would require the routine transportation, use, and disposal of hazardous materials and wastes typical of construction projects that could result in accidental releases. None of the chemicals proposed for use or storage at the Project site are on the list of regulated substances in 40 CFR section 68.130. Implementing the Health and Safety Program, SPCCP, and SWPPP, as recommended in the Public Health and Safety Report (Panorama 2023), and the CRMP SOP 2 and SOP 3 (Hazardous Waste) would reduce the likelihood of, and minimize the potential adverse effects from, accidental releases.

Solid Waste Management. Project construction would generate approximately 1,515 tons of scrap metal, wood, glass, plastic, and worker-generated waste, per the POD. Construction debris would be managed and processed in accordance with the applicable regulatory requirements. Western Solar Plan PDF HMW1-1(a) requires identifying and minimizing the waste stream during construction of the Project and establishing regular removal of waste. The Health and Safety Program would include a Waste and Hazardous Materials Management Plan that would identify the anticipated waste streams, give handling instructions for waste streams, including damaged or old batteries and panel waste, and describe how the wastes would be managed in accordance with BLM policy, and federal, state, and local laws. The Waste and Hazardous Materials Management Plan would be approved by the BLM in accordance with the CRMP SOP 8 (Common to All). The Hawthorne Landfill, the Carson City Municipal Landfill, or the Lockwood Regional Landfill all have adequate capacity to accommodate the Project's waste disposal without impacting the waste disposal needs of the local communities. Any specialty wastes, such as solar panels or battery storage, would be taken to specialty locations for recycling or disposal (see PDF HMW1-1[b]). No adverse effects related to solid waste management are anticipated.

Emergency Response. The gen-tie construction may require short-term closure of the US 95A. US 95A is designated as a major evacuation route in the area (NDOT 2022). Any temporary closures of US 95A associated with the Project would be coordinated with NDOT. Encroachment permits and authorizations would be obtained prior to any work within the US 95A ROW. With proper coordination and implementation of encroachment permit requirements, adverse effects to emergency response would not occur. Local roads to the Project site are unlikely to be used as emergency routes because of the remote location of the Project site.

Evacuation of numerous construction workers and Project personnel from the Project area may be needed in the event of a major emergency. Given limited access to the site, primarily along East Walker Road to Reese River Road, evacuation could be difficult if these roads were blocked. A Site Evacuation Plan would be prepared to address evacuation, in accordance with OSHA (29 CFR § 1910.38(a)), as a part of

the Health and Safety Program that would be approved by the BLM prior to authorization of Project construction through the NTP. The Evacuation Plan would address other methods of evacuation, such as along access roads heading north towards Pursel Lane (through agreements with Nevada Copper, per MM SOC-1), shelter-in-place provisions, and air evacuation provisions. Preparation and implementation of a Site Evacuation Plan would minimize adverse effects related to emergency evacuation of on-site Project personnel.

Intentionally Destructive Acts. Site security would include fencing and possibly motion sensor lighting, on-site security guards, cameras, and other technology during construction and O&M. Perimeter security fencing would be 7 feet in height (inclusive of 6 feet of fencing with 1 foot of barbed wire at the top). The entire site would be fenced appropriately to restrict public access during construction and O&M. Chain-link security fencing would be installed around the site perimeter, substation, and other areas requiring controlled access. Implementation of security fencing would reduce the risk of exposure to individuals during construction-related activities.

Fire Risk and Protection. Project construction and O&M could increase fire risk through vehicles and equipment operating within vegetated areas, smoking, battery failures, transmission lines, and introduction of annual grasses that would increase the fuel load. A wildfire originating in the Project area during construction could damage or destroy the partially built solar facility or the surrounding transmission facilities, decrease air quality, cause hazardous materials releases, interrupt nearby recreational uses, spread fire to lands outside the Project area, destroy forage and cover, or cause injury or death of personnel on the site. Indirect impacts would result in changes to the vegetation communities and the wildlife supported by these communities. The risk of a wildfire spreading outside the Project area as a result of construction would be low based on the wildfire risk assessment ratings and vegetation characteristics in the Project area and based on past occurrences of wildfires in most of the Project area (Nevada WRA 2021a; 2021b; 2021c; NIFC 2023).

Western Solar Plan PDF WF1-1 requires the implementation of fire management measures that identify and minimize fire risk, such as providing worker training to all Project personnel prior to their entering the Project work site. Western Solar Plan PDF WF1-1 also requires inspection and monitoring measures to reduce fire risk during construction, O&M, and decommissioning of a solar energy development.

Western Solar Plan PDF WF2-1 would also be implemented, which further reduces on-site fire risks by requiring passive and active vegetation management to minimize the potential to increase the frequency of wildland fires and prevent the establishment of non-native, invasive species on the solar energy facility and its transmission line and roads. While Western Solar Plan PDFs WF1-1 and WF2-1 would reduce the fire risk from the Project, they do not require a comprehensive plan to review and address all fire risks during construction. Thus, Project MM PHS-1 is recommended and requires preparation and implementation of a Fire Prevention and Safety Plan to minimize adverse effects associated with increased fire hazards during construction.

To address the counties' ability to provide the needed additional services, Project MM SOC-3 would require coordination with Mineral and Lyon counties, including the Mineral County Fire Department and the Mason Valley Fire Protection District or other responsible fire authority, prior to issuance of a NTP for the Project by the BLM, to determine increased demands for fire protection and establish a cooperative service agreement with the entities that may include an added fee based on likely point of service and estimated increases in service needs during construction. With implementation of Western Solar Plan PDFs WF-1 and WF2-1 and MM PHS-1 and MM SOC-3, the Project would not result in adverse effects from an increase in the risk of wildfire.

Operation and Maintenance Impacts

Occupational Safety. Occupational hazards during O&M would be similar to those identified for construction; however, fewer workers would be involved in O&M than with construction.

Implementation of Western Solar Plan PDFs HMW1-1, HMW2-1, and HMW3-1, the CRMP SOP 23 (Common to All), an SPCCP, and compliance with OSHA and Nevada OSHA regulations would minimize potential occupational hazards during operation and maintenance activities.

Public Health and Safety. The effect of the Project operations on vector-borne diseases and valley fever in the area would be less than the effect due to construction because, during O&M, there is less water use for dust abatement, less opportunity for mosquitoes to breed, and less potential to mobilize airborne dust that could contain fungal spores. By applying the controls discussed under Construction Impacts, the Project would not have an adverse effect on public health and safety.

Electric and Magnetic Fields. No residences or other uses would be subject to EMF exposure from the proposed gen-tie line due to the distance between the gen-tie line and the nearest residence, which is over 1,000 feet away. Adverse effects to humans from EMF exposure are not anticipated.

Hazardous Wastes and Materials. Project O&M would require the routine transportation, use, and disposal of hazardous materials and wastes similar to those used for construction, as well as spent batteries, transformer fluids, and pesticides used to control mosquitoes. Limited use of herbicides would occur to control non-native and noxious weeds. If herbicides or pesticides are required, they would be limited to those analyzed and approved by the BLM in the 2007 Vegetation Treatments Using Herbicide on BLM Lands in the 17 Western States PEIS (BLM 2007) and the 2016 Final Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on BLM Lands in 17 Western States PEIS (BLM 2016). To be consistent with those PEISs, herbicide use would adhere to applicable PDFs contained therein. The process for treatments would be characterized in a PUP, approved by the BLM. Accidental release of pesticides, hazardous materials, or waste could affect public health or the environment. The batteries used for the solar facility would most likely be lithium-ion, which are not considered hazardous waste but must be managed and recycled properly to prevent combustion and fire hazards. Numerous regulations ensure the safe transport, use, storage, and disposal of hazardous materials. Hazardous materials accidents or spills could still occur. Requirements of the SPCCP would be implemented for transformers and other oil-containing structures.

Requirements of Western Solar Plan PDFs HMW1-1, HMW2-1, and HMW3-1, including the Hazardous Materials and Waste Management Plan, would ensure that personnel are properly trained in the handling of identified chemicals and wastes and instructed in the procedures to follow in case of a chemical spill or accidental release. Western Solar Plan PDF HMW3-1 would require maintaining compliance with the terms and conditions for hazardous materials and waste management during O&M by measures such as installing sensors or other devices to monitor system integrity and implementing robust site inspection and repair procedures. Implementation of these measures would minimize adverse effects associated with accidental hazardous materials release.

Although solar panels for utility-scale facilities would most likely use nonhazardous silicon-based semiconductor material, it is possible that some solar panels may use semiconductors containing heavy metals such as cadmium, selenium, and arsenic. These metals are fully contained within the solar panels and would not be released under normal operating conditions (BLM and DOE 2012). The Project includes battery storage on site to help store the energy produced by the panels so the energy can be released at optimal times. The type of battery is not yet determined, but would likely be lithium ion. Lithium-ion-based batteries include industry-standard design features to greatly reduce the potential of a spill or leak.

Solid Waste Management. The Project would produce wastes commonly associated with solar facility O&M activities. These wastes would include defective or broken electrical materials, empty containers, the typical refuse generated by workers and small office operations, and other miscellaneous solid wastes. The existing landfills in the area have adequate capacity to accommodate the Project waste without adversely impacting the local waste disposal needs. To ensure that wastes would be disposed of in accordance with laws, HMW1-1 requires preparation and implementation of a Hazardous Materials and Waste Management Plan prior to operation to minimize potential effects.

