U.S. Department of the Interior

BUREAU OF LAND MANAGEMENT

GREENLINK NORTH TRANSMISSION PROJECT

DOI-BLM-NV-0000-2022-0002-RMP-EIS

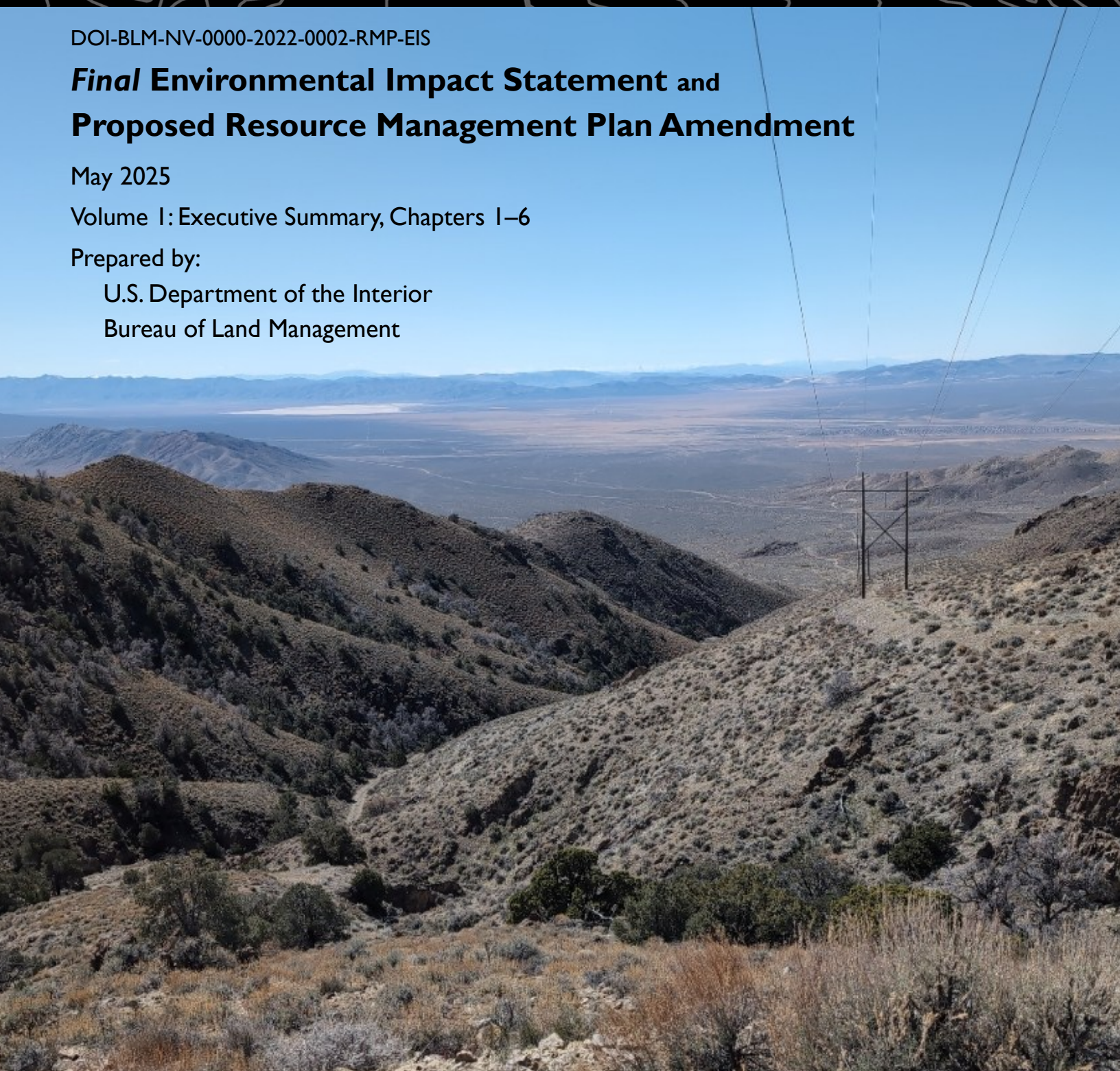
Final Environmental Impact Statement and Proposed Resource Management Plan Amendment

May 2025

Volume 1: Executive Summary, Chapters 1–6

Prepared by:

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



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Our Missions

The **Department of the Interior** protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

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.

Photo by Andrew Fisher spring 2024, of the existing transmission line near the proposed Greenlink North Transmission Project

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Nevada State Office
1340 Financial Blvd
Reno, NV 89502-7147

May 23, 2025

In Reply Refer To:
DOI-BLM-NV-0000-2022-0002-RMP-EIS

Dear Reader:

Enclosed is the Greenlink North Transmission Project (GLNP) Final Environmental Impact Statement (EIS) and Proposed Resource Management Plan Amendment (RMPA). Nevada Power Company and Sierra Pacific Power Company, doing business as NV Energy, submitted applications to the United States Department of the Interior, Bureau of Land Management (BLM) and United States Department of Agriculture, Forest Service (Forest Service) for the construction, operation, maintenance, and decommissioning of the GLNP. The proposed GLNP would consist of a new, approximately 235-mile, 525-kilovolt (kV) overhead electric transmission line connecting to a system of 525 kV, 345 kV, and 230e kV gateway transformer facilities; substations; and ancillary project components that would be constructede between Ely and Yerington in White Pine, Eureka, Lander, Churchill, and Lyon Counties, Nevada.e

The BLM is the lead federal agency for the GLNP. The BLM's decision will be to approve, modify, or deny a short-term right-of-way for preconstruction geotechnical investigations and a permanent right-of-way for construction, operation, maintenance, and decommissioning of the GLNP transmission line and associated facilities on BLM-administered lands. The BLM will also decide whether to amend the Carson City Consolidated Resource Management Plan (RMP), the Battle Mountain District Shoshone-Eureka RMP, and the Ely District RMP, which were amended by the Nevada and Northeastern California Greater Sage-Grouse Approved RMP Amendment (2015 ARMPA), to designate a new, approximately 198-mile utility corridor from Ely to Yerington, Nevada, which would be up to 3,500 feet in width, and modify restrictions in greater sage-grouse habitat management areas and in proximity to leks.

The BLM developed this Final EIS/Proposed RMPA in compliance with the Federal Land Policy and Management Act of 1976 and the National Environmental Policy Act of 1969 (NEPA). The Final EIS/Proposed RMPA also conforms to the BLM's requirements for NEPA implementation, as described in the Department of the Interior's NEPA regulations (43 Code of Federal Regulations [CFR] 46) and the BLM NEPA Handbook, and the Forest Service NEPA regulations (36 CFR 220). The NEPA process for evaluating the GLNP began on May 26, 2023, when a Notice of Intent to prepare an EIS was published in the *Federal Register*.

The BLM and Forest Service (as a cooperating agency) are following the substitution approach described in 36 CFR 800.8(c) to use the NEPA process and this Final EIS/Proposed RMPA to comply with the requirements of Section 106 of the National Historic Preservation Act (54 United States Code 306108), consistent with the Advisory Council on Historic Preservation's regulations implementing Section 106. The BLM notified the Advisory Council on Historic Preservation and the Nevada State Historic Preservation Office in advance of its intention to utilize the substitution process and is satisfying the standards set forth in the Section 106 regulations.

In addition to Section 106 consultation, the BLM requested informal consultation under Section 7 of the Endangered Species Act with the United States Fish and Wildlife Service (USFWS) and sought the USFWS's concurrence with the determination that the project may affect, but is not likely to adversely affect, the

Lahontan cutthroat trout and western yellow-billed cuckoo. The BLM also requested concurrence with its determination that the project would not affect the Dixie Valley toad or critical habitat for the western yellow-billed cuckoo. On December 19, 2024, the USFWS concurred that GLNP construction, operations, maintenance, and decommissioning may affect, but are not likely to adversely affect, the Lahontan cutthroat trout and western yellow-billed cuckoo (USFWS File No. 2025-0020510; USFWS 2024[1]).

In preparing the Final EIS/Proposed RMPA, the BLM developed a range of options to resolve resource conflicts by considering (1) issues raised through the public scoping and public comment periods and consultation and coordination with cooperating agencies, consulting parties, and American Indian tribes; (2)dissues raised by agency resource specialists; and (3) applicable planning criteria. These considerationso have resulted in the analysis of four alternatives in detail, including the BLM's Preferred Alternative. Theo No Action Alternative, which constitutes a continuation of current trends and uses in the GLNP area, iso also addressed as one of the four alternatives. The BLM also considered 19 other alternatives that haveo been dismissed from detailed analysis. Section 1.9 of the Final EIS/Proposed RMPA includes changeso between the Draft EIS/RMPA and the Final EIS/Proposed RMPA. Appendix C of the Final EIS/Proposedo RMPA includes responses to substantive comments received during the public review of the Drafto EIS/RMPA.o

Pursuant to the BLM's land use planning regulations at 43 CFR 1610.5-2, any person who participated in the BLM land use planning process for the GLNP and has an interest that is or may be adversely affected by the BLM land use planning decisions may protest the proposed BLM planning decisions contained in the Final EIS/Proposed RMPA. The regulations specify the required elements of your protest. A protest may raise only those issues that were submitted for the record during the land use planning process. The protest must be in writing and must be filed with the BLM Director. The protest must be filed within 30 days of the date the United States Environmental Protection Agency publishes its Notice of Availability of the Final EIS/Proposed RMPA in the *Federal Register*.

If you file a protest, take care to document all relevant facts. As much as possible, refer to or cite the planning documents or available planning records. Before including your address, phone number, email address, or other personal, identifying information in your protest, be advised that your entire protest—including your personal, identifying information—may be made publicly available at any time. While you can ask the BLM in your protest to withhold from public review your personal, identifying information, the BLM cannot guarantee that it will be able to do so.

Instructions for filing a protest with the BLM Director regarding the Final EIS/Proposed RMPA may be found online at https://www.blm.gov/programs/planning-and-nepa/public-participation/filing-a-plan-protest and at 43 CFR 1610.5-2.

If you do not have the ability to file your protest electronically, hardcopy protests must be mailed to either of the following addresses, postmarked by the close of the protest period:

US Postal Service Mail:
BLM Director
Attention: Protest Coordinator (HQ210)

[1] USFWS (US Fish and Wildlife Service). 2024. Informal Consultation on the Bureau of Land Management's Greenlink North Transmission Project, Nevada. Memorandum to Deputy State Director, BLM Nevada State Office, Reno, from Anne Mankowski, Assistant Field Supervisor, Reno Fish and Wildlife Office, Reno, Nevada. USFWS File No. 2025-0020510.

PO Box 151029
Lakewood, CO 80215

Overnight Parcel Delivery:
BLM Director
Attention: Protest Coordinator (HQ210)
Denver Federal Center, Bldg. 40
Lakewood, CO 80215

The BLM Director will make every attempt to promptly render a decision on each protest. The decision will be in writing and will be sent to the protesting party by certified mail, with return receipt requested. The BLM Director's decision shall be the Department of the Interior's final decision on each protest. Responses to valid protest issues will be compiled and documented in a Director's Protest Resolution Report made available following the protest resolution online at https://www.blm.gov/programs/planning-and-nepa/public-participation/protest-resolution-reports.

Upon resolution of all land use plan protests, the BLM will issue an Approved RMPA and Record of Decision (ROD). The Approved RMPA and ROD will be made available electronically to all who participated in the planning process and will be available on the project website at https://eplanning.blm.gov/eplanning-ui/project/2017033/510.

The Forest Service's decision will be to approve, modify, or deny the special use permit on National Forest System lands for the construction, operations and maintenance, and decommissioning of the GLNP transmission line and associated facilities. A legal notice in the *Reno Gazette-Journal* (newspaper of record) initiates the Forest Service's 45-day pre-decisional administrative review process, also known as an objection process (36 CFR 218, Subparts A and B). Objections must be postmarked (if sent via postal mail), faxed, or submitted electronically via email to objections-intermtn-regional-office@usda.gov within 45 days following publication of the legal notice in the *Reno Gazette-Journal*. Mailed objections should be sent to Objection Reviewing Officer, Greenlink North Project, USFS Intermountain Regional Office, 324 25th Street, Ogden, UT 84401. Hand delivery of written objections can be made during normal working hours to that address. Objections may be faxed to (801) 625-5365. Electronic objections must be submitted in a format such as portable document format (.pdf), plain text (.txt), or Word (.doc or .docx), and electronic file names must be less than 85 characters long (including spaces).

A timely submission will be determined as outlined in 36 CFR 218.6(a) for project objections. It is the responsibility of objectors to ensure their objection is received in a timely manner (36 CFR 218.9). Objections will be accepted only from individuals and entities who have submitted timely, specific written comments regarding a proposed project or activity, per 36 CFR 218.5. Individual members of organizations must have submitted their own comments to meet the requirements of eligibility as an individual. Objections received on behalf of an organization are considered as those of the organization only. If an objection is submitted on behalf of a number of individuals or organizations, each individual or organization listed must meet the eligibility requirement of having previously submitted comments on the project. Objections will become part of the public record. Issues raised in objections must be based on previously submitted, specific written comments regarding the proposed project during scoping or other designated opportunity for public comment, unless the objections are based on new information arising after designated opportunities for comment.

The BLM and Forest Service will each prepare and sign a ROD to disclose the respective agencies' final decisions and identify any conditions of approval. The RODs will be posted to the BLM NEPA Register on the project website at https://eplanning.blm.gov/eplanning-ui/project/2017033/510 and to the Forest Service's project website at https://www.fs.usda.gov/project/htnf/?project=64198.

For questions or additional information, please contact the BLM Project Manager, Brian Buttazoni, at (775) 861-6491 or email at BLM_NV_greenlinknorth@blm.gov.

Sincerely,

Kimberly Prill
Acting BLM Nevada State Director

Greenlink North Transmission Project Final Environmental Impact Statement and Proposed Resource Management Plan Amendment

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

2. Type of Action: Administrative (X) Legislative ( )

3. Document Status: Draft () Final (X)

Abstract: The United States (US) Department of the Interior, Bureau of Land Management (BLM), Nevada State Office prepared this Final Environmental Impact Statement (EIS)/Proposed Resource Management Plan Amendment (RMPA) to evaluate a BLM right-of-way application and Forest Service special use permit application by Nevada Power Company and Sierra Pacific Power Company, doing business as NV Energy, to construct, operate, maintain, and decommission an approximate 235-mile, 525-kilovolt transmission line and associated facilities. Approval of the project in the BLM Record of Decision would also approve amendments to the Carson City Consolidated Resource Management Plan (RMP), the Battle Mountain District Shoshone-Eureka RMP, and the Ely District RMP, which were amended by the Nevada and Northeastern California Greater Sage-Grouse Approved RMP Amendment (2015 ARMPA). The amendments are analyzed in this Final EIS/Proposed RMPA.

Based on input from cooperating agencies (including the US Department of Agriculture, Forest Service), consulting parties, Native American tribes, and the public, the BLM has brought forward three action alternatives for detailed analysis, in addition to the No Action Alternative. Two of the action alternatives (excluding the Proposed Action) would be in conformance with the Forest Service's 1986 Toiyabe Land and Resource Management Plan. Under the three action alternatives, to address potential nonconformance with the BLM's existing RMPs, the BLM has evaluated in this Final EIS/Proposed RMPA the following amendments to the existing RMPs, as amended by the 2015 ARMPA:

- Designate a new 3,500-foot-wide utility corridor on BLM-administered lands
- Exempt the BLM utility corridor from lek avoidance buffers
- Exempt the BLM utility corridor from a seasonal restriction for activities in greater sage-grouse winter range

Under the No Action Alternative, the BLM or the US Department of Agriculture, Forest Service, or both, would deny the respective right-of-way or special use permit applications and would not amend any land use plans.

4. For further information, please contact:

Brian Buttazoni, Project Manager
BLM Nevada State Office
1340 Financial Blvd
Reno, NV 89502
775-861-6491

ePlanning website: https://eplanning.blm.gov/eplanning-ui/project/2017033/510

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Executive Summary

ES.1 Introduction

Nevada Power Company and Sierra Pacific Power Company, doing business as NV Energy (Proponent), propose to build the Greenlink North Transmission Project (GLNP; the project) in Nevada. The GLNP would consist of a new, approximately 235-mile, 525-kilovolt (kV) overhead electric transmission line connecting to a system of 525 kV, 345 kV, and 230 kV gateway transformer facilities; substations; and ancillary project components.

The GLNP would be constructed between Ely and Yerington in White Pine, Eureka, Lander, Churchill, and Lyon Counties, Nevada (see Figure ES-1, Greenlink North Transmission Project, BLM Preferred Alternative). The 525 kV transmission line would generally parallel portions of United States (US) Highway 50 and an existing 230 kV transmission line for most of its length. For approximately 52 miles, the proposed 525 kV transmission line would be dually collocated with existing 230 and 345 kV transmission lines. The GLNP electric transmission facilities would be predominantly on lands administered by the US Department of the Interior, Bureau of Land Management (BLM) with shorter segments of the project crossing lands administered by the US Department of Defense (DOD), Department of the Navy; US Department of Agriculture, Forest Service (Forest Service); and private landowners.

The BLM is the lead federal agency for the GLNP under the National Environmental Policy Act (NEPA) and has coordinated the preparation of the environmental analysis contained in this final environmental impact statement (EIS) and proposed resource management plan amendment (RMPA). The BLM is also the lead for compliance with Section 106 of the National Historic Preservation Act (NHPA) and Section 7 of the Endangered Species Act (ESA). The BLM invited various federal, state, and county agencies and tribal governments to participate as cooperating agencies and consulting parties.

ES.2 Land Use and Management Plan Conformance

ES.2.1 The BLM

Actions approved or authorized by federal land management agencies must conform to the approved land use plans for the lands they administer (43 Code of Federal Regulations [CFR] 1610.5-3). The BLM must consider existing resource management plans (RMPs) in the decision to issue a right-of-way (ROW) grant, in accordance with 43 CFR 1610.5 5(b). Land use plans or RMPs that apply to each BLM field office or district office provide public land and resources management direction. If a proposed project does not conform with the plan, the BLM can choose to deny the project, adjust the project to conform to the RMP, or amend the RMP to address the nonconformance (BLM 2008).

The action alternatives, including the Proposed Action, would cross greater sage-grouse general habitat management areas (GHMAs) and priority habitat management areas (PHMAs) within the administrative boundaries of the BLM Carson City, Battle Mountain, and Ely District Offices. Based on review of these offices' land use plans, as amended by the 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (2015 ARMPA), the action alternatives, including the Proposed Action, would not

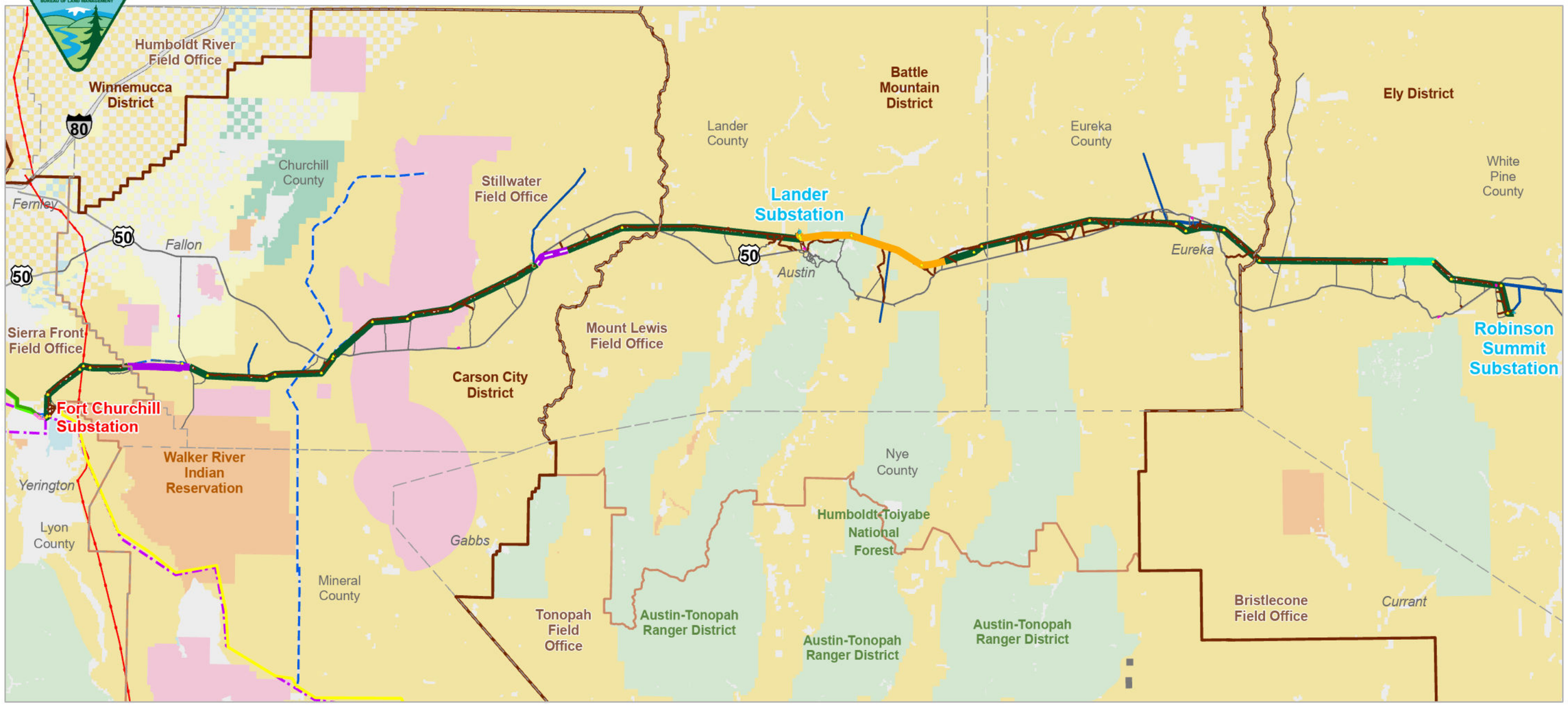
be in conformance with these land use plans. Consistent with 43 CFR 1610.5-3(c) and 1610.5-5, the BLM proposes to address the action alternatives' nonconformance by designating a utility corridor up to 3,500 feet in width and modify restrictions in greater sage-grouse habitat management areas and in proximity to leks (see Section 2.4 for further details on the plan amendments).

Under the land use plans, as amended by the 2015 ARMPA, GHMAs and PHMAs on BLM-administered lands are managed as avoidance areas for major ROWs (BLM 2015). If adaptive management responses have been triggered (as a hard trigger), GHMAs and PHMAs become exclusion areas for high-voltage (greater than 100 kV) transmission lines that are outside designated utility corridors (BLM 2015). If impacts from the GLNP result in habitat loss and degradation that remain after avoidance and minimization measures are applied, then compensatory mitigation projects would be required to provide a net conservation gain to greater sage-grouse through the Nevada Conservation Credit System (BLM 2015).

The land use plans, as amended by the 2015 ARMPA, de-designated a substantial number of RMP-level utility corridors in greater sage-grouse habitat management areas that were unoccupied by transmission infrastructure (BLM 2015). A substantial portion of the existing Fort Churchill–Alpine 230 kV transmission line, constructed in the 1970s, occurs within one of these corridors. The GLNP would be collocated with this existing transmission line. Based on a geographic information systems review of the existing RMP and Section 368 utility corridors, there is no continuous utility corridor available between the Robinson Summit Substation and the Fort Churchill Substation in which the GLNP can be sited that is economically and technically viable for the Proponent.

Those land use plans amended by the 2015 ARMPA included new avoidance objectives described in Appendix B as "lek buffers" (BLM 2015). Lek buffers are not land use allocations; instead, they fit within the broader conservation objectives and planning decisions for the greater sage-grouse. The BLM prioritizes these objectives when considering new projects, to avoid their placement within the lek buffers. As described in Section 3.6, Special Status Species, some segments of the project would occur within these lek buffers.