Emergency Response. The O&M of the Project would neither cause any road closures nor impair access to local roads. Internal access roads to the solar site would be designed to meet the Mineral and Lyon counties' fire codes. O&M of the Project would not result in any adverse effects on emergency response activities. The Health and Safety Program would include a Site Evacuation Plan to evacuate on-site

workers in the event of an emergency, per PEIS PDF HS1-1(b). With these measures in place, the Project would not adversely affect emergency response protocols.

Intentionally Destructive Acts. The consequences of an intentionally destructive act on the facility during O&M would be similar to those that might occur during construction, with the added risk of an interruption of electrical service to end users. The Project includes security measures such as security fencing, controlled access gates, on-site security patrols, lighting, electronic and security systems and/or remote monitoring. Once the Project is constructed, non-emergency access would be limited. The potential release of hazardous materials used at the facility due to an attack during O&M would not cause a threat to the health and safety of the surrounding community because these materials would be present in limited quantities, their toxicity is relatively low, and the site is far from the nearest receptors. The Project could be at risk of cyberattacks resulting in data breaches or power loss as reliance on computing and remote operations has increased. Based on recent attacks, this is often done through the inverter controls and monitoring systems. Integration of and consideration for cybersecurity when selecting monitoring and other computing systems for the Project would minimize adverse effects associated with cybersecurity attacks that could result in loss of solar power into the grid. Adverse impacts associated with intentional destructive acts during O&M of the Project are unlikely given the security measures included in the design and the relatively low likelihood of such an action.

Fire Risk. The probability of a wildfire occurring due to O&M activities would be low due to the low- and low-to-moderate-risk site conditions and the required training of operations staff. Western Solar Plan PDF WF1-1 would require the Applicant to incorporate fire management training into the worker training for all phases of the Project's life including operations. The worker training would ensure the workers are aware of key fire mitigation efforts of the Project work site during all phases of the Project's life.

Compliance with regulations and implementation of PDFs would reduce but not eliminate fire hazard risks from hazardous materials, improper disposal of batteries, and line breakages. MM PHS-1 requires preparation and implementation of a comprehensive Fire Prevention and Safety Plan to minimize adverse effects associated with increased fire hazards during operations, including requiring a battery-specific fire suppression plan. Implementation of Western Solar Plan PDFs WF1-1 and WF2-1 and of PDFs HMW1-1 and MM PHS-1 would reduce adverse effects associated with fire hazards during O&M. Western Solar Plan HS1-1 requires preparation and implementation of a comprehensive Fire Prevention and Safety Plan to minimize adverse effects associated with increased fire hazards during O&M, including requiring a battery-specific fire suppression plan. These measures would reduce adverse effects associated with fire hazards during O&M.

Decommissioning Impacts

Occupational Safety. Occupational hazards during decommissioning would be similar to those identified for construction. Decommissioning activities would be similar to construction activities and would also require implementation of Western Solar Plan PDFs HMW 1-1, HMW 2-1, HMW 3-1, HMW 4-1, and HMW 5-1 and compliance with OSHA and Nevada OSHA guidelines. Western Solar Plan PDFs HMW 4-1 and HMW 5-1 would require emergency response capabilities during reclamation and decommissioning, and decommissioning design features, implementation of the Hazardous Materials and Waste Management Plan, health, and safety training, and the SPCCP would minimize potential adverse health and safety impacts to Project personnel.

Public Health and Safety. The impacts on public health and safety from decommissioning would be the same as those identified for construction. Controlling breeding opportunities for mosquitoes by covering water tanks, preventing ponding, and using the BLM-approved dust palliatives to reduce fugitive dust would minimize the potential for vector-borne diseases and valley fever.

Electric and Magnetic Fields. No EMF impacts are expected from decommissioning.

Hazardous Waste and Materials. Decommissioning would require the use of fuel and lubricants for vehicles and equipment as well as the transport and disposal of hazardous materials used at the Project site, such as refrigerants, spent solar panels, and electrical equipment. Inadvertent release of hazardous materials could occur. Compliance with existing laws and regulations and Western Solar Plan PDFs

HMW1-1, HMW2-1, HMW3-1, HMW4-1, and HMW5-1 would ensure that the risk of hazards associated with accidents and spills or leaks during decommissioning would be minimized. Although these incidents could still occur, their likelihood is considered low. Adverse impacts associated with any accidental release of hazardous materials would be minor and localized.

Solid Waste Management. Decommissioning would result in the generation of solid waste as facility components are disassembled. Solid wastes include concrete, metal, plastics, and photovoltaic panels. Recyclable materials would be removed from the waste stream and recycled. The remainder would be disposed of in an approved landfill. Based on current estimates and permits, landfills in the area are expected to be open at the time of decommissioning and would have remaining capacity available. Therefore, sufficient capacity is expected to be available to accommodate solid waste generated from decommissioning. Specialty waste, such as solar panels or battery storage systems, would be recycled or taken to specialty waste facilities and would not contribute to the nearby landfill waste unless specifically allowed at that time (in 30 years). No adverse effects would occur.

Emergency Response. Project decommissioning activities would be similar to construction activities and would not impair implementation of, or physically interfere with, an adopted emergency response plan. Western Solar Plan PDF HMW4-1 requires Project developers to maintain emergency response capabilities throughout the reclamation and decommissioning period for as long as hazardous materials and wastes remain on site.

Intentionally Destructive Acts. Prior to the facility being taken offline, the probability and effect of intentionally destructive acts is similar to that during construction. Once the facility is taken offline, the likelihood of the site being a target of intentionally destructive acts would be reduced since the site would no longer operate and produce power, so there would be little incentive to target it.

Fire Risks. Potential effects from decommissioning would be similar to those described for construction, including an increase fire risk through vehicles and equipment operating on vegetated areas, smoking, battery failures, transmission lines, and introduction of annual grasses that would increase the fuel load. As described for construction, with implementation of Western Solar Plan PDFs WF1-1, WF2-1, and MM PHS-1 and SOC-1, decommissioning of the Project would not result adverse effects from an increase in the risk of wildfire.

Cumulative Impacts

Cumulative impacts related to occupational safety, public health and safety, and EMFs would not be expected to occur since the impacts related to these factors would either be project-specific and not compound or would not be cumulatively adverse given effects of each project would be minimal and/or would not have spatial or temporal overlap.

Cumulative effects could occur related to the use, storage, and disposal of hazardous wastes. US 95 and US 95A may be used to access many of the cumulative projects and would be used to transport any potentially hazardous materials used in construction, O&M, and decommissioning of the cumulative projects; however, most of the other identified cumulative projects would not likely be constructed at the same time as the Project, with the exception of Greenlink West and potentially the 60 MW Luning Solar 2 project, in Mineral County, approximately 50 miles away. Ground-disturbing activities could disturb contaminated soils or sites. Improper disposal and handling of contaminated materials, or accidental release of hazardous materials during handling or transport, could expose the public to health risk. The Project would contribute to a potentially adverse cumulative effect. Preparation of a Hazardous Materials and Waste Management Plan in accordance with Western Solar Plan PDF HMW1-1 would minimize the Project's contribution to a potentially cumulative effect on occupational health and safety and risk of hazardous materials accidents or spills. Cumulative projects would be required to comply with existing health and safety laws and Western Solar Plan PDFs or other BLM BMPs, which would reduce the adverse cumulative effects.

Cumulative projects would generate hazardous and non-hazardous solid waste during construction and O&M that would require disposal; however, construction periods except for that of Greenlink West,

Luning Solar 2 and, potentially, the Pumpkin Hollow Copper Mine Expansion are not anticipated to overlap with the Project's construction period. Due to the available capacity of landfills in the region, cumulative projects are not anticipated to adversely affect landfill capacity. Each cumulative project under the jurisdiction of the BLM is anticipated to require recycling of materials where feasible and adherence to the Western Solar Plan or the BLM BMPs to reduce the cumulative waste.

Cumulative projects may also increase demand for and utilize similar roads for emergency response. Construction is not expected to overlap except, potentially, for the Greenlink West project and potentially the Pumpkin Hollow Copper Mine Expansion. Emergency response may also be needed during O&M. Implementation of Western Solar Plan PDF HMW1-1 requires preparation of an Emergency Response Plan. Similar PDFs and SOPs would be expected for other solar projects on BLM lands as well as for Greenlink West. While the overall impacts are not known for the Pumpkin Hollow Copper Mine Expansion, the Project would reduce effects through the Emergency Response Plan and thus would not contribute to any adverse cumulative effect.

Construction and O&M of the adjacent cumulative projects that involve the use of heavy machinery or off-road vehicle use would increase the risk of wildfire ignition. Adverse cumulative impacts could occur; however, wildfire risk in the region of the Project and cumulative projects is low (Nevada WRA 2021b). The Project would involve activities that could spark a fire or change the fire susceptibility, resulting in a contribution to the cumulative regional fire risk. Western Solar Plan MM PHS-1, which requires preparation and implementation of a Fire Prevention and Safety Plan, along with implementation of Western Solar Plan PDFs WF1-1 and WF2-1, would further reduce the risks of wildland fires. Cumulative projects would likely require similar fire prevention plans or adherence to the Western Solar Plan PDFs, reducing the cumulative risk of fire.

3.16.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction, O&M, decommissioning, and cumulative impacts to public health and safety resources would be similar for Alternative 1 as for the Proposed Action because the area of the proposed solar site, access, and workforce would be similar. Alternative 1 may require a two month longer construction period, slightly increasing impacts. The reduction in vegetation removal and exposed soils through the modified construction methods approach, however, would lessen impacts to air quality from fugitive dust, further reducing the potential for valley fever infections. Fire risks may be slightly increased by leaving more vegetation. The same PDFs as identified for the Proposed Action would be implemented for Alternative 1 to minimize adverse effects.