Executive Summary. Figure ES-1
BLM Preferred Alternative



BLM Preferred Alternative
- 525 kV transmission line
- Distribution line
- Churchill County route
- Humboldt-Toiyabe National Forest northern route
- Desatoya Mountains Wilderness Area route
- Mining proponent route to avoid an unpatented mining claim
- Substation
- Amplifier

- Material yard
- Pulling site
- New road
- Existing road requiring improvement

Authorized substation, separate NEPA
- Fort Churchill

Authorized transmission line, separate NEPA
- Fort Churchill-Mira Loma 345 kV T Line
- Comstock Meadows-Fort Churchill 345 kV T Line
- Fort Churchill 345/120 kV
- Fort Churchill 345/230 kV
- Greenlink West 525 kV

Existing transmission line
- Other voltage
- 120 - 128 kV
- 230 kV
- 500 kV+
- Existing road
- BLM district
- BLM field office
- County boundary

Land management
- Bureau of Land Management
- Forest Service
- Private or other
- Tribal Reservation
- Department of Defense
- Reclamation
- State of Nevada
- Local government
- Fish and Wildlife Service
- National Park
- Department of Energy

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Miles

Source: BLM, FS, and NVE GIS 2024
U.S. Department of the Interior, Bureau of Land Management, Nevada State Office
May 14, 2025, GreenlinkN_Alts.aprx
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ES.2.2 Forest Service

The proposed route must be consistent with the standards, guidelines, and desired conditions in the 1986 Toiyabe Forest Land and Resource Management Plan (Toiyabe Forest Plan; Forest Service 1986) and all its amendments. In particular, the proposed route does not conform with standards and guidelines in amendment 17 (Forest Service 2015a) and the Greater Sage-grouse Record of Decision (ROD) for Nevada and Land Management Plan Amendment (Forest Service 2015b). The 1986 Toiyabe Forest Plan standards for locating new transmission facilities require collocation of the facilities within existing utility corridors.

The 1986 Toiyabe Forest Plan provides standards and guidelines for the management of National Forest System lands in the project area; specifically, the standards and guidelines in special uses and realty are to:

- (4) Manage all utility, road and transmission corridors in accordance with plans and permits issued for their construction and use. When applications for utility ROW are received, the first priority will be to use existing corridors (Forest Service 1986, p. IV-62).
- **GRSG-LR-SUA-ST-014** In PHMA, restrict issuance of new lands special use authorizations for infrastructure. Exceptions may include co-location and must be limited (e.g., safety needs) and based on rationale (e.g., monitoring, modeling, or best available science) that explicitly demonstrates that adverse impacts to greater sage-grouse will be avoided by the exception. If co-location cannot be accomplished, locate it adjacent to existing infrastructure, roads, or already disturbed areas and limit disturbance to the smallest footprint or where it best limits impacts to greater sage-grouse or their habitat (Forest Service 2015a, p. 114).
- **GRSG-LR-SUA-ST-015** In GHMA, new lands special use authorizations may be issued for infrastructure, such as high-voltage transmission lines, major pipelines, distribution lines, and communication tower sites, if they can be located within existing designated corridors or rights-of-way and the authorization includes stipulations to protect greater sage-grouse and their habitats (Forest Service 2015a, p. 114).

Two alternatives (Forest Service Southern Alternative and Forest Service Northern Alternative) were developed in coordination with the Proponent that would comply with forest plan standards. The Forest Service Southern Alternative would avoid crossing PHMAs and GHMAs and would follow existing ROWs as much as possible. This alternative is a component of the Other Resource Consideration Alternative, described in Section ES.7.2 and Section 2.2. The Forst Service Northern Alternative would be collocated within an existing designated utility corridor. This alternative is a component of the BLM Preferred Alternative, described in Section ES.7.3 and Section 2.3.

ES.3 Proponent Goals

The Proponent has submitted an Application for Transportation, Utility Systems, Telecommunications, and Facilities on Federal Lands and Property (Standard Form 299) and preliminary plan of development to the BLM and Forest Service to:

- Construct, operate, and maintain a proposed system of new 525 kV, 345 kV, and 230 kV electric transmission facilities (with one 525 kV transmission line and substation infrastructure).
- Provide for energy transmission redundancy, reliability, and resiliency, as defined below. As such, the GLNP is not dependent on the development of other projects for its justification.
    - Redundancy—Having multiple channels or backup systems in place to ensure continuous operation even if one component fails; where the loss of a single path or component does not disrupt the overall functionality of the system.
    - Reliability—The ability of a power system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components.
    - Resiliency—The optimizing and future proofing capital investment strategy, with technology that harnesses "what if" scenario planning and predictive analytics to facilitate strategic decision-making (such as using steel poles for fire protection and/or public safety outage management programs during extreme fire danger).
- Help to achieve the State of Nevada Renewable Energy Portfolio and Nevada's greenhouse gas emissions mandate.
- Facilitate access to the State of Nevada-designated renewable energy zones.
- Increase northern Nevada's transmission import capacity required to meet the region's electric demand, grid reliability, and Federal Energy Regulatory Commission requests for service.
- Comply with Nevada Senate Bill 448. In July 2021, the Nevada governor signed into law an omnibus energy bill, Nevada Senate Bill 448. The bill requires the Proponent to amend its integrated resource plan to include a plan for placing certain high-voltage transmission infrastructure construction projects into service no later than December 31, 2028. On September 1, 2021, the Proponent filed an amendment to its integrated resource plan with the State of Nevada Public Utilities Commission requesting approval to complete the GLNP by December 1, 2028.

ES.4 Purpose of and Need for Action

ES.4.1 Bureau of Land Management

The BLM's purpose is to respond to the ROW application submitted by the Proponent to construct, operate, maintain, and decommission a system of transmission facilities and associated infrastructure that would transmit electricity between the Fort Churchill and Robinson Summit Substations on BLM-administered lands and on lands jointly administered by the BLM and DOD in the Dixie Valley Training Area. The BLM has the authority to authorize ROWs in the Dixie Valley Training Area, per Section 3014(a)(3) of the National Defense

Authorization Act of 2000 (Public Law 106-65), in accordance with the Federal Land Policy and Management Act of 1976.

The need for this action is to fulfill the BLM's responsibility under the Federal Land Policy and Management Act of 1976 and the BLM's ROW regulations to manage the BLM-administered lands for multiple use and sustained yield, including the transmission of electric energy. If approved by the BLM, the ROW for the proposed GLNP would support the directives found in Executive Orders 14154, Unleashing American Energy, and 14156, Declaring a National Energy Emergency, and Secretarial Orders 3417, Addressing the National Energy Emergency, and 3418, Unleashing American Energy.

As proposed, the GLNP would not conform to the RMPs in the BLM Carson City, Battle Mountain, and Ely District Offices as required by 43 CFR 1610.5-3(a). The BLM would need to amend these RMPs to bring the GLNP into conformance. In particular, the Proponent's proposed transmission line would not conform with the management objectives of the planning area for transmission lines greater than 100 kV. The purpose of the RMPA is to ensure that development of the GLNP would conform to the RMPs' provisions, as provided for in 43 CFR 1610.5-3(c), by providing for the designation of a utility corridor and modifying restrictions in greater sage-grouse habitat management areas and in proximity to leks.

ES.4.2 Forest Service

The Forest Service's purpose is to respond to the SF-299 ROW application submitted by the Proponent to construct, operate, maintain, and decommission a transmission line over National Forest System land that would transmit electricity between the Fort Churchill and Robinson Summit Substations in the Austin-Tonopah Ranger District of the Humboldt-Toiyabe National Forest.

The need for this action is to fulfill the Forest Service's responsibility under the Federal Land Policy and Management Act and in accordance with agency regulations in 36 CFR 251 Subpart B that authorize use and occupancy on National Forest System lands. Pursuant to 36 CFR 219.10, the Forest Service must review all site-specific projects, including authorized uses of the land, to ensure they are consistent with the 1986 Toiyabe Forest Plan, per the National Forest Management Act (16 US Code 1600–1614, as amended). The special use permit application and authorization objectives are that (1) authorizations to use and occupy National Forest System land are in the public interest while avoiding and minimizing adverse effects, and (2) proposals are in conformance with existing land and resource management plans.

ES.5 Decision to Be Made

Table ES-1 summarizes the agencies' decisions to be made for the proposed GLNP. Refer to Section 2.1 for descriptions of the GLNP components and required BLM, Forest Service, and DOD ROW locations. The BLM, Forest Service, and DOD will use or tier to this Final EIS/Proposed RMPA to make their respective decisions under NEPA and other applicable laws. The other cooperating agencies could use this information to support their analyses and decisions, as needed.

Table ES-1. Summary of Agency Decisions to Be Made

Agency	Action
The BLM	• Approve or deny a short-term right-of-way (ROW) application and Plan of Development for geotechnical investigations. • Approve, modify, or deny the ROW for BLM-administered lands for the construction and operations and maintenance (O&M) of the GLNP transmission line and associated facilities. • Amend or not amend the Carson City Consolidated RMP, the Battle Mountain District Shoshone-Eureka RMP, and the Ely District RMP, which were amended by the 2015 ARMPA to designate a new, approximately 198-mile utility corridor from Ely to Yerington, Nevada, which would be up to 3,500 feet in width, and modify restrictions in greater sage-grouse habitat management areas and in proximity to leks.
Forest Service	• Approve, modify, or deny the special use permit on National Forest System land for the construction and O&M of the GLNP transmission line and associated facilities, including resource protection measures, mitigation, and monitoring.

ES.6 Consultation and Coordination

The BLM has involved, consulted with, and coordinated with federal, state, and local agencies; Native American tribes; and the public, both formally and informally. These efforts were aimed at informing the public about the GLNP and soliciting input to assist in analysis and decision-making. Consultation and coordination ensure that the most appropriate data have been gathered and analyzed. Additionally, coordination assures that agency policy and public values are considered and incorporated into the Final EIS/Proposed RMPA. Consultation, coordination, and public participation efforts began prior to the start of the official NEPA process. Agencies and organizations that have jurisdiction and/or special expertise in the GLNP were contacted prior to scoping, at the start of scoping, during resource inventory, and before the publication of the Draft EIS/RMPA.

ES.6.1 Section 7 of the Endangered Species Act

Consultation with the US Fish and Wildlife Service (USFWS) is required under Section 7(c) of the ESA of 1973 (16 US Code 1531–1544) before a federal agency begins a project that may affect federally listed threatened or endangered species or their critical habitat. The BLM submitted a biological assessment to the USFWS on October 24, 2024. Pursuant to Section 7 of the ESA, the BLM requested informal consultation and concurrence from the USFWS of the determination that the project may affect, but is not likely to adversely affect, the Lahontan cutthroat trout and western yellow-billed cuckoo. The BLM also requested concurrence of its determination that the project would not affect Dixie Valley toad or critical habitat for the western yellow-billed cuckoo. On December 19, 2024, the USFWS concurred that GLNP construction and O&M may affect, but are not likely to adversely affect, Lahontan cutthroat trout and western yellow-billed cuckoo (USFWS File No. 2025-0020510; USFWS 2024).

ES.6.2 Section 106 of the National Historic Preservation Act

In accordance with Section 106 (54 USC 306108) of the NHPA, federal agencies are required to consider the effects of the agencies' undertakings on historic properties listed on, or eligible for listing on, the National Register of Historic Places and the need for meaningful consultation. The BLM initiated the consultation and notified the Nevada State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP) of its intent to use the

NEPA process to comply with Section 106, pursuant to the regulations at 36 CFR 800.8(c). Additional details about Section 106 consultation can be found in Section 3.8, Cultural Resources. The BLM conducted consultation to identify historic properties, preliminary determinations of effect, and preliminary treatment methods to resolve adverse effects on historic properties for the undertaking. As the BLM and Forest Service cannot determine the significance of certain resources without consulting with knowledgeable tribal representatives, Section 106 consultation will continue to take place with individual consulting parties as the need is identified.

Along with the publication of NEPA draft and final documents, the Nevada SHPO, the ACHP, and tribes were provided draft copies of the Class I and III Cultural Resource Inventory reports, as well as the draft historic properties treatment plan, for consultation purposes. Through consultation requested on the Class I report (provided to consulting parties on September 24, 2024), the Class III report (provided on January 28, 2025), the historic properties treatment plan (provided on February 11, 2025), and an NHPA Section 106 consultation meeting held by the BLM on March 12, 2025, the identified consulting parties were given the opportunity to contribute to and comment on preliminary areas of potential effects, the identification effort, resource eligibility, effects on historic properties, and mitigation of adverse effects until April 28, 2025. The Nevada SHPO met with the BLM on April 23, 2025, and confirmed that the SHPO would not be providing comment on eligibility or effect.

36 CFR 800.8(C) Coordination with the NEPA Substitution Process

On February 8, 2023, the BLM initiated the consultation and notified the Nevada SHPO, Tribal Historic Preservation Officers, ACHP, and Native American tribes of its intent to use the NEPA process to comply with Section 106, pursuant to the regulations at 36 CFR 800.8(c). The substitution process incorporates the four main steps of the Section 106 process: initiation, identification of historic properties, assessment of adverse effects, and resolution of adverse effects.

ES.6.3 Government-to-Government Consultation

Statues and regulations require federal agencies to consult with Native American tribes on a government-to-government basis on federal actions or undertakings that may affect "trust assets," including cultural and natural resources of tribal concern. Government-to-government consultation involves the process of seeking, discussing, and considering tribes' views on policies, undertakings, and decisions. The BLM formally initiated consultation with Native American tribes that had previously expressed claims to cultural affiliation with the GLNP area to inform them of the project and to inquire about their interest in continuing government-to-government consultation.

To date, two formal government-to-government meetings regarding this project have taken place. One was a virtual meeting with BLM Nevada State Director Jon K. Raby and Regional Forester Lance Brown, conducted on July 16, 2024, with representatives from seven tribes. The BLM State Director also attended a government-to-government meeting with the Fallon Paiute-Shoshone Tribe that addressed the GLNP, among other topics of interest to the tribe. The BLM will continue to consult and coordinate with any Native American tribes who request government-to-government consultation for the GLNP.

ES.6.4 Public Coordination

Pre-Notice of Intent (NOI) Public Involvement

The BLM hosted five pre-NEPA public meetings between January 2022 and April 2023 (see Table ES-2) to adequately notify the public about the project and to solicit input prior to the start of the public scoping period, in compliance with NEPA. Comments received during these activities helped guide resource considerations and alternative route and key component development.

Table ES-2. Public Meetings

Meeting	Date	Location
Virtual pre-NOI public input workshops	January 26, 2022	Zoom meeting
	January 27, 2022	Zoom meeting
	July 27, 2022	Zoom meeting
	December 13, 2022	Zoom meeting
	March 29, 2023	Zoom meeting
Public scoping meetings	June 12, 2023	Zoom meeting
	June 20, 2023	Sparks, Nevada
	June 21, 2023	Ely, Nevada
	June 22, 2023	Austin, Nevada
	March 26, 2024	Zoom meeting

Scoping

The official scoping period that kicked off the NEPA process began with publication of the NOI in the *Federal Register* on May 26, 2023. The NOI briefly describes the purpose of and need for the GLNP, the preliminary description of the Proposed Action and alternatives considered, and a brief summary of the expected impacts of the alternatives. In addition, a preliminary project schedule for the decision-making process was included.

The BLM held three in-person and one virtual public scoping meetings in June 2023 to solicit public input (see Table ES-2). Thirteen people attended the in-person meetings.

Revised Scoping

During development of the alternatives, the BLM determined that plan amendments may be needed as part of the project. As such, the BLM published a second NOI in the *Federal Register* on March 11, 2024. The 30-day period for submitting comments was from March 11, 2024, to April 11, 2024. During this revised scoping period, the BLM made the planning criteria and preliminary Chapters 1 and 2 of the Draft EIS/RMPA available for public input. On March 26, 2024, the BLM hosted a virtual public meeting (see Table ES-2). Fourteen people attended. No additional public scoping meetings were scheduled.

Issues

Issues raised through consultation, coordination, and scoping include effects on wildlife, including federally listed and special status species and the bald and golden eagles; cultural resources; Native American religious concerns; paleontological resources; national historic trails (NHTs); land use; visual resources; socioeconomics; and environmental justice.

Draft EIS/RMPA

The Draft EIS/RMPA was published on September 10, 2024, and public comments were considered in the development of this Final EIS/Proposed RMPA. Section 1.9 outlines the changes that were made between the draft and final documents. Appendix C includes the substantive public comments on the Draft EIS/RMPA and the BLM's responses to those comments.

ES.7 Action Alternatives

ES.7.1 Proposed Action

The proposed 525 kV facilities would begin at the Fort Churchill Substation located approximately 10 miles north of Yerington, Nevada, in Lyon County. The Fort Churchill Substation's construction is occurring on private or Proponent-owned land, as authorized under the Greenlink West Transmission Project EIS; it is not a component of the GLNP. The facilities, including the 525 kV transmission line; new and improved roads; and, where applicable, distribution lines, would overlay approximately 679 miles[1] in northern Nevada through portions of Lyon, Churchill, Lander, Eureka, and White Pine Counties. In Lander County, the facilities would connect to the proposed Lander Substation, approximately 3 miles northwest of Austin, Nevada. The facilities would terminate at the Robinson Summit Substation, approximately 17 miles west of Ely, Nevada, in White Pine County.

The 525 kV transmission line would generally follow US Highway 50 for most of its length. The proposed GLNP facilities would cross BLM-administered land, DOD-administered land, National Forest System land, and private land as described in Section 2.1 (BLM, FS, and NVE GIS 2024; see Figure ES-2).

ES.7.2 Other Resource Consideration Alternative

Based on input from the public, cooperating agencies, and tribal members, segments of the Proposed Action were rerouted to address other resource and resource use concerns. These were wrapped into the Other Resource Consideration Alternative. This alternative would follow the route under the Proposed Action except for one adjustment described in Section 2.2 (see Figure ES-3).

ES.7.3 BLM Preferred Alternative

Under NEPA, the "preferred alternative" is a preliminary indication of the lead agency's preference of action among the no-action alternative and action alternatives. The lead agency selects a preferred alternative for a variety of reasons, including the agency's priorities and environmental considerations discussed in an EIS. In accordance with NEPA (43 CFR 1610.4-7), the BLM has identified its preferred alternative to be the Proposed Action as modified with rerouting four segments of the 525 kV transmission line and narrowing a portion of the proposed utility corridor to 2,000 feet in width to address other resource and resource use concerns (see Figure ES-1 and Section 2.3).

[1] This total does not include existing access roads that do not require improvements.

Table ES-3 displays comparisons between the Proposed Action and the alternatives for miles of surface management and estimated total acres of disturbance.

Table ES-3. Proposed Action and Alternatives Comparison

Comparison Criteria	Proposed Action Route	Other Resource Consideration Alternative	BLM Preferred Alternative
General			
Combined transmission components' length (miles)[1]	678.6	670.7	655.8
Surface Management			
BLM (miles)	579.4	572.4	557.8
Forest Service (miles)	33.0	26.8	32.6
DOD (miles)	43.8	43.4	43.8
Private (miles)	22.4	28.1	21.5
Disturbance Estimates			
Total disturbance (acres)[1]	36,917	36,756	36,830

Source: BLM, FS, and NVE GIS 2024

[1]These totals include the 525 kV transmission line and access roads, and, where applicable, distribution lines. Each area includes three temporary disturbance buffers and one permanent disturbance buffer for the temporary and permanent (30 years with an option to renew) ROWs. The buffers are described in further detail in Section 3.1.

ES.8 No Action Alternative

Under the No Action Alternative, the BLM would not grant a ROW, the Forest Service would not grant a special use permit for construction and operation of the GLNP, and the BLM would not amend its land use plans. The GLNP facilities would not be built, and existing land uses and present activities in the GLNP area would continue. The land on which the GLNP would be located would be available to other uses that are consistent with the respective district office or field office land use plans.

ES.9 Plan Amendments

On March 11, 2024, the BLM announced that it was considering plan amendments for the GLNP. The second Federal Register NOI stated, "The plan amendments are being considered to allow the BLM to evaluate modifying restrictions on major rights-of-way (ROWs) within greater sage-grouse habitat management areas and in proximity to leks and to establish a new 235-mile utility corridor between Ely, Nevada and Yerington, Nevada…" (89 Federal Register 17510). Since the publication of the Federal Register notice, the length of the utility corridor has been revised to 198 miles under the Proposed Action, 205 miles under the Other Resource Consideration Alternative, and 205 miles under the BLM Preferred Alternative, to exclude non-BLM-administered lands.

To address potential nonconformance with the existing land use plans, the BLM has evaluated in this Final EIS/Proposed RMPA the following amendments to the existing land use plans, as amended by the 2015 ARMPA:

- Designate a new utility corridor on BLM-administered lands;
- Exempt the BLM utility corridor from lek avoidance buffers; and
- Exempt the BLM utility corridor from a seasonal restriction for activities in greater sage-grouse winter range.

The BLM would designate a utility corridor, up to 3,500 feet in width, on BLM-administered lands. The utility corridor would occur on approximately 82,600 acres of BLM-administered lands under the Proposed Action; on approximately 85,800 acres under the Other Resource Consideration Alternative; and on approximately 83,400 acres under the BLM Preferred Alternative. The terminus of the GLNP utility corridor would be approximately 1 mile east of the Robinson Summit Substation where it would connect into an existing Section 368 corridor. This would ensure the long-term viability of both the GLNP and Section 368 utility corridors.

A utility corridor width of up to 3,500 feet would provide enough spatial leeway to ensure proper spanning between existing 230 kV and 345 kV transmission lines, where collocated, and to shift the transmission line as needed. The minimum distance requirements to avoid electrical interference between transmission lines would depend on the height of the proposed 525 kV transmission line, which would vary depending on the topography.

The designation of the BLM utility corridor would exempt the GLNP and any future energy transmission infrastructure from the soft and hard trigger requirements incorporated into the land use plans, as amended by the 2015 ARMPA. The GLNP would occur within current hard trigger (exclusion) areas on approximately 13,813 acres under the Proposed Action; on approximately 13,779 acres under the Other Resource Consideration Alternative; and on approximately 13,832 acres under the BLM Preferred Alternative. These areas are exclusion areas for high-voltage transmission lines greater than 100 kV outside of a utility corridor (BLM 2015, MD SSS 20).

The BLM would exempt the BLM utility corridor from lek avoidance buffers described in Appendix B (BLM 2015, MD SSS 3)—which range in distance from 0.25 miles for noise and up to 3.1 miles for surface disturbance—that would affect geotechnical investigations, construction activities, and O&M activities. As described in Section 3.6.3, various segments of the proposed 525 kV transmission line would occur within the greatest extent of lek avoidance buffers (3.1 miles).

The proposed 525 kV transmission line would occur within the 3.1-mile lek avoidance buffers for approximately 134 miles under the Proposed Action; on approximately 117 miles under the Other Resource Consideration Alternative; and on approximately 98 miles under the BLM Preferred Alternative. The transmission line's proximity to leks would be unavoidable. Exempting the BLM utility corridor from the lek avoidance buffers would ensure the viability of the utility corridor if future applications for energy transmission projects were submitted to the BLM.

The BLM would also exempt the BLM utility corridor from a seasonal restriction period in winter habitats (November 1 to February 28) that would affect geotechnical investigations, construction, O&M, and decommissioning activities of the GLNP (BLM 2015, MD SSS-3). The BLM has reviewed the NDOW GIS data for the three areas subject to seasonal restrictions: breeding, brood-rearing, and winter habitats. Under the action alternatives, including the Proposed Action, approximately 190 miles of the proposed 525 kV transmission line would intersect all three categories of seasonal habitats. As a result, the seasonal restriction periods combined would result in a 45-day construction window per year (September 16 to October 31) for the GLNP. Approximately 45 miles of the transmission line are outside the greater sage-grouse habitat areas and would not be affected by these seasonal restrictions.