3.16.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Providing supplemental access routes to the Project solar site during construction would result in the same impacts to public health and safety as the Proposed Action. No new or greater risks or impacts would occur from diverting some traffic along other routes to the solar site. The solar site and gen-tie would be constructed, operated, and decommissioned as described for the Proposed Action. The same PDFs and SOPs would apply to reduce adverse effects as identified for the Proposed Action. Cumulative impacts would also be the same as for the Proposed Action. Supplemental routes would only be used during construction, and cumulative impacts would remain the same as described since use of the supplemental routes would not introduce any new or greater hazards that could contribute to cumulative effects.

3.16.4.5 Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West

Construction, O&M, and decommissioning impacts to public health and safety would be reduced for Alternative 3 as compared to the Proposed Action because of the elimination of construction of a 0.54-miles long gen-tie line in lieu of a 24.1-mile gen-tie. The solar site, access, and amount of construction that could result in impacts, particularly fire risks, would be reduced. The same PDFs and SOPs applicable to the Proposed Action would be implemented for Alternative 3. Cumulative impacts would also be reduced since, under this alternative the gen-tie alignment would be reduced by 23.6 miles, which would reduce risks of hazardous materials spills, emergency response needs, and wildfire risks from the Project.

3.16.4.6 No Action Alternative

Under the No Action alternative, the Project would not be developed, and there would be no hazards or risks introduced to the public. Therefore, there would be no impacts to public health and safety in the analysis area.

3.16.4.7 Relevant Required Western Solar Plan Programmatic Design Features, the CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Western Solar Plan Programmatic Design Features

Programmatic design features from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to public health and safety:

- HMW1-1, HMW2-1, HMW3-1, HMW4-1, and HMW4-2
- HS1-1
- WF1-1 and WF2-1

The CRMP Standard Operating Procedures

SOPs from the CRMP are listed in Appendix B. The following SOPs were identified as relevant:

- Common to all SOPs 8 23
- Hazardous Waste SOPs 2 3

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction, O&M, and decommissioning to minimize impacts to public health and safety:

- SPCCP
- Health and Safety Program (including a Fire Prevention and Safety Plan/ Management Plan, Emergency Action Plan, Waste and Hazardous Materials Management Plan, and Trash Abatement Plan)
- SWPPP
- Site Restoration and Revegetation Plan (Draft available on the Project website)
- Decommissioning and Site Reclamation Plan

The Project would comply with the following mitigation measures as well as MM SOC-1 and MM SOC-3 from Section 3.14 Socioeconomics to minimize adverse impacts to public health and safety:

MM PHS-1: Fire Prevention and Safety Plan

The Applicant shall prepare and implement a Fire Prevention and Safety Plan to ensure the safety of workers and the public during Project construction, O&M, and decommissioning activities. The Fire Prevention and Safety Plan shall be submitted to the BLM for review and approval prior to the issuance of the NTP. The plan shall incorporate the use of appropriate fire protection equipment, worker training, and consultation with local fire departments to identify appropriate protocols and procedures for fire prevention and early response to minor fires. The plan shall also address the following recommendations, with particular focus on suppressants for fires from lithium-ion battery cells, including inert gas, carbon dioxide, and Halon as well as measures to protect batteries against thermal abuse:

- Keep a water truck or other portable trailer-mounted water tank on-site and available to workers at all times for use in extinguishing small man-made fires.
- Use fire watches during hot work on-site (e.g., welding, soldering, cutting, drilling, or grinding).
- Incorporate the use of appropriate fire protection equipment, worker training, and consultation with local fire departments to identify appropriate protocols and procedures for fire prevention and early response to minor fire. The plan should limit where smoking can occur to minimize chances of igniting a fire and should identify proper vehicle maintenance and use to minimize fire risks.

- Store battery packs at reduced state-of-charge¹⁴ prior to and during construction to reduce the likelihood that crush, puncture, or external heating would lead to cell thermal runaway and a fire ignited by heated cell cases.
- Ensure protocols are in place to quickly extinguish any transmission line breakages that could ignite a fire during construction.
- Immediately report fires to 911 or (702) 631-2350 and make all accommodations to allow immediate safe entry of firefighting apparatus and personnel.
- Coordinate with the BLM law enforcement or their designated representative to conduct an Origin and Cause Investigation on any human-caused fire on the Project site. Properly manage and preserve evidence in coordination with the BLM to minimize disturbance of potential evidence located at the fire scene.

3.16.4.8 Irreversible and Irretrievable Impacts and Residual Effects

An irreversible or irretrievable impact would occur if the public or workers were exposed to hazardous levels of waste and materials, significant occupational accidents, EMFs, or wildland fires. Construction, O&M, and decommissioning activities would occur in accordance with all applicable laws and regulations governing health and safety. Implementation of these standard practices would reduce potential occupational health and safety risks. Although the Project would use hazardous materials during construction, O&M, and decommissioning, it is unlikely that the accidental release of hazardous materials would result in irreversible or irretrievable impact due to the types and quantities of the hazardous materials used. If an accidental release were to occur, exposure to hazardous materials would be minimized by the implementation of the PDFs and the various health and safety plans. There are no reasonably foreseeable future actions that would cumulatively increase the risk of public or occupational exposure to hazardous materials in the analysis area.

Residual effects on public health and safety related to occupational risk, EMF, hazardous materials, public health, emergency response, and intentionally destructive acts would not be expected after implementation of regulatory requirements and mitigation.

3.17 Transportation and Traffic

3.17.1 Introduction

This section describes the existing transportation and traffic conditions in the analysis area. This section is limited to non-recreational modes of transportation that would be used for the movement of materials and equipment during construction and that would be used by workers for commuting during construction, O&M, and decommissioning of the Project. An analysis of Project impacts on recreational access, including OHV travel, is provided in Section 3.12 *Recreation*.

The BLM's regulations are primarily related to travel and transportation management for recreational purposes. The BLM Manual 1626 Travel and Transportation Management (BLM 2011b) provides detailed policy, direction, and guidance for the comprehensive management of travel and transportation on BLM-administered lands and related waters. The BLM also maintains Handbook 9113-1 Roads Design (BLM 2011), which dictates the design standards for roads on BLM-managed lands. Most of the traffic-related Project impacts would occur on non-BLM lands and are thus subject to local and regional transportation policies, as opposed to those established by the BLM. Permitting processes for Lyon and/or Mineral counties (e.g., the Renewable Energy Special Use Permit for Mineral County) would likely require the preparation of a county-specific traffic study and Traffic Management Plan prior to

¹⁴ State-of-charge refers to percent that the battery is charged.

construction. The Project's POD also requires that a Traffic Management Plan be prepared prior to construction.

3.17.2 Analysis Area

The analysis area for transportation and traffic includes the transportation systems within the Mason Valley in Lyon and Mineral counties, Nevada (as shown in Figure 3.17-1) and focuses on the primary public road systems that would be used for construction, O&M, and decommissioning of the Project. Regional travel routes anticipated for the Project are shown in Figure 3.17-2. Materials, equipment, and commuter trips may originate outside of the analysis area. Project-related traffic would be dispersed and is not expected to impact regional transportation corridors such as Interstate 80 (I-80), State Route 439 (SR 439), U.S. Highway 50 (US 50), or roads within the Reno-Sparks metropolitan area.

The travel routes addressed in this analysis include US 95A, Nevada State Route 339 (SR 339), SR 827, SR 208, East Walker Road, and Reese River Road (Figure 3.17-3). Project related traffic would utilize US 95A to SR 339 south to SR 827 east to SR 208 south. From SR 208, Project traffic would turn east on to East Walker Road and then east to Reese River Road. Under Alternative 2, SR 827 and East Pursel lane may be used within Yerington along with unnamed, unpaved transmission line roads. While there are multiple other roads within the Mason Valley, they are not proposed for use as main transportation routes for the Project.

3.17.3 Affected Environment

3.17.3.1 Regional and Local Roadway Facilities

Project Roadways

The regional roadways that could be impacted by the Project are described below and are shown in Figure 3.17-1.