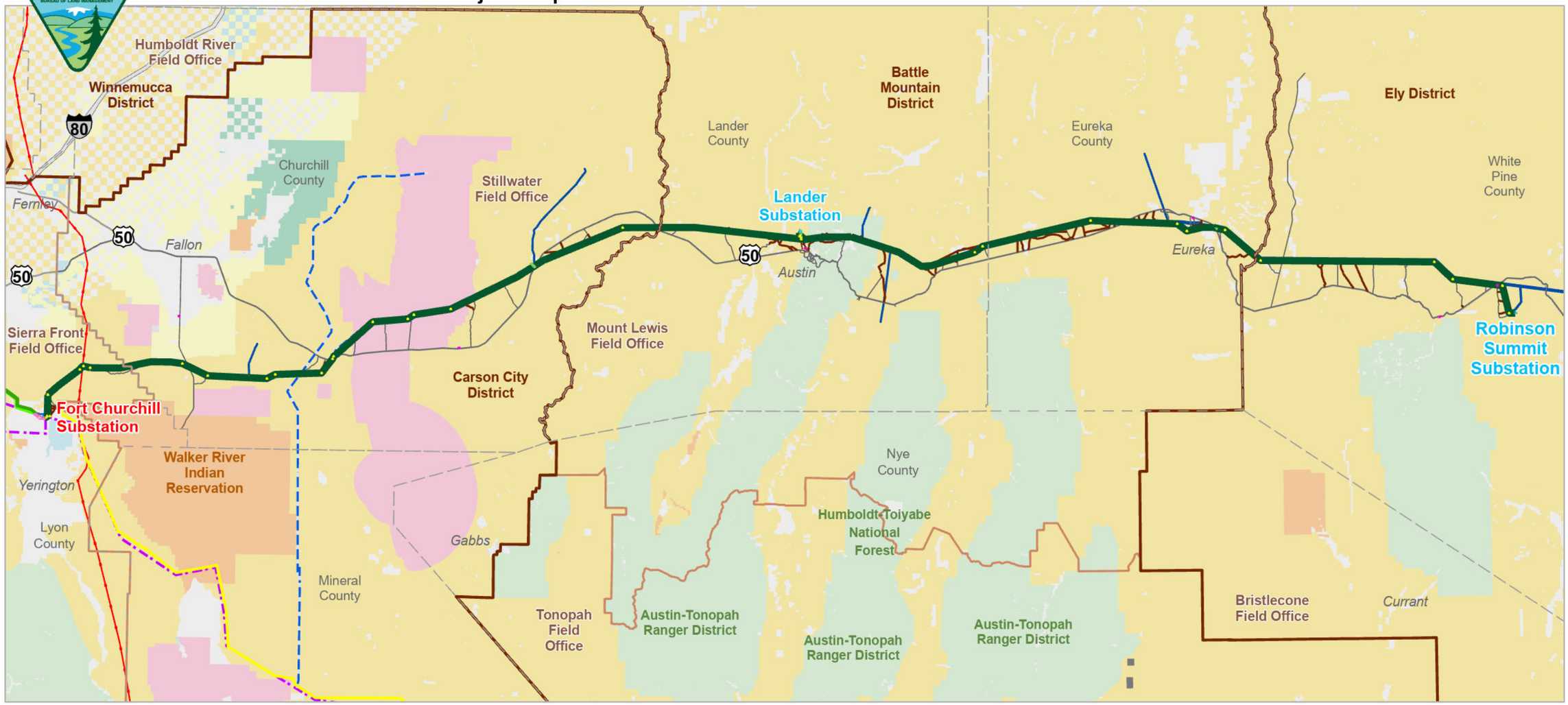
Construction of the 235-mile GLNP 525 kV transmission line cannot occur over a 2- to 3-year period with such seasonal restrictions in place. Mobilizing and demobilizing construction activities during a 45-day work window would cause greater environmental impacts and significant increases in project costs. Exempting the BLM utility corridor from the winter habitat seasonal restriction would allow for GLNP geotechnical investigations, construction, O&M, and decommissioning activities to occur between September 16 and February 28 each year and allow any future energy transmission project in the BLM utility corridor to occur during this same period.

Section 202 of the FLPMA requires the BLM to develop, maintain, and revise land use plans to provide for the management of tracts or areas of public lands on the basis of multiple use. The 2015 ARMPA does not prevent the BLM from amending its land use plans, including the proposed designation of a new utility corridor. All other decisions incorporated into the existing land use plans, as amended by the 2015 ARMPA, would remain in effect.

ES.10 Summary of Impacts by Action Alternative

To avoid, minimize, or otherwise mitigate impacts on resources from the GLNP, the applicant has committed to environmental protection measures and BLM has specified environmental management measures (EMMs), which include relevant best management practices and standard operating procedures (see Appendix D). In addition, conservation and prevention measures, applicable land management agency requirements, requirements from the BLM's applicable RMPs and manuals, and requirements from the Forest Service's 1986 Toiyabe Forest Plan would be enacted. These collective measures are considered in the impact analysis for each resource and use. The EMMs included in Appendix D would apply to all the action alternatives. Table ES-4 includes a comparison of effects—by alternative—on resources that have the potential to have significant impacts.

Executive Summary. Figure ES-2
Greenlink North Transmission Project Proposed Action



Proposed Action
- 525 kV transmission line
- Distribution line
- Substation
- Amplifier
- Material yard
- Pulling site
- New road
- Existing road requiring improvement

Authorized substation, separate NEPA
- Fort Churchill

Authorized transmission line, separate NEPA
- Fort Churchill-Mira Loma 345 kV T Line
- Comstock Meadows-Fort Churchill 345 kV T Line
- Fort Churchill 345/120 kV
- Fort Churchill 345/230 kV
- Greenlink West 525 kV

Existing transmission line
- Other voltage
- 120 - 128 kV
- 230 kV
- 500 kV+
- Existing road
- BLM district
- BLM field office
- County boundary

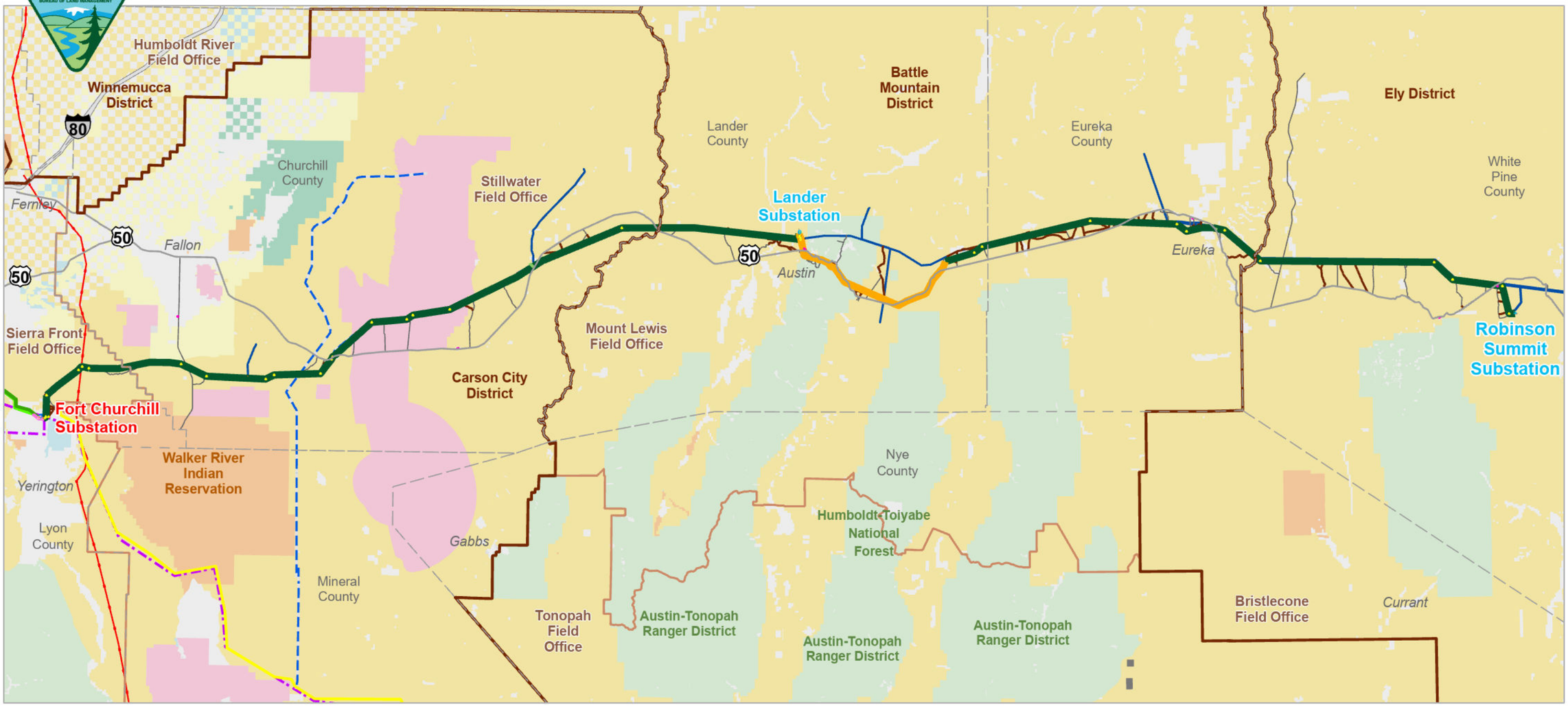
Land management
- Bureau of Land Management
- Forest Service
- Private or other
- Tribal Reservation
- Department of Defense
- Reclamation
- State of Nevada
- Fish and Wildlife Service
- Department of Energy

N

0 10 20
Miles

Source: BLM, FS, and NVE GIS 2024
U.S. Department of the Interior, Bureau of Land Management, Nevada State Office
May 14, 2025, GreenlinkN_Alts.aprx
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Executive Summary. Figure ES-3
Other Resource Consideration Alternative



Other Resource Consideration Alternative
- 525 kV transmission line
- Distribution line
- Humboldt-Toiyabe National Forest southern route
- Substation
- Amplifier
- Material yard
- Pulling site
- New road
- Existing road requiring improvement

Authorized substation, separate NEPA
- Fort Churchill

Authorized transmission line, separate NEPA
- Fort Churchill-Mira Loma 345 kV T Line
- Comstock Meadows-Fort Churchill 345 kV T Line
- Fort Churchill 345/120 kV
- Fort Churchill 345/230 kV
- Greenlink West 525 kV

Existing transmission line
- Other voltage
- 120 - 128 kV
- 230 kV
- 500 kV+
- Existing road
- BLM district
- BLM field office
- County boundary

Land management
- Bureau of Land Management
- Forest Service
- Private or other
- Tribal Reservation
- Department of Defense
- Reclamation
- State of Nevada
- Fish and Wildlife Service
- Department of Energy

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Miles

Source: BLM, FS, and NVE GIS 2024
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Table ES-4. Comparison of Effects by Action Alternative

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Soil Resources	There would be approximately 1,208 acres of soils with Kw factor[2] greater than 0.40 and approximately 2,796 acres of soils in wind erodibility groups (WEGs) 1 and 2 in the Proposed Action project area. These areas would be the most at risk for erosion from surface disturbance during geotechnical investigations, construction, O&M, and decommissioning. There would be approximately 1,848 acres of prime farmlands and approximately 2,461 acres of farmlands of statewide importance in the Proposed Action project area. If these areas are disturbed, their production potential would decrease to the point that they may no longer be classified as prime farmlands or farmlands of statewide importance. The proposed utility corridor could increase the potential for surface disturbance on soils susceptible to erosion. It could also increase the potential for surface disturbance on farmlands and biological soil crusts. However, it would reduce impacts on these soil resources outside the utility corridor if future projects were collocated within the utility corridor. EMMs GEO_SOIL-1 through GEO_SOIL-13 would minimize impacts on soil resources. Where soils are graded and leveled for the placement of project infrastructure, the topsoil would be removed so that only the bare mineral soil remains, and the mineral soil would be compacted. Where vegetation removal from construction activities occurs, impacts on soils would include reduced aggregate stability and increased potential for wind and water erosion. Fencing would have similar impacts, but the fence installation would not require soil removal. Operation of vehicles during construction, O&M, and decommissioning would decrease soil porosity, reduce water infiltration, and displace surface soil particles. The most severe impacts on soils would occur during the construction period. Vehicles used for grading, excavation, and moving of soils would cause the most surface disturbance and potential for soil erosion. Once the facilities are constructed, surface disturbance from vehicles during O&M and decommissioning activities would be less severe. Heavy equipment and repeated vehicle use over the same areas would increase the potential for compaction. Hydric soils and other wet soils would be the most at risk for compaction. Surface disturbance from vehicle use on biological soil crusts would decrease the abundance of biological communities and reduce the crust's function to provide soil stability. This would increase the potential for soil erosion. In contrast, surface disturbance on physical soil crusts would increase their porosity and water infiltration. Most soils are rated as poor for reclamation potential. Organic matter and tilling may be necessary before the soil can be used for reclamation. After the topsoil is replaced, calcium amendments and artificial drainage and irrigation may also be required. Reseeding would reestablish vegetation cover within a few years, which would promote soil aggregate stability and minimize the erosion potential.	There would be approximately 52 more acres of soils with Kw factor greater than 0.40 and approximately 201 more acres of soils in WEGs 1 and 2 within the Other Resource Consideration Alternative project area. This would increase the potential for water and wind erosion, compared with the Proposed Action. In addition, there would be approximately 84 more acres of prime farmlands, if irrigated and reclaimed of excess salts and sodium, and approximately 232 more acres of farmlands of statewide importance, if irrigated. This would increase the potential for reduced productivity of farmlands or conversion to non-farmland within the Other Resource Consideration Alternative project area. Impacts on soils from the proposed utility corridor would be the same as described under the Proposed Action.	There would be approximately 28 fewer acres of soils with Kw factor greater than 0.40, 45 fewer acres of soils in WEGs 1 and 2, and 36 fewer acres of farmlands of statewide importance, compared with the Proposed Action. This would decrease the potential for water and wind erosion and reduced productivity of farmlands or the potential for conversion to non-farmlands. There would be approximately 30 fewer acres of prime farmlands, if irrigated and reclaimed of excess salts and sodium. This would increase the potential for reduced productivity of prime farmlands or conversion to non-farmlands within the BLM Preferred Alternative project area. Impacts on soils from the proposed utility corridor would be the same as those described under the Proposed Action.

[2] A relative index of susceptibility of bare soil to particle detachment and transport by rainfall. Kw factor values range from 0.02 for the least erodible soils and 0.64 for the most erodible.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Water Resources	The Proposed Action would not require any new water rights or wells. Water for the GLNP would be obtained from municipal or commercial sources. The water estimates for transmission line and amplifier site construction along all segments would be approximately 57,100 to 233,000 gallons per day (a typical construction water truck holds around 4,000 to 5,000 gallons). The water estimates for construction yards would be about 35,500 to 183,775 gallons per day. The water estimates for substation construction (new and expanded substations) would be approximately 17,000 to 75,800 gallons per day. The water estimates for restoration would be approximately 600 to 2,900 gallons per day. Water necessary for the construction and O&M efforts of the Proposed Action is not anticipated to affect existing groundwater levels or any seeps and springs in the area. Impacts on surface water resources would be associated with ground-disturbing activities, such as geotechnical investigations, vegetation removal for construction of the access roads, transmission line structures, and ancillary components. Additional impacts, including scoring; changes in channel gradients, aggradation, or degradation of the stream channels; and potential changes in aquatic habitats in the area, could result from road crossing and culvert placements. Installation of fences would also cause ground disturbance, though not to the same extent as the other construction activities. These ground-disturbing activities would result in soil erosion and would increase the potential for sedimentation in downgradient environments. If most of the surface-disturbing activities take place in the utility corridor, this could reduce impacts on water resources outside the utility corridor and increase water resource concerns inside the established area if future ROWs are collocated within the utility corridor. The proposed disturbance has the potential to affect approximately 29,082 acres of hydrologic unit code (HUC) 12 sub-watersheds in the Proposed Action project area. These impacts would be minimized through the use of the resource-specific EMMs (WATER-1 through WATER-20 in Appendix D), Surface disturbance from construction activities and contaminants from point and nonpoint sources could reduce water quality in surface water, shallow aquifers, and the associated water tables. Both point source and nonpoint source contaminants could affect the water quality standards set forth by the Nevada Division of Environmental Protection and the standards in the ambient standards for waterbodies from the Environmental Protection Agency. Known 100-year floodplains could be impacted from increased sedimentation during construction activities. The GLNP would cross 474 acres of 100-year floodplains mapped by the Federal Emergency Management Agency. This acreage includes the following floodplains that are greater than 1,500 linear feet: the Reese River, Stoneberger Creek, Coils Creek, and Roberts Creek. The Proponent would contact the local Environmental Protection Agency office for a Section 404 permit, if applicable. The Proponent would obtain any state permits prior to any surface disturbance. The GLNP would cross 712 acres of wetlands and riparian areas. Riverine areas are the most common type of wetland along the route.	All water rights activities and water use allocations associated with the construction, O&M, and decommissioning and reclamation phases would be the same as discussed under the Proposed Action. No new water rights would be needed for this alternative. All water use activities associated with the construction, O&M, and decommissioning phases of the infrastructure and roads involved with the Other Resource Consideration Alternative would be the same as discussed in the Proposed Action section. Water use allocations and flow dynamics would be the same as or similar to the allocations discussed for the Proposed Action. Under the Other Resource Consideration Alternative, proposed disturbance would have the potential to affect approximately 28,942 acres of HUC 12 sub-watersheds in the project area. Impacts on water resources from the proposed utility corridor would be the same as those under the Proposed Action. There would be a potential to impact 860 fewer acres of sub-watersheds, which would decrease the potential for sedimentation and reduced water quality in the Other Resource Consideration Alternative project area. The GLNP would cross 507 acres of floodplain environment and 731 acres of wetland and riparian environments. The type of effects on water quality in floodplains, wetlands, and riparian areas would be the same as those under the Proposed Action. Compared with the Proposed Action, there would be approximately 2.3 more miles of perennial drainages affected; the differences in miles of intermittent and ephemeral drainages would be negligible.	All water rights activities and water use allocations associated with the construction, O&M, and decommissioning and reclamation phases would be the same as discussed under the Proposed Action. No new water rights would be needed for this alternative. All activities associated with the construction, O&M, and decommissioning phases of the infrastructure and roads involved with the BLM Preferred Alternative would use the same amount of water as discussed in the Proposed Action section. Water use allocations and flow dynamics would be the same as or similar to the allocations discussed for the Proposed Action. Under the BLM Preferred Alternative, the proposed disturbance would have the potential to affect approximately 29,082 acres of HUC 12 sub-watersheds in the project area, which is the same as under the Proposed Action. Impacts on water resources from the proposed utility corridor would be the same as those under the Proposed Action. The GLNP would cross approximately 470 acres of floodplain environment and 698 acres of wetland and riparian environments. The type of effects on water quality in floodplains, wetlands, and riparian areas would be the same as those under the Proposed Action. Fewer impacted acres would benefit wetlands and riparian areas along the proposed route under the BLM Preferred Alternative, compared with the other action alternatives. Compared with the Proposed Action, there would be approximately 2.8 fewer miles of ephemeral drainages and 1.0 fewer miles of intermittent drainages affected; the differences in miles of perennial drainages would be negligible. All impacts would be similar to those under the Proposed Action. However, impacts on surface water and groundwater from the BLM Preferred Alternative would involve some changes to the analyzed disturbance within the 10-mile segment through the Humboldt-Toiyabe National Forest and 9-mile segment of BLM-administered lands to the east. The segment through the Humboldt-Toiyabe National Forest is in steeper terrain and would have higher erosion potentials that could affect water quality downgradient. For the 9-mile segment through BLM-administered lands, there would be minor changes in the total amount of surface disturbance along the route for the BLM Preferred Alternative. However, the impacts on surface water and groundwater quality would be the same as those discussed for the Proposed Action.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Water Resources *(continued)*	Approximately 1.9 miles of perennial, 4.4 miles of intermittent, and 115 miles of ephemeral drainages would overlap the project area. Most impacts on the Reese River and other drainage crossings would be from increased sediments from the construction, operations, and decommissioning phases. Also, increased sediments can impact flow dynamics, impact water quality standards, and change channel morphology. The Walker River would not be impacted to a degree that requires detailed analysis. Impacts on water quality from O&M would be similar to the impacts from construction, but they would be less in magnitude. Impacts on surface water quality from road crossings would include continued erosion of stream banks and sedimentation of road runoff from stormwater events. Permanent improvements to crossing structures could result in temporary, minor discharges of sediment but would reduce long-term impacts associated with maintenance. Potential increases in erosion would occur from repeated vehicle use on access roads, which creates dust, or driving during wet periods, which creates excess rutting. During precipitation events, water runoff in rutted areas would increase sedimentation in downgradient environments. Water quality could also be impacted by contamination from accidental spills such as hydrocarbons from oil leaking from trucks, antifreeze spills, or the occasional gasoline spills in refueling staging areas. Vegetation management during O&M has the potential to impact water quality through increased sedimentation from bare ground increases or spills from vehicles being used to access the sites. The use of herbicides to control noxious weeds or nonnative, invasive plant species could have short-term impacts on water quality. Surface water quality could be affected by runoff, leaching, and drift of herbicides from wind. The GLNP would not include the application of herbicides directly to surface water or groundwater expression sites like springs or seeps. Impacts could occur on downgradient environments from wind drift in application areas in upland sites. During decommissioning, most areas needed for temporary use would undergo surface reclamation, and permanent areas would undergo site stabilization to reduce sedimentation into downgradient water features.	*(see above)*	*(see above)*