- **US 95A** is a paved, two-lane, arterial highway that traverses undeveloped rural areas, with an average speed limit of 60 mph. US 95A runs east–west from the US 95 junction to Yerington, and north/south from the US 50 junction at Silver Springs to Yerington. US 95A is maintained by the NDOT.
- **SR 339** is a paved, two-lane, collector highway that runs north-south on the west side of Yerington and the Mason Valley. SR 339 extends approximately 11.5 south from the junction of US 95A to its junction with SR 208, bypassing the urban and agricultural areas of the greater Yerington area. US 339 is maintained by the NDOT.
- **SR 827**, also locally referred to as Mason Road, is a paved, two-lane, minor collector road that runs east-west from its junction with SR 339 to the west, through the intersection of SR 208, and then turns in to an unpaved road approximately 1.5 miles to the east. The paved portion of SR 827 is maintained by the NDOT.
- **SR 208** is a road that extends south from US 95A at the north end of Yerington. Project traffic would utilize SR 208 from the intersection of SR 827, heading south. SR 208 is a mostly straight, paved, two-lane, collector highway that traverses an active agricultural area. SR 208 also serves as the main street through downtown Yerington, with a speed limit ranging from 25 mph in the downtown core commercial district to 50 mph south of Yerington. This road is also maintained by NDOT.
- **East Walker Road** turns east approximately 8.2 miles south of the junction of US 95A and SR 208. East Walker Road is a two-lane unpaved rural road approximately 24 feet wide. The road has three culvert crossings, including one over the East Walker River and two over irrigation ditches. Two houses and agricultural fields are within the first 0.5-mile portion of the road. At the 0.75-mile point, the road turns to the southeast into a remote, undeveloped desert landscape. East Walker Road is the primary access point to the Walker State Recreation Area, approximately 4.25 miles from the intersection of East Walker Road and SR 208. The segment from SR 208 to the

Figure 3.17-1 Transportation Corridors in the Proposed Project Area

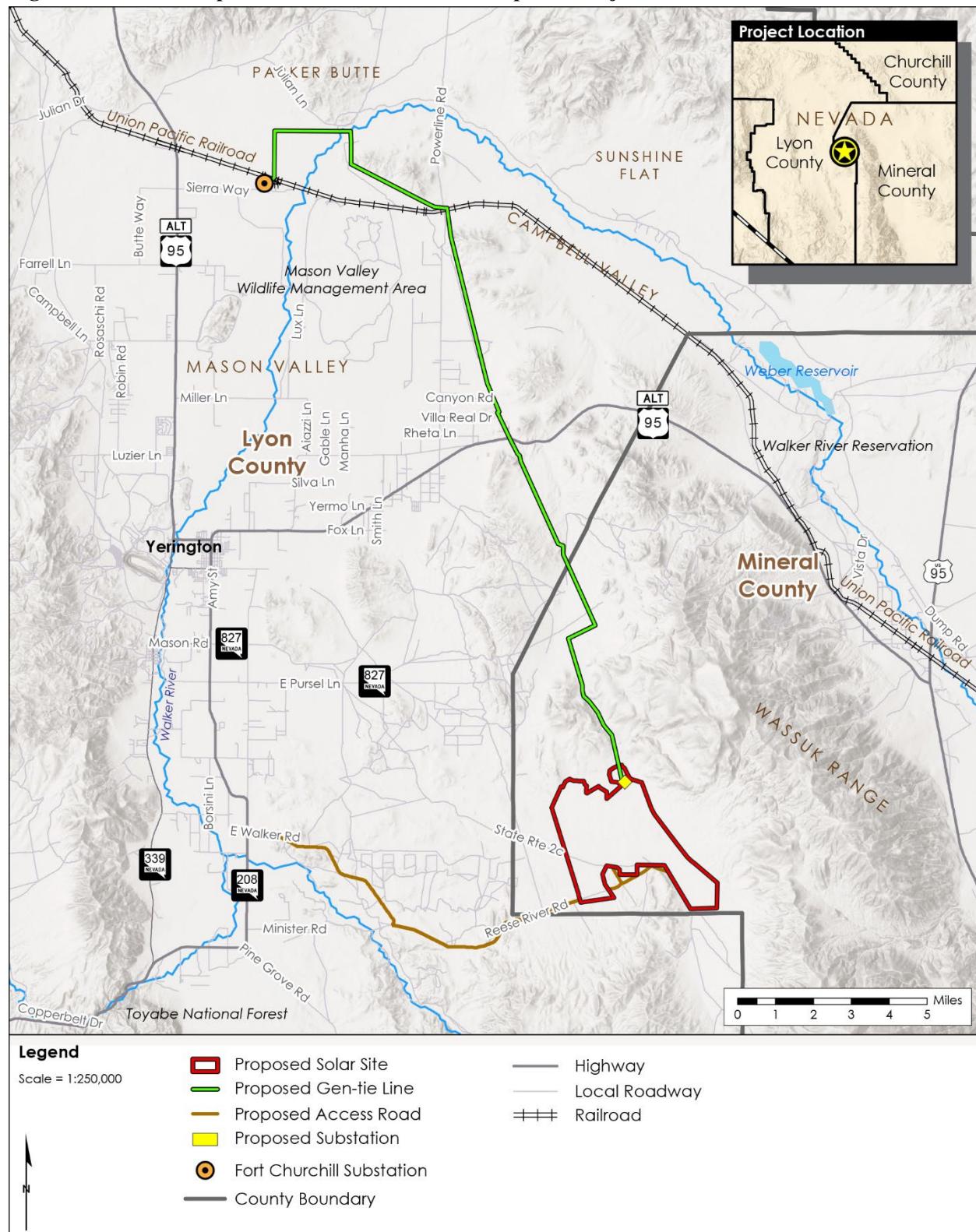


Figure 3.17-2 Transportation Routes to the Proposed Project Site

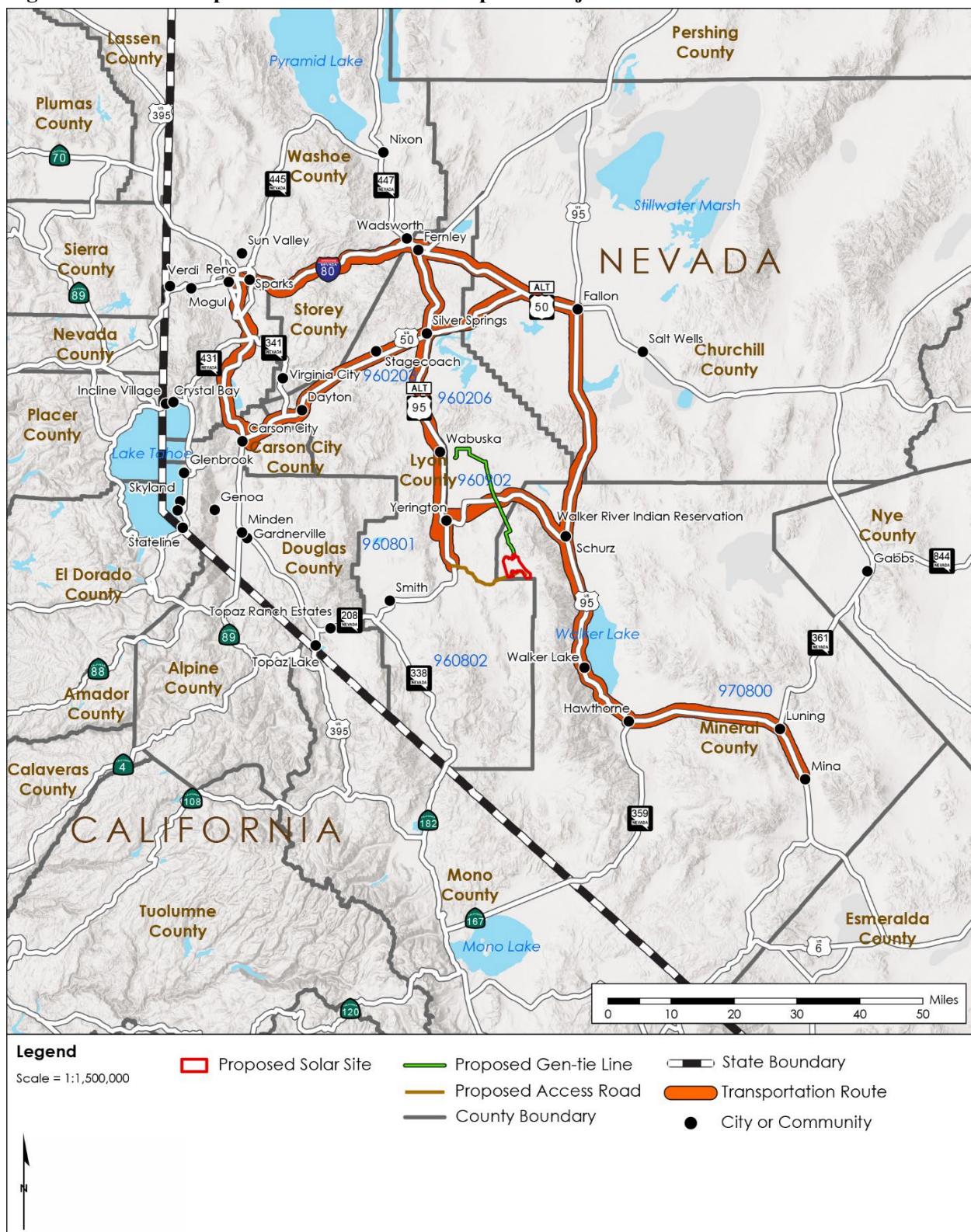
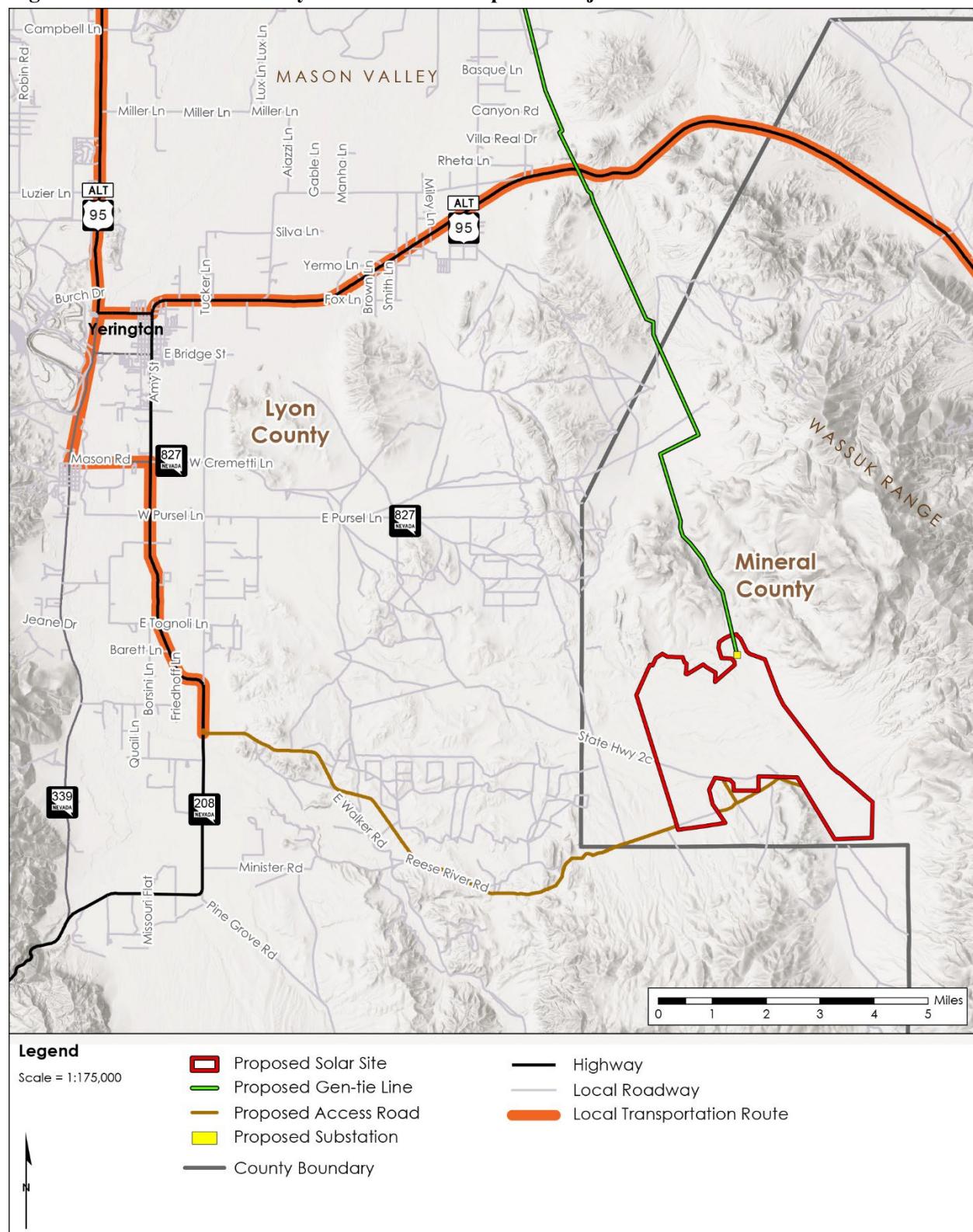