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Vegetation Communities and Resources	Geotechnical investigations for and construction, O&M, and decommissioning activities of the GLNP under the Proposed Action would have the potential to affect the acres and condition of general vegetation, wetlands and riparian areas, old growth, and noxious weeds in the analysis area. There would be approximately 20,814 acres of temporary disturbance. Of these, approximately 11,616 acres (41 percent of the total temporary disturbance) would occur in the Inter-Mountain Basins Big Sagebrush Shrubland and the Inter-Mountain Basins Mixed Salt Desert Scrub land cover types. This means that vegetation removal, soil disturbance, and the potential for weed establishment and spread would be greatest in these general vegetation types. EMMs to minimize the construction footprint and to follow noxious weed prevention measures would be in place to minimize effects. Of the proposed temporary disturbance areas, approximately 45 acres (less than 1 percent) would be wetland or riparian types. However, EMMs would prevent impacts on wetlands and riparian areas by avoiding these areas with a 300-foot buffer during construction, O&M, and decommissioning. At least eight species of noxious weeds are present in the GLNP temporary ROW. To minimize the potential for construction, O&M, and decommissioning activities to introduce or spread noxious weeds, standard operating procedures from the BLM vegetation management programmatic EISs for noxious weed control are incorporated by reference and would be followed (BLM 2007, 2016; BLM Integrated Vegetation Management Handbook 1740-2).The Proponent would also follow the direction contained in Forest Service Manual 2900, Invasive Species Management, to minimize the spread of invasive plant species and noxious weeds on National Forest System lands.	Effects from geotechnical investigations and construction, O&M, and decommissioning activities for the GLNP under the Other Resource Consideration Alternative would be similar to those described for the Proposed Action. There would be approximately 5 fewer acres of temporary disturbance under the Other Resource Consideration Alternative. As under the Proposed Action, most proposed disturbance would occur in the Inter-Mountain Basins Big Sagebrush Shrubland and the Inter-Mountain Basins Mixed Salt Desert Scrub land cover types, and EMMs to minimize the construction footprint and to follow noxious weed prevention measures would be in place to minimize effects. Compared with the Proposed Action, there would be approximately 2 fewer acres of wetlands and riparian areas that would be disturbed. As under the Proposed Action, EMMs would prevent impacts on wetlands and riparian areas by avoiding these areas with a 300-foot buffer during construction, O&M, and decommissioning. Effects on noxious weeds, including measures for preventing or minimizing spread and establishment during GLNP construction, O&M, and decommissioning activities, would be the same as under the Proposed Action.	Effects from geotechnical investigations and construction, O&M, and decommissioning activities for the GLNP under the BLM Preferred Alternative would be similar to those described for the Proposed Action. There would be approximately 18 more acres of temporary disturbance under the BLM Preferred Alternative. As under the Proposed Action, most proposed disturbance would occur in the Inter-Mountain Basins Big Sagebrush Shrubland and the Inter-Mountain Basins Mixed Salt Desert Scrub land cover types, and EMMs to minimize the construction footprint and to follow noxious weed prevention measures would be in place to minimize effects. Compared with the Proposed Action, there would be approximately 7 additional acres of wetlands and riparian areas in the total disturbance area. As under the Proposed Action, EMMs would prevent impacts on wetlands and riparian areas by avoiding these areas with a 300-foot buffer during construction, O&M, and decommissioning. Effects on noxious weeds, including measures for preventing or minimizing spread and establishment during GLNP construction, O&M, and decommissioning activities, would be the same as under the Proposed Action.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Fish and Wildlife	Under the Proposed Action, approximately 29,082 acres of temporary disturbance and 7,834 acres of permanent disturbance of wildlife habitat would occur. During the construction phase, short-term impacts would include habitat fragmentation, increased noise, and heightened human presence, all of which can disrupt wildlife movement, feeding, and breeding behaviors. The implementation of seasonal restrictions (EMM BIO-31) would help mitigate these disruptions in crucial areas such as summer habitats, winter ranges, and migration corridors, particularly for mule deer. Approximately 430 acres of the temporary ROW and 100 acres of the permanent ROW would be within the Ruby Mountains mule deer population migration corridors. Other species affected include big game species, raptors, and various small mammals and reptiles. O&M activities would involve ongoing disturbances from maintenance tasks, which would continue to disrupt wildlife, particularly during sensitive periods like breeding seasons. The noise and human presence would persist, potentially leading to long-term avoidance of the area by some species. Regular inspections and repairs could lead to repeated disturbances, further impacting wildlife behavior and habitat use. During the decommissioning phase, efforts would focus on habitat recovery, although some permanent habitat loss and alteration would be inevitable, especially in biodiversity hotspots such as riparian areas, playas, and aquatic habitats. These long-term impacts could lead to changes in species composition and ecosystem functions, potentially reducing habitat quality and availability for various wildlife species over time.	The Other Resource Consideration Alternative would affect approximately 28,952 acres of wildlife habitat, about 130 fewer acres than the Proposed Action. Short-term impacts during construction would include habitat fragmentation, noise, and increased human activity, leading to temporary displacement of wildlife and disruption of their natural behaviors. Impacts on the Ruby Mountains mule deer migration corridors would be the same as described for the Proposed Action. O&M activities would involve a slightly higher impact due to the additional acreage affected. Ongoing disturbances would continue to affect wildlife behavior and habitat use, with increased maintenance activities potentially exacerbating impacts compared with the Proposed Action. During the decommissioning phase, efforts to restore habitat would be implemented, but the slightly larger disturbed area may require more extensive restoration efforts. Long-term habitat degradation would be similar, affecting key habitats and potentially leading to population declines. The cumulative long-term effects on wildlife would be similar to those under the Proposed Action, potentially leading to reduced habitat quality and ecosystem function over time, affecting species such as elk, pronghorn, raptors, and various mammals.	The BLM Preferred Alternative would disturb approximately 29,121 acres of fish and wildlife habitat, which is about 38 more acres than the Proposed Action. Short-term impacts during the construction phase would include disturbances from construction activities, leading to temporary habitat fragmentation and increased stress for wildlife. Impacts on the Ruby Mountains mule deer migration corridors would be the same as described for the Proposed Action. During the O&M phases, reduced disturbance compared with the Proposed Action would result in fewer disruptions to wildlife behavior and habitat use. Ongoing maintenance would still cause some disturbance but to a lesser extent. The lower impact on wildlife behavior and habitat use due to reduced acreage affected would benefit species such as elk, pronghorn, raptors, and various small mammals and reptiles. During the decommissioning phase, decommissioning impacts would be similar to other alternatives but with slightly less area to restore. Efforts to restore habitat would be more manageable, leading to potentially better long-term outcomes. Permanent habitat loss would still occur but to a lesser extent. Long-term impacts would involve permanent habitat loss and alteration, but the long-term reduction in disturbed acreage would result in slightly better habitat quality and ecosystem function compared with the Proposed Action. Species such as elk, pronghorn, raptors, and various small mammals and reptiles would benefit from the reduced disturbance, but ongoing monitoring and habitat restoration would be essential to mitigate long-term impacts.
Special Status Species	Geotechnical investigations, for and construction, O&M, and decommissioning activities of the GLNP would have the potential to impact special status species through habitat loss and fragmentation and direct disturbance, injury, or mortality. These impacts would extend across an area larger than the actual construction footprint, and special status species more sensitive to habitat fragmentation and disturbance may shift habitat use to other areas. The impacts of habitat loss and fragmentation would be greatest when the affected habitats are limited in distribution and the species' range is limited. The Proponent would implement a variety of measures to reduce the intensity of impacts, including EMMs (Appendix D), and the project-specific raven management plan (Appendix H), bird and bat conservation strategy (Appendix I), and eagle conservation plan (Appendix K). As a result, the GLNP would have impacts on special status species but would not result in a trend toward federal listing under the ESA nor loss of population viability. The GLNP would traverse seasonal habitat and habitat management areas for greater sage-grouse on both BLM-administered and National Forest System lands. Impacts could include habitat loss, degradation, and fragmentation; disturbance from noise or human presence; increased predation pressure; and direct injury or mortality from vehicle strikes or fence collisions. EMMs would be implemented to avoid or reduce impacts. Exempting the BLM utility corridor from seasonal restrictions in winter habitats (November 1 to February 28; BLM 2015, MD SSS-3) would mean that geotechnical investigations and construction, O&M, and decommissioning activities would likely be carried out in winter habitats	Effects from geotechnical investigations and construction, O&M, and decommissioning activities of the Other Resource Consideration Alternative would be similar to those described for the Proposed Action. The GLNP would have impacts on special status species but would not result in a trend toward federal listing under the ESA nor loss of population viability. The Other Resource Consideration Alternative would traverse marginally fewer acres of habitat and habitat management areas for greater sage-grouse than the Proposed Action. Impacts would generally be as described for the Proposed Action, including on greater sage-grouse in winter habitat areas during the winter period. The same EMMs would be implemented to avoid or reduce impacts. The Other Resource Consideration Alternative would pass through greater sage-grouse habitat management areas in neighborhood lek clusters that have met hard trigger thresholds. The Other Resource Consideration Alternative would pass through PHMAs and GHMAs in five neighborhood lek clusters on BLM-administered lands and two on National Forest System lands. Effects would be as described for the Proposed Action. Of the 58 leks within 4 miles of the GLNP temporary ROW, 19 are on BLM-administered lands, and 4 are on National Forest System lands. The Proposed Action would not satisfy the lek buffer distance objectives and planning decision in the 2015 ARMPA for 12 leks. The Proposed Action would not satisfy the Forest Service 2015 ROD's recommended or required buffer distances for four leks. Effects on greater sage-grouse from compliance with BLM and Forest Service anthropogenic disturbance cap requirements would be the same as under the Proposed Action.	Effects from geotechnical investigations for and construction, O&M, and decommissioning activities of the BLM Preferred Alternative would be similar to those described for the Proposed Action. The GLNP would have impacts on special status species but would not result in a trend toward federal listing under the ESA nor loss of population viability. The BLM Preferred Alternative would traverse marginally fewer acres of PHMAs for greater sage-grouse than the Proposed Action and marginally more acres of GHMAs; impacts would generally be as described for the Proposed Action, including impacts on greater sage-grouse in winter habitat areas during the winter period. The same EMMs would be implemented to avoid or reduce impacts. The BLM Preferred Alternative would pass through greater sage-grouse habitat management areas in neighborhood lek clusters that have met hard trigger thresholds. The BLM Preferred Alternative would pass through PHMAs and GHMAs in five neighborhood lek clusters on BLM-administered lands and two on National Forest System lands. Effects would be as described for the Proposed Action. Of the 58 leks within 4 miles of the GLNP temporary ROW, 19 are on BLM-administered lands, and 4 are on National Forest System lands. The BLM Preferred Alternative would not satisfy the lek buffer distance objectives and planning decision in the 2015 ARMPA for 12 leks. The Proposed Action would not satisfy the Forest Service 2015 ROD's recommended or required buffer distances for three leks. Effects on greater sage-grouse from compliance with BLM and Forest Service anthropogenic disturbance cap requirements would be similar to those under the Proposed Action. Like the Proposed Action, since the