Figure 3.17-3 Local Roadway Access for the Proposed Project



intersection with Reese River Road is 5.9 miles, of which 3.6 is on BLM land and 2.3 miles is on Lyon County or State-managed lands. All of East Walker Road is maintained by Lyon County.

- **Reese River Road** traverses east into Mineral County, intersecting the Project solar site approximately 5.5 miles east of the intersection with East Walker Road. Reese River Road is an unpaved road averaging approximately 15 feet wide. The BLM maintains Reese River Road.

Under Alternative 2, **East Pursel Lane**, accessed from SR 827 and SR 208, could also be utilized during the construction phase of the Project as a supplemental access route to the Project site, reducing total traffic volumes on East Walker Road. East Pursel Lane is an unpaved private access road owned by Nevada Copper. The northern route of East Pursel Lane is primarily used by NV Energy to service the substation to the east of the mine.

Traffic Counts for Major Roadways

NDOT publishes annual traffic count data on their Traffic Records Information Access online GIS application. Annual average daily traffic (AADT) counts are available for SR 339, SR 827, SR 208, and US 95A near the Project area (provided in Table 3.17-1). AADT is not available for East Walker Road, Reese River Road, or East Pursel Lane.

Table 3.17-1 Affected Transportation Route Average Daily Traffic Data

Road name	Managing entity	AADT (Year 2022) *
SR 208 (Station 0190108, 300ft. S. of Mason Rd.)	NDOT	4,000
US 95A (Station 0190115, .6 mi. N. of Miller Ln.)	NDOT	4,700
SR 339 (Station 0190063, 720 ft. N. of SR 827)	NDOT	3,800
SR 827 (Station 0190065, 400 ft. W. of SR 208)	NDOT	1,300
East Walker Road	Lyon County	N/a
Reese River Road	BLM	N/a
East Pursel Lane	Nevada Copper	N/a

* AADT = total volume of vehicle traffic of a highway or road for a year divided by 365 days

Source: (NDOT 2022)

3.17.4 Environmental Consequences

3.17.4.1 Methods

Methods to evaluate impacts were developed using a combination of Federal Highway Administration (FHWA) traffic movement indicators, analysis using desktop GIS software, and telephone calls or in-person meetings with Lyon County, NDOT, and the BLM. As described in detail below, for potential impacts to traffic volumes, generalized level of service (LOS) indicators from FHWA were used as the baseline (FHWA 2017). LOS defines traffic movement in the context of mobility and roadway design. For comparison to existing AADT estimates and measurements, construction traffic (worker and haul truck) daily round trips were estimated for the Project access roads.

Meetings were conducted with Lyon County and the BLM to discuss design standards for Project roads under their jurisdiction (i.e., East Walker Road and Reese River Road, respectively). These meetings indicated transportation facilities should retain existing structural and traffic capacity standards.

For potential impacts to traffic volumes, generalized LOS indicators from FHWA were used to establish a baseline and define the potential for measurable impacts (FHWA 2017). LOS values define traffic movement in context of user mobility and roadway design and are defined by the following:

- LOS A = Free-flow traffic with users unaffected by the presence of other users
- LOS B = Stable traffic flow with a high degree of freedom to select speed but with some influence from other users
- LOS C = Restricted flow that remains stable but with significant interactions with others in the traffic stream. The general level of comfort and convenience declines noticeably at this level
- LOS D = High-density flow in which speed and freedom to maneuver are severely restricted and comfort and convenience have declined even though flow remains stable
- LOS E = Unstable flow at or near capacity levels with poor levels of comfort and convenience
- LOS F = Stop and go waves, poor travel times, low comfort and convenience, and increased accident exposure

A speed limit of 45 miles-per-hour was used for SR 208, as it is the lowest available estimate in the guidance and accounts for slower overall traffic speeds that vary through Yerington and the southern roadway portion. A speed limit of 45 mph was used for SR 339 to account for travel through the urbanized area as the road intersects with multiple roads connecting to the urbanized Yerington area. The speed limit on SR 827 is 45 mph. A 60 mile-per-hour average speed limit was used for US 95A. For US 95A, given the baseline AADT, it appears to be at a LOS A. SR 208, SR 339, and SR 827 appear to be currently operating at a LOS B based on AADT (FHWA 2017). For this analysis, any change in LOS to a lower service level represents a potential impact on users. LOS should stay at a D or higher to be acceptable. The volumes for LOS A, B, and C for US 95A, SR 208, SR 339, and SR 827 are shown in Table 3.17-2.

No traffic volume data is available for East Walker Road, Reese River Road, or East Pursel Lane. Additionally, the FHWA guidance does not apply to rural unpaved roads. Qualitative analysis is provided for these roads, based on discussions with Lyon County and the BLM.

3.17.4.2 Proposed Action

Construction Impacts

Roadway Volumes and Level of Service. The average number of workers anticipated for each construction phase is shown in the POD; however, the on-site construction workforce is anticipated to number approximately 400, on average, with a peak of up to approximately 700 workers at any given time. Most construction staff and workers would commute daily to the jobsite from the Reno and Carson City Metropolitan areas (Arevia 2023). Materials would be delivered to the site during construction periodically throughout the day via trucks, typically between 7:00 a.m. and 7:00 p.m., up to seven days a week (Arevia 2023).

Heavy construction equipment would be moved on site at the beginning of construction and would remain throughout construction, as needed. Daily vehicle traffic would be primarily composed of workers' passenger cars/light trucks. For this analysis, the average of 542 worker trips per day was assumed if all phases were to occur at the same time. This is likely an overestimate. As shown in Table 3.17-3, total construction vehicle trips could, conservatively, reach up to 855 trips per day over the 16-month construction period. Table 3.17-2 describes the daily volume changes to SR 208, SR 339, SR 827, and US 95A as under the Proposed Action.

Table 3.17-2 Level of Service Volume Comparison

Road name	AADT (Year 2022)	Volume that starts LOS B	LOS C	Current LOS	Volume increase from Construction traffic	Total volume	LOS with Project
US 95A (Station 0190115, .6 mi N of Miller Ln)	4,700	19,000	24,200	A	18%	5,555	A
SR 208 (Station 0190108, 300 ft. S. of Mason Rd.)	4,000	3,400	8,600	B	21%	4,855	B
SR 339 (Station 0190063, 720 ft. N. of SR 827)	3,800	3,400	8,600	B	23%	4,655	B
SR 827 (Station 0190065, 400 ft. W. of SR 208)	1,300	3,400	8,600	B	66%	2,155	B

Source: Simplified Highway Capacity Calculation Method for the Highway Performance Monitoring System (FHWA 2017)

Table 3.17-3 Average Daily Construction Trips

Construction Phase	Daily worker vehicles	Daily haul truck	Daily water truck	Daily light truck
Civil Works	78	47	40	5
Installation of PV arrays	183	15	40	5
Installation of electrical collection systems	85	4	20	5
Installation of on-site collector substation	38	6	20	5
Civil works gen-tie	78	47	20	5
Installation of gen-tie	80	4	20	5
Total all phases (average daily)	542	123	160	30

Source: (RCH 2023)

The traffic volume increases are anticipated to have adverse impacts to drive times on US 95A, SR 208, SR 339, and SR 827. However, for all three roadways, the LOS is not expected to change (from A on US 95A and from B on SR 208, SR 339, and SR 827). Construction and delivery trucks would arrive at and depart the Project site throughout the day. A total of 313 truck trips on US 95A would result in a 6 percent traffic volume increase. This increase would not reduce the LOS. The 313 truck trips would result in an 8 percent increase on SR 208 and SR 339 and a 24 percent increase on SR 827. The increases for all three roadways would not reduce the LOS.

The majority of the traffic volume increases would be from commuting workers, as stated above. Most construction work commences early in the morning, so vehicle trips would likely be during a morning

commute period, or earlier, and an evening commute and could overlap with farm worker and farm equipment traffic. Traffic from workers could be concentrated during the peak traffic hours, thus creating a greater impact to local traffic in Yerington, in particular. Implementation of MM TR-1 would require remote parking, ideally in northern Yerington, and a shuttle or vanpool service for a target of 50-percent of the workers. Assuming 12-person shuttle vans would be used, the total daily worker vehicle trips would be reduced from an estimated 524 trips each way down to approximately 300 trips each way. Additionally, workers would be scheduled in split shifts, where feasible, to further reduce peak traffic volumes. With the implementation of MM TR-1, adverse effects would be reduced. Additional traffic studies and measures to obtain permits from Lyon County and/or Mineral County may also be required and would be obtained prior to construction. Project MM SOC-2 also includes the preparation of a Workforce Housing and Transportation Plan prior to construction, which would address workforce temporary housing nearer to the Project site, scheduling of vehicle trips and shifts, and traffic routing measures to further reduce traffic impacts. Given the scale of Project construction and the small size of Yerington, the impacts even with traffic controls could be adverse but would only last for the duration of construction (16 months).

Road Safety and Design General Safety Impacts. The Project would generate a large number of worker, delivery, and construction vehicle trips throughout construction. Construction traffic, such as large delivery trucks traveling at low speeds or with extra wide loads, could cause a hazard to other roadway users. Traffic crash data does not indicate a crash risk along the Project access route (NDOT 2020); however, a Traffic Management Plan is also required. MM TR-2 requires the Traffic Management Plan to dictate the use of traffic control measures such as traffic control devices and flaggers during high traffic periods or during deliveries of large or oversized loads, particularly at the intersections of SR 827 and SR 208 and SR 208 and East Walker Road and along the first 0.5 mile of the road near the homes. Special attention would be paid to East Walker Road since traffic for agricultural operations and to the Walker River State Recreation Area also use the road. Implementation of MM TR-2 would minimize the effects of traffic hazards associated with construction. Traffic hazards for each road or system are discussed in more detail in the following sections.

US 95A. Large delivery trucks would follow all safety requirements for driving on NDOT highways. Safety hazards are also not anticipated for US 95A given trucks would be required to follow NDOT requirements for oversized or hazardous material transport. Installation of the gen-tie line could require short-term closure of US 95A east of Yerington, approximately 0.8 mile from the intersection of Prospect Street. Temporary closures of US 95A would be coordinated with the NDOT. The necessary encroachment permits and authorizations would be obtained prior to any work within the US 95A ROW. Existing roads are proposed for use where possible, in accordance with Carson City CRMP SOP 4 (Right-of-Way Corridors); however, approximately 16.9 miles of 20-foot-wide spur roads would be required to access each set of gen-tie poles. Adverse effects would not occur with proper coordination and implementation of the requirements of the encroachment permits and the Traffic Management Plan.

SR 339. Safety hazards on SR 339 are not anticipated as safety requirements for oversized or hazardous material transport on NDOT highways would be followed. Adverse effects would not occur with implementation of MM TR-2, which would include the use of traffic control measures during deliveries of large or oversized loads.

SR 827. The intersection of SR 827 and SR 208 is a four-way stop. Adverse effects would be minimized with implementation of MM TR-2, requiring traffic control devices and flaggers during periods of high traffic volumes or during deliveries of large or oversized loads.

SR 208. Potential safety improvements may be required due to identified partially obstructed views at the intersection of SR 208 and East Walker Road. The Applicant would coordinate with Lyon County Roads Department and NDOT during final design to determine the potential need for intersection modifications and the design parameters that may be desired or required, per MM TR-2. Any construction would likely require a temporary reduction of lanes on SR 208, and traffic control would direct traffic through the area during construction. If determined necessary, safety improvements would be completed prior to

commencement of the Project construction. Impacts to transportation due to construction of a turn lane on SR 208 would be reduced with traffic control.

East Walker Road. Three culverts are located in the first 0.6-mile segment of East Walker Road from the intersection of SR 208. The road is currently rated for truck traffic, and no replacement of the culverts is anticipated. East Walker Road has a compacted road surface but is unpaved, and an increase in traffic would increase fugitive dust, posing a potential safety risk due to reduced driver visibility and a health risk to nearby houses, which are considered sensitive receptors. The impacts of dust generation on air quality are evaluated in Section 3.3 *Air Quality and Climate Change*. To eliminate the fugitive dust near the sensitive receptors, the POD requires a Dust Control and Air Quality Plan be developed, which would also follow Western Solar Plan PDF AQC2-1. The Project also includes potentially paving approximately 1.5 miles of East Walker Road from the intersection of SR 208, to be determined in coordination with Lyon County Roads Department and the homeowners along the road. Additionally, the Applicant would develop a maintenance agreement for East Walker Road with Lyon County for the 30-year life of the Project. All improvements and maintenance activities would follow Lyon County standards and specifications. An increase in traffic on the remaining portion of East Walker Road and Reese River Road would also increase fugitive dust emissions; however, there are no sensitive receptors nearby. Implementation of the Dust Control and Air Quality Plan would require dust abatement, thus minimizing adverse effects. East Walker Road could also experience damage from the high traffic volumes. MM TR-3 requires pre- and post-construction road condition assessments of East Walker Road, and restoration of any damage during and after Project construction. Adverse effects would be minimized by requiring assessment and repair of any public roads during or after construction, in accordance with mitigation measures and monitoring.

Reese River Road. The existing road base and width of Reese River Road is inadequate and would be improved to safely accommodate construction truck traffic. Reese River Road is maintained by the BLM, and all improvements would be completed in accordance with the BLM Manual 9113-1 Roads Design Handbook (BLM 2011) and in communication with the CCDO in accordance with Western Solar Plan PDF T2-1. Damage from heavy traffic could occur on the road. MM TR-3 requires maintenance of the roadway for the life of the Project, commensurate with its use by the Project.

Emergency Services. Emergency response vehicles currently using roadway facilities in the Project area include EMS, County Sheriff, State Highway Patrol, and fire departments. Emergency services would not be interrupted by construction of the Project, and access for emergency service to the Project site would always be provided. Additional emergency access would be available from SR 208 to West Bridge Street and East Pursel Lane through the Pumpkin Hollow Copper Mine property and then south along a BLM-managed transmission ROW. The Applicant would develop a cooperative agreement with Nevada Copper to include emergency access through their property. Adverse effects on emergency services would not occur during project construction. Evacuation is addressed in Section 3.16 *Human Health and Safety*.

Operation and Maintenance Impacts

Up to 15 employees are expected to be on site each day during O&M of the Project. Workers would live off site but would commute to the Project site daily to conduct security, maintenance, and repairs. O&M of the Project site would rarely require vehicles and equipment such as crane trucks, forklifts, manlifts, and pick-up trucks; thus, no impacts to traffic LOS or safety are expected. No heavy equipment would be used during normal facility operation but may be occasionally needed for maintenance. Traffic impacts would not be adverse from such use. Key public roadways through the Project site (i.e., Reese River Road, Old State Road 2C) would remain open for the life of the Project in accordance with CRMP SOP 5 (Rights-of-Way Corridors). Effects on transportation resources during operation and maintenance of the Project would be less than during construction and would not be adverse.

Decommissioning Impacts

The workforce and length of time for decommissioning the Project is expected to be similar to or less than that of the construction period. Effects on regional and local roadway operations would be similar to those anticipated to occur during construction. Project MMs TR-1 and TR-2 along with the Traffic

Management Plan measures would also apply to decommissioning. Implementation of mitigation measures and management plans would minimize adverse effects.

Cumulative Impacts

The Project's construction activities are not anticipated to overlap in schedule with any of the identified cumulative solar development projects. The other identified solar projects are in the very preliminary stages of NEPA review with the exception of the Luning Solar projects, one of which is built, and the other was approved in 2021 and may be constructed within the next year, prior to Libra's construction. Many of the cumulative solar projects are located north of Yerington, and while they could utilize US 95A, they would not utilize SR 339, SR 827, or SR 208. The Project would overlap with the construction of Greenlink West. Greenlink West would require a much smaller workforce in any one location at a given time and, as a linear Project, its traffic impacts would move with the project progression. Greenlink West's workers and deliveries would likely use US 95A but not SR 208 or SR 339. Impacts would compound, but the increase in adverse effects would be limited to the construction overlap period, which would be a few months at most. In preliminary discussions with Nevada Copper, who operates the Pumpkin Hollow Copper Mine, they do not anticipate starting their future planned expansion (open pit mine) during the Project's proposed construction timeline.

The Project would have no adverse cumulative effects during O&M due to the very limited worker trips required. However, the construction of the Pumpkin Hollow Copper Mine Expansion may start soon after the construction of the Project is completed. An adverse cumulative impact could result as the Copper Mine Expansion would also require heavy traffic loads through Yerington, likely also using SR 208, constituting an extension in the duration of impacts. The Project would implement several MMs and management plans during its construction phase to reduce effects, but cumulative effects could be adverse. All identified cumulative projects would be completed prior to decommissioning of the Project; thus, no other cumulative impacts are anticipated.

3.17.4.3 Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance

Construction, O&M, decommissioning, and cumulative impacts to transportation resources, including LOS, safety and design, and emergency access would be the same under Alternative 1 as described for the Proposed Action because the proposed access route and workforce would be very similar. The same PDFs and MMs, as well as the same plans including the Traffic Management Plan and Workforce Housing and Transportation Plan (MM SOC-3), as identified for the Proposed Action would be implemented for Alternative 1 to reduce adverse effects. As under the Proposed Action, some adverse effects to LOS and safety, due to the scale of construction, are expected. This alternative may require larger equipment as well as a longer construction period, extended from 16 to 18 months, which may slightly increase the adverse effects as compared with the Proposed Action.

3.17.4.4 Alternative 2 – Alternative Supplemental Access During Construction

Construction Impacts

Alternative 2 would reduce the traffic volumes on the southern portions of SR 208 and East Walker Road by diverting approximately 25 percent of daily traffic to the supplemental access routes identified in Chapter 2. Vehicles would still need to travel along the northern portions of SR 208 through Yerington's commercial core. LOS impacts would be similar for the Proposed Action. Use of SR 827 and East Pursel Lane by approximately 25 percent of the construction worker traffic would require a cooperative agreement between the Applicant and Nevada Copper that would outline maintenance responsibilities and terms. If the supplemental route off of US 95A were used, impacts along SR 339, SR 827, and SR 208 would be reduced. Project MMs TR-1 and TR-2 along with the Traffic Management Plan and Workforce Housing and Transportation Plan would still be required to reduce adverse effects. Impacts to LOS and safety would be reduced as compared with the Proposed Action by spreading out the construction traffic routes, but could still be adverse due to the scale of construction and the relatively small size of Yerington.

Operation and Maintenance, Decommissioning, and Cumulative Impacts

O&M, decommissioning, and cumulative impacts are the same as described for the Proposed Action. The alternate routes would not be used during O&M but may be used during decommissioning, in which case the impacts to LOS and safety could be slightly reduced as compared with the Proposed Action for decommissioning.

3.17.4.5 Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West

Construction Impacts

Alternative 3 would reduce the amount of workforce needed to construct the Project due to elimination of the 24.1-mile-long gen-tie line and thus use of US 95A to access the unpaved roads in the vicinity of the gen-tie. This alternative could result in an approximate 30-percent reduction in daily worker and truck trips as compared to the Proposed Action. The LOS impacts would otherwise be similar to those described for the Proposed Action, and the same PDFs, MMs, and the Traffic Management Plan and Workforce Housing and Transportation Plan would apply under this alternative. Traffic safety and design and emergency access impacts would also be similar to that described for the Proposed Action. With implementation of the same PDFs, SOPs, MMs, and management plans described for the Proposed Action, adverse impacts would be reduced and less than those for the Proposed Action.

Operation and Maintenance, Decommissioning, and Cumulative Impacts

O&M, decommissioning, and cumulative impacts to transportation resources would be slightly reduced for Alternative 3 as compared with the Proposed Action because the workforce would be reduced. US 95A would not be impacted by the gen-tie crossing it, and decommissioning would take less time. The same PDFs, SOPs, MMs, and management plans applicable to the Proposed Action would be implemented for Alternative 3 to minimize effects during decommissioning. Cumulative impacts would also be reduced since a smaller workforce would combine with that for constructing Greenlink West when Greenlink West is being constructed outside Yerington.

3.17.4.6 No Action Alternative

Under the No Action alternative, the Project would not be developed. Therefore, there would be no impacts to transportation and traffic in the analysis area.

3.17.4.7 Relevant Required Western Solar Plan Programmatic Design Features, Carson City CRMP Standard Operating Procedures, Management Plans, and Mitigation Measures

Western Solar Plan Programmatic Design Features

PDFs from the Western Solar Plan are listed in Appendix B. The Project would comply with the following PDFs to minimize impacts to transportation:

- AQC2-1
- T2-1

Carson City CRMP Standard Operating Procedures

SOPs from the Carson City CRMP (BLM 2001) are listed in Appendix B. The following SOPs were identified to minimize transportation impacts:

- Common to All SOP 2
- Rights-of-Way Corridors SOP 4 and 5

Management Plans and Mitigation Measures

The following management plans, required by the BLM ROW grant, would be relevant and implemented during Project construction, O&M, and decommissioning to minimize traffic impacts:

- Dust Control and Air Quality Plan (Draft available on Project website)
- Traffic Management Plan

- Workforce Housing and Transportation Plan

The Project would comply with the following mitigation measures and MM SOC-3 from Section 3.14 Socioeconomics to minimize adverse traffic impacts:

MM TR-1: Workforce Housing and Transportation Plan. Under MM SOC-2, specific components of the plan shall include:

- A vanpool/shuttle service shall be identified along with worker parking areas that can service an estimated 50-percent of the peak hour commuting workforce from northern Yerington or along 95A to the job site.
- Workers shall be scheduled in split shifts, as feasible, to reduce peak traffic volumes.
- Traffic control measures, such as flaggers, traffic control devices, escort vehicles, and signage shall be dictated in the plan, particularly along the first 0.5-mile segment of East Walker Road near the two residences.

MM TR 2: Traffic Management Plan Measures. The Traffic Management Plan shall include the use of traffic control measures such as traffic control devices and flaggers during high traffic periods or during deliveries of large or oversized loads, particularly at the intersections of SR 827 and SR 208 and SR 208 and East Walker Road and along the first 0.5 mile of the road near homes. Additional measures shall include:

- Identify traffic control measures needed, consistent with the requirements in the Manual of Uniform Traffic Control Devices (MUTCD) and specify the circumstances under which each is required. Traffic control measures may include escort vehicles for wide loads, signage, and flaggers.
- Use static and variable message signs, as necessary, to inform drivers that there may be delays or trucks entering traffic due to construction.
- Provide a breakdown of the number, type, capacity, and dimensions of the construction vehicles that would service the site.
- Provide an estimate of the average daily or weekly number of vehicles per vehicle type during each major phase of the work.
- Identify effective and safe routes for use by passenger/worker vehicles, delivery vehicles, and excavation and construction vehicles.
- Enforce the chosen construction travel routes through contractor stipulations and conditions and periodic verification.
- Identify a contact for complaints and indicate how complaints should be addressed.
- Coordinate with Lyon County Roads Department and NDOT during final design to determine the potential need for intersection modifications and any design parameters that would be required or desirable. Coordinate with landowners to establish agreements if improvements require encroachment onto private properties and provide the appropriate compensation and if appropriate post construction restoration for encroachments on private property.

MM TR 3: Road Conditions Assessment

The Applicant shall conduct a pre-construction and post-construction road condition assessment along East Walker Road. The pre-construction road condition assessment shall include photographs or a video recording. The Applicant shall submit the pre-construction road condition assessment to Lyon County Public Works or other applicable agency no less than 30 days prior to construction. Following construction, the Applicant shall conduct a post-construction road condition assessment. If damage to roads occurs as a result of construction traffic, the Applicant shall restore damaged roadways within 60 days after the completion of construction and decommissioning to a pre-construction condition, based on the pre-construction road condition assessment, or to a condition agreed upon by the Applicant and Lyon

County, and obtain any necessary permits. The Applicant shall also ensure maintenance of East Walker Road for the life of the Project that is commensurate with its use by the Project.

3.17.4.8 Irreversible and Irretrievable Impacts and Residual Effects

There would be no irreversible commitments of resources because all roads would remain in their existing capacities after decommissioning of the Project, and current traffic volumes would be reestablished. Some residual effects to access would occur even after application of mitigation due to the increases in traffic from construction on US 95A, SR 339, SR 827, and SR 208, East Walker Road, and Reese River Road. Residual effects may still be adverse due to the scale of construction.

Chapter 4 Consultation and Coordination

4.4 Introduction

This chapter summarizes the consultation and coordination activities conducted for the Project with interested agencies, organizations, Tribes, and individuals. The primary goal of the NEPA public-involvement process is to ensure that all interested and affected parties are aware of the Project. The scoping period includes the initial presentation of the Project to the public and opportunities for the public and agency representatives to provide comments.

4.5 Public Involvement Process

4.5.1 Scoping

The BLM published an NOI to prepare an EIS for the Project in the *Federal Register* on April 24, 2023, which initiated a 30-day public scoping period for the Project, ending on May 24, 2023. The BLM hosted a virtual public scoping meeting for the Project on May 8, 2023. A postcard notifying identified agencies and stakeholders of the scoping meeting was sent by certified mail. The scoping meeting had 15 attendees. The BLM received 25 emails and letters during the scoping period. A Scoping Report was prepared to summarize the comments addressed (BLM 2023). The Scoping Report is available on the BLM's National BLM NEPA Register website.

4.5.2 Draft EIS Public Comment Period and Public Comments

This Draft EIS was published concurrently with the publication of the Notice of Availability (NOA) in the *Federal Register*. The publication is followed by a 45-day public comment period to receive comments on the Draft EIS. Within the 45-day public comment period, the BLM will hold an in-person and a virtual public meeting to provide the public with information on the Draft EIS, respond to questions, and gather public comments.

A copy of the Libra Solar Project Draft EIS is available for public review at the following locations:

Central Branch Library (Lyon County)
20 Nevin Way
Yerington, Nevada 89447

Mineral County Library (Hawthorne Library)
110 1st Street
Hawthorne, NV 89415

Bureau of Land Management, Carson City District Office
5665 Morgan Mill Road
Carson City, Nevada 89701

The Draft EIS is also available at: <https://eplanning.blm.gov/eplanning-ui/project/2022592/570>.

4.6 Formal Consultation with Tribal Governments

The BLM has initiated government-to-government consultation with Indian Tribes, pursuant to Executive Order 13175 of November 6, 2000 (Consultation and Coordination With Indian Tribal Governments);

Section 106 of the National Historic Preservation Act (NHPA); National Environmental Policy Act (NEPA); American Indian Religious Freedom Act (AIRFA); and Executive Order 13007, Indian Sacred Sites; and consistent with the Solar Programmatic Agreement (2012).

The BLM is conducting on-going government-to-government consultation with Bridgeport Indian Colony, Fallon Paiute-Shoshone Tribe, Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, Walker River Paiute Tribe, Washoe Tribe of Nevada and California, Yerington Paiute Tribe, and Yomba Shoshone Tribe. Key concerns include potential impacts to the Piston-Black Mountain NCA and other nearby sensitive cultural sites, particularly along the gen-tie line. BLM invited the following Tribes, which are within an extended regional area, to participate in scoping: Moapa Band of Paiutes, Las Vegas Paiute Tribe, Kaibab Band of Paiutes, Paiute Indian Tribe of Utah, Ely Shoshone Tribe, and Duckwater Shoshone Tribe. The Moapa Band of Paiutes provided scoping comments on topics such as biological resources, vegetation removal, viewshed analyses, Project water use, and cultural resources.

On June 26, 2023, and July 12, 2023, the BLM hosted virtual tribal meetings to present the Project, show maps of the Project facilities, and provide an overview of key resource findings based on the completed technical studies. Representatives from the Walker River Paiute Tribe, Reno-Sparks Indian Colony, and Fallon Paiute Shoshone Tribe participated in the meetings. BLM received input regarding important hunting areas and concerns related to the Piston-Black Mountain NCA that were incorporated into the analysis, as appropriate.

The BLM has identified potential impacts to cultural resources in this Draft EIS and is continuing discussions with Tribes through formal and informal consultation to ensure that concerns are considered in proposed mitigation.

4.7 National Historic Preservation Act Section 106 Consultation

Section 106 of the NHPA (54 USC § 306108), and its implementing regulations at 36 CFR 800, requires federal agencies to consider the effects of proposed projects (undertakings) on any historic properties, and to provide the ACHP and opportunity to comment. The BLM initiated Section 106 consultation with the ACHP and the Nevada SHPO on April 14, 2023. The NHPA, and its implementing regulations, provide guidance for using NEPA to comply with Section 106. Specifically, the regulations at 36 CFR 800.8(c), allow a federal agency to use the NEPA environmental review process to comply with Section 106 of the NHPA in lieu of the procedures set forth in 36 CFR 800.3 - 800.6.

The BLM is using the environmental review process to fulfill its requirements to consider effects to historic properties under Section 106 of the NHPA. As part of the process, the BLM notified the ACHP, the SHPO, Indian Tribes, and all consulting parties that the BLM will use the environmental review process to meet the Section 106 compliance requirements, consistent with 36 CFR 800.8(c) on April 14, 2023. Indian Tribes have also been invited to participate specifically in the NEPA review and under Section 106 of the NHPA.

4.8 Endangered Species Act Section 7 Consultation

Threatened, endangered, proposed, or candidate species, as identified under the ESA, would not be impacted by the Project. No Section 7 consultation was required as part of the Project. The USFWS is a Cooperating Agency.

4.9 Cooperating Agency Coordination

In July 2022, the BLM sent Cooperating Agency invitation letters for the Project to the following federal, state, local agencies, and Indian Tribes.

Federal

Bureau of Indian Affairs, Western Nevada Agency
US Fish and Wildlife Service
US Army Corps of Engineers
US Environmental Protection Agency
US Department of Defense (Hawthorne Army Depot)
US Bureau of Reclamation
US National Parks Service

State of Nevada

State Historic Preservation Office
Nevada State Parks
NV Energy
Nevada Department of Environmental Protection
Nevada Department of Transportation
Nevada Department of Wildlife
Nevada Division of Water Resources
Nevada Department of Conservation and Natural Resources
Nevada Department of Forestry

Local Agencies

Lyon County
Mineral County
Churchill County
City of Yerington

Tribal governments

Bridgeport Indian Colony
Fallon Paiute-Shoshone Tribe
Pyramid Lake Paiute Tribe
Reno-Sparks Indian Colony
Walker River Paiute Tribe
Washoe Tribe of Nevada and California
Yerington Paiute Tribe
Yomba Shoshone Tribe
Moapa Band of Paiutes
Las Vegas Paiute Tribe
Kaibab Band of Paiutes
Paiute Indian Tribe of Utah
Ely Shoshone Tribe
Duckwater Shoshone Tribe

The Cooperating Agencies that accepted Cooperating Agency invitation include USEPA, Hawthorne Army Depot, USFWS Migratory Bird Program, NDOW, Mineral County, and Lyon County. The BLM conducted a Cooperating Agency kick-off meeting for the Project, as well as additional meetings on alternatives for the Proposed Action, to gather input from the agencies for the NEPA analysis. The Cooperating Agencies also participated in review of administrative draft documents for the Draft EIS, as well as review of resource reports, studies, and modeling utilized for the NEPA analysis.

The BLM provided notification of the publication, including a link to the document location, of the Draft EIS to the seven federal, nine state, four local agencies listed above, and the eight tribal governments identified in Section 4.6 for government-to-government consultation.

4.10 Next Steps in the NEPA Process

Upon receipt and consideration of the public comments on the Draft EIS, the BLM will publish the Final EIS. The BLM would then publish the ROD and, potentially, authorize the ROW application. The ROD would identify the selected alternative for the Project.

Chapter 5 Literature Cited and List of Preparers

5.1 List of Preparers

Table 5.1-1 BLM Staff Contributing to the Preparation of the EIS

Contributor	Role/responsibility
Frank Giles	State Air Resource Specialist (Air Quality)
Wyatt Fereday	Hydrologist (Water Resources and Soils)
Niki Cutler	Hydrologist (Jurisdictional Waters, Soils)
Christine McCollum	Archaeologist (Cultural Resources, Native American, Paleontology)
Jonathan Gordon	Wildlife Biologist (Wildlife, Endangered Species)
Mark Mazza	Rangeland Management Specialist (Rangeland)
Dean Tonenna	Botanist (Threatened or Endangered Plant Species, Sensitive Plants)
Lawrence Rose	Rangeland Management Specialist, Weeds Coordinator (Noxious and Invasive, Non-Native)
John Axtell	Wild Horse and Burro Specialist (Wild Horses and Burros)
Paul Amar	Outdoor Recreation Planner (Recreation, Wilderness, Travel Management)
Jason Wright	Archaeologist (Visual Resources)
Matthew Fockler	Socioeconomic Specialist (Socioeconomics, Environmental Justice)
Dave Schroeder	Environmental Protection Specialist (Wastes – Hazardous or Solid, Geothermal Resources)
Don Shannon	Fire Ecologist (Public Health and Safety, Fire Management)
Taylor Burnham	Geologist (Geology – Minerals and Materials)
Terah Malsam	Realty Specialist (Lands and Realty, Assistant Project Manager)
Kim Dow	Carson City District Manager and Acting Field Manager, Sierra Front Field Office
Shedra Rakestraw	Assistant Field Office Manager, Sierra Front Field Office
Melanie Hornsby	Planning and Environmental Coordinator, Military Liaison (NEPA Compliance, Project Manager)

Table 5.1-2 Third Party Consultants

Contributor	Role/responsibility
Tania Treis	Panorama, Project Manager, Soils, Water Resources
Keri Hill	Panorama, Deputy Project Manager, Visual Resources, Rangeland, Transportation and Traffic
Aaron Lui	Panorama, Senior Manager, Visual Resources
Jenna Savois	Panorama, Planner, Environmental Justice, Socioeconomics, Air Quality, Cultural Resources, Native American Religious Concerns
Kelsey Patterson	Panorama, Senior Planner/Biologist, Wildlife, Vegetation and Noxious Weeds
Garret Peterson	Panorama, Planner, Recreation, Land Use and Realty
Miriam Liberatore	Panorama, Public Health and Safety
Lacar Musgrove	Panorama, Technical Editing, QA/QC
Edward Stoner	ASM Affiliates, Cultural Resources
Ryan Young	Phoenix Biological Consulting, Small Mammal Trapping Study, Botanical Survey Report, Eagle Nesting Survey Report, Migratory Bird Survey Report, Bat Acoustic Study, Jurisdictional Delineation Report,
Mike Ratte	RCH Group, Air Quality Technical Report
Jeff Moffett	Triple Point Strategic Consulting LLC, Economic and Fiscal Impact Assessment
Tony Dimpel	McGinley and Associates (Now Universal Engineering Sciences), Phase 1 Environmental Site Assessment
Ken Loy	West Yost Affiliates, Groundwater Impact Analysis
Westwood	Preliminary Drainage Study
Travis Jokerst	EnviroMine, Due Diligence Report

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