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Special Status Species *(continued)*	during the winter period, while greater sage-grouse are using these areas for winter shelter and life history needs. As a result, greater sage-grouse individuals would be affected by noise, human presence, and other disturbance factors, which would cause displacement from such areas and inhibit the ability of individuals to carry out essential life history functions. The Proposed Action would pass through greater sage-grouse habitat management areas in neighborhood lek clusters that have met hard trigger thresholds per the greater sage-grouse land use plan amendments' adaptive management direction (2015 ARMPA Appendix J and Forest Service ROD Appendix C). The Proposed Action would pass through PHMAs and GHMAs in five neighborhood lek clusters on BLM-administered lands and two on National Forest System lands. On BLM-administered lands, the BLM would designate a utility corridor to allow siting of the GLNP in these areas. On National Forest System lands, the Proposed Action would not meet Forest Service 2015 ROD standards; this is because it would pass through PHMAs and GHMAs where hard triggers have been tripped, and be outside a designated utility corridor. Of the 58 leks within 4 miles of the GLNP temporary ROW, 19 are on BLM-administered lands, and 4 are on National Forest System lands. The Proposed Action would not satisfy the lek buffer distance objectives and planning decision in the 2015 ARMPA for 12 leks. The Proposed Action would not satisfy the Forest Service 2015 ROD's recommended or required buffer distances for three leks. According to the BLM's greater sage-grouse 2015 ARMPA and Forest Service's 2015 ROD, these agencies monitor the amount of anthropogenic disturbance in greater sage-grouse habitat at multiple spatial scales, and activities proposed in PHMAs are required to adhere to a 3 percent anthropogenic disturbance cap. For both agencies, there is an exception to the 3 percent anthropogenic disturbance cap at the project scale for projects in designated utility corridors that fulfill the use for which the utility corridor is designated. Since the proposed GLNP amendment (Section 2.4) would designate a utility corridor on BLM-administered lands in which the GLNP would be sited, the 3 percent anthropogenic disturbance cap at the project scale would not apply to the GLNP on BLM-administered lands. Nonetheless, the amount of anthropogenic disturbance that would result in PHMAs at the biologically significant unit and project scale from implementation of the GLNP would be below the 3 percent cap. The Proponent would comply with Nevada Administrative Code 232.400–232.480, which requires coordination with the Sagebrush Ecosystem Technical Team on the application of a compensatory mitigation program. The mitigation program would compensate for residual impacts on greater sage-grouse and greater sage-grouse habitat that would not otherwise be avoided or minimized. Precise compensatory mitigation ratios would be disclosed in the ROD. The Proponent would fund the compensatory mitigation. Detailed field surveys to identify areas of likely pinyon jay nest colonies, pygmy rabbit burrows, burrowing owl burrows, and Monte Neva paintbrush distribution in and near the temporary ROW have been completed. Surveys for other sensitive plant species and pinyon jay in 2025 are underway. EMMs have been developed to facilitate avoidance of	Like under the Proposed Action, the Proponent would fund greater sage-grouse compensatory mitigation for residual impacts on greater sage-grouse and greater sage-grouse habitat that would not otherwise be avoided or minimized. Like under the Proposed Action, detailed field surveys in and near the temporary ROW have been completed and are underway in 2025. EMMs have been developed to facilitate avoidance of sensitive species during GLNP geotechnical investigations and construction, O&M, and decommissioning activities based on survey results. There are 104 golden eagle nests within 2 miles of the GLNP temporary ROW. Like the Proposed Action, the Other Resource Consideration Alternative would not propose raptor nest removals and would incorporate raptor-specific EMMs to avoid disruption of breeding activities, including spatial and temporal avoidance of in-use nest buffers.	proposed GLNP amendment (Section 2.4) would designate a utility corridor that the GLNP would be sited in on BLM-administered lands, the 3 percent anthropogenic disturbance cap at the project scale would not apply on BLM-administered lands. Since the BLM Preferred Alternative would be located in an existing utility corridor across National Forest System lands, the 3 percent anthropogenic disturbance cap at the project scale would not apply on National Forest System lands. Like under the Proposed Action, the Proponent would fund greater sage-grouse compensatory mitigation for residual impacts on greater sage-grouse and greater sage-grouse habitat that would not otherwise be avoided or minimized. Like under the Proposed Action, detailed field surveys in and near the temporary ROW have been completed and are underway in 2025. EMMs have been developed to facilitate avoidance of sensitive species during GLNP geotechnical investigations and construction, O&M, and decommissioning activities based on survey results. There are 137 golden eagle nests within 2 miles of the GLNP temporary ROW. Like the Proposed Action, the BLM Preferred Alternative would not propose raptor nest removals and would incorporate raptor-specific EMMs to avoid disruption of breeding activities, including spatial and temporal avoidance of in-use nest buffers.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Special Status Species *(continued)*	sensitive species during GLNP geotechnical investigations and construction, O&M, and decommissioning activities based on survey results. There are 139 golden eagle nests within 2 miles of the GLNP temporary ROW. Golden eagle or other raptor nest removals are not proposed. The Proponent would incorporate raptor-specific EMMs to avoid disruption of breeding activities, including spatial and temporal avoidance of in-use nest buffers.	*(see above)*	*(see above)*
Paleontological Resources	The potential for impacts on paleontological resources would be very similar across the action alternatives. The presence of medium to very high potential, Potential Fossil Yield Classification 3, 4, and 5 geological units indicates the possibility of any of the alternatives to encounter scientifically important paleontological resources that would result in avoidance, recovery, or other mitigation. Soil loss and access associated with geotechnical investigations and construction, O&M, and decommissioning activities would increase the risk of damage, destruction, or loss of scientifically important fossils or localities through exposure, erosion, weathering, and collecting. Under the action alternatives, the current legal and regulatory protections in place on federal lands would be protective against impacts on paleontological resources. Under the action alternatives, project adherence to EMMs related to worker education, paleontological resource management services standards, and the development of a monitoring and mitigation plan that provides for unanticipated discoveries (EMMs PALEO-1 through PALEO-4 in Appendix D) would also be protective against impacts on paleontological resources from increased access and surface-disturbing activities related to the GLNP.	Anticipated impacts are the same as under the Proposed Action.	Anticipated impacts are the same as under the Proposed Action.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Cultural Resources	Under the Proposed Action, as under all alternatives, cultural resources would continue to be managed according to current law, regulation, and policy. Combined with project adherence to EMMs (Appendix D) and a historic properties treatment plan, this would result in avoidance or mitigation of most impacts on cultural resources from the GLNP on federally administered lands. Under the Proposed Action, the area where physical impacts are anticipated (the direct area of potential effect [DAPE]) contains 801 known cultural resource locations. Of these locations, 141 are known historic or potentially historic properties and 44 are cultural resources identified by tribes. The area where visual impacts are anticipated (the visual area of potential effect [VAPE]) contains 952 known cultural resource locations. Of these locations, 83 are potentially affected historic or potentially historic properties and 55 are cultural resources identified by tribes. While the intention is for the GLNP to avoid impacts on cultural resources through design, it is anticipated that some mitigation would be necessary to resolve potential adverse effects on historic properties under the NHPA. Approximately 3.6 miles of the Pony Express NHT and 4.3 miles of the Central Overland Emigrant Route-Simpson Route would be within the proposed transmission line and utility corridor. The transmission line would cross the Pony Express NHT a total of five times and would cross the Central Overland Emigrant Route-Simpson Route a total of seven times. The proposed access roads would occur between the northern and southern units of the the Numu Newe Special Management Area (SMA). Impacts on cultural resources may also include temporary, short-term effects associated with auditory, atmospheric, and visual intrusions from the presence and activity of geotechnical investigation equipment and personnel. All proposed areas for geotechnical investigations have been inventoried to Class III standards for cultural resources. The investigations would avoid impacts on cultural resources; therefore, the BLM does not anticipate adverse effects on historic properties from geotechnical investigations. It is anticipated that impacts on cultural resources would be similar among the action alternatives, and greater than those under the No Action Alternative.	Under the Other Resource Consideration Alternative, as under all alternatives, cultural resources would continue to be managed according to current law, regulation, and policy. Combined with project adherence to EMMs (Appendix D) and a historic properties treatment plan, this would result in avoidance or mitigation of most impacts on cultural resources from the GLNP on federally administered lands. Under the Other Resource Consideration Alternative, the area where physical impacts are anticipated (the DAPE) contains 739 known cultural resource locations. Of these locations, 104 are known historic or potentially historic properties and 29 are cultural resources identified by tribes. The area where visual impacts are anticipated (the VAPE) contains 908 known cultural resource locations. Of these locations, 75 are potentially affected historic or potentially historic properties and 49 are cultural resources identified by tribes. While the intention is for the GLNP to avoid impacts on cultural resources through design, it is anticipated that some mitigation would be necessary to resolve potential adverse effects on historic properties under the NHPA. Approximately 1.4 miles of the Pony Express NHT and 5.5 miles of the Central Overland Emigrant Route-Simpson Route would be within the proposed transmission line and utility corridor. The transmission line would cross the Pony Express NHT a total of 4 times and would cross the Central Overland Emigrant Route-Simpson Route a total of 16 times. The proposed access roads would occur between the northern and southern units of the Numu Newe SMA. Impacts from geotechnical investigations would be the same as those under the Proposed Action. It is anticipated that impacts on cultural resources would be similar among the action alternatives and greater than those under the No Action Alternative.	Under the BLM Preferred Alternative, as under all alternatives, cultural resources would continue to be managed according to current law, regulation, and policy. Combined with project adherence to EMMs (Appendix D) and a historic properties treatment plan, this would result in avoidance or mitigation of most impacts on cultural resources from the GLNP on federally administered lands. Under the BLM Preferred Alternative, the area where physical impacts are anticipated (the DAPE) contains 810 known cultural resource locations. Of these locations, 146 are known historic or potentially historic properties and 46 are cultural resources identified by tribes. The area where visual impacts are anticipated (the VAPE) contains 943 known cultural resource locations. Of these locations, 83 potentially affected historic or potentially historic properties and 55 are cultural resources identified by tribes. While the intention is for the GLNP to avoid impacts on cultural resources through design, it is anticipated that some mitigation would be necessary to resolve potential adverse effects on historic properties under the NHPA. Approximately 3.8 miles of the Pony Express NHT and 4.5 miles of the Central Overland Emigrant Route-Simpson Route would be within the proposed transmission line and utility corridor. As under the Proposed Action, the transmission line would cross the Pony Express NHT a total of five times and would cross the Central Overland Emigrant Route-Simpson Route a total of seven times. The proposed access roads would occur between the northern and southern units of the Numu Newe SMA. Impacts from geotechnical investigations would be the same as those under the Proposed Action. It is anticipated that impacts on cultural resources would be similar among the action alternatives and greater than those under the No Action Alternative.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Native American Religious Concerns	Under the Proposed Action, the geotechnical investigations and construction, O&M, and decommissioning activities of the GLNP would result in impacts on tribal interests, including Native American religious concerns. Temporary impacts include loss of access to important locations, removal of or damage to resources important to tribes, changes in views because of ground disturbance, increased noise, and increased human presence. Long-term impacts on tribal interests also include removal of or damage to resources important to tribes and changes in important viewsheds, particularly where locations of tribal importance intersect the transmission line or associated infrastructure. While many impacts associated with construction would decrease over time, the presence of infrastructure in the vicinity of important tribal locations could disrupt traditional or religious uses. Additionally, the presence of new infrastructure could prevent or alter access to areas of tribal use. All access roads, both new and improved, would be maintained as permanent components of the action alternatives and may increase access-related impacts over the No Action Alternative. Under the Proposed Action, the BLM would designate a utility corridor along the BLM ROW. With this designation, future linear ROW applications within proximity to this utility corridor would be collocated, unless review determined a need for an alternative location. Any additional undertakings would increase the potential for impacts such as those described above within the utility corridor and reduce the potential for impacts outside of it. Cultural resource-specific EMMs related to worker education, temporary site boundary marking, cultural resource management services standards, restriction of project-related travel to designated routes, development of a mitigation plan and unanticipated discovery plan, and commitment to seeking to avoid impacts on tribal interests as identified through subsequent consultation and tribal monitoring (EMMs CULT-1 through CULT-8 in Appendix D) would be protective against impacts on cultural resources of interest to tribes under the Proposed Action. A government-to-government consultation meeting on July 16, 2024, indicated that the current route of the Proposed Action from Hickison Summit through the Toiyabe Range, similar to the closely aligned Forest Service Northern Alternative segment under the BLM Preferred Alternative, would cause a greater level of impact on tribal interests, including Native American religious concerns, than the Other Resource Consideration Alternative.	Under the Other Resource Consideration Alternative, the geotechnical investigations and construction, O&M, and decommissioning activities of the GLNP would result in temporary and long-term impacts on tribal interests, including Native American religious concerns, as described under the Proposed Action. Some impacts, such as those related to surface disturbance, are anticipated to be greater under this alternative than under the Proposed Action. This is due to the slightly longer route of the transmission line and more extensive construction necessary to complete the project, particularly in areas without existing transmission infrastructure. A government-to-government consultation meeting on July 16, 2024, indicated that the current route of the Other Resource Consideration Alternative from Hickison Summit through the Toiyabe Range (also referred to as the Forest Service Southern Alternative) would cause a lower level of impacts on tribal interests, including Native American religious concerns, than the Proposed Action or the BLM Preferred Alternative.	Under the BLM Preferred Alternative, the geotechnical investigations for and construction, O&M, and decommissioning activities of the GLNP would result in temporary and long-term impacts on tribal interests, including Native American religious concerns, as described under the Proposed Action. Impacts are anticipated to be similar to those described under the Proposed Action due to the similarity of the transmission line placement and footprint. A government-to-government consultation meeting on July 16, 2024, indicated that the current route of the BLM Preferred Alternative from Hickison Summit through the Toiyabe Range (also referred to as the Forest Service Northern Alternative), which is similar to the closely aligned Proposed Action, would cause a greater level of impact on tribal interests, including Native American religious concerns, than the Other Resource Consideration Alternative.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Visual Resources	Impacts would affect visual resources in the short term (during geotechnical investigations, construction, and decommissioning) and the long term (during O&M). Adherence to Proponent-committed environmental protection measures and resource-specific EMMs VIS-1 through VIS-19 (see Appendix D) would minimize the impacts on visual resources. Also, the BLM would follow the BMPs in Night Sky and Dark Environments: Best Management Practices for Artificial Light at Night on BLM-Managed Lands. The long-term contrast would conform to the visual resource management (VRM) class objectives. In areas with unclassified VRM designation (with scenic quality ratings of A, B, or C), similar impacts on the characteristic landscape would occur. Geotechnical investigations, construction, O&M, and decommissioning would add artificial light and glare to areas in the analysis area that are nearly devoid of artificial light. Artificial light and glare would affect the visibility of stars and other astronomical phenomena in the surrounding area and could affect the presence and behavior of animals in the analysis area. Adherence to resource-specific EMMs VIS-1 through VIS-19 (see Appendix D) would be implemented to mitigate these effects and to minimize disruptions to nighttime conditions.	Impacts on visual resources would be similar to those under the Proposed Action with minor variations. Variations would depend on the changes to the route of the transmission line as well as the existing landscape features and presence of existing built features (such as transmission lines and substations) that occur within or adjacent to the specific key observation point (KOP). However, under this alternative, the long-term contrast would not conform to the VRM class objective used for the analysis for one of the KOPs (KOP 22S). Changes would not repeat the basic elements of form, line, and texture found in the predominant natural features of the characteristic landscape. This is because of the proximity of this alternative to the KOP, the lack of similar infrastructure and natural features nearby, the lack of terrain capable of screening the project, and the height of the transmission line compared with the surrounding landscape elements (mostly short grasses and bushes). The long-term contrast would conform to the VRM class objective for the other KOPs. In areas with unclassified VRM designation (with scenic quality ratings of A, B, or C), similar impacts on the characteristic landscape would occur. Impacts on night skies would be the same as those under the Proposed Action.	Impacts on visual resources would be similar to those under the Proposed Action with minor variations. Variations would depend on the changes to the route of the transmission line as well as the existing landscape features and presence of existing built features (such as transmission lines and substations) that occur within or adjacent to the specific KOP. The long-term contrast would conform to the VRM class objectives. In areas with unclassified VRM designation (with scenic quality ratings of A, B, or C), similar impacts on the characteristic landscape would occur. Impacts on night skies would be the same as those under the Proposed Action.
Lands, Realty, and Cadastral Survey	The Proposed Action proposes a utility corridor spanning approximately 198 miles, primarily on BLM-administered lands. This corridor would concentrate future infrastructure projects, reducing impacts outside the designated area. Approximately 168 miles (or approximately 85 percent) of the proposed utility corridor would be collocated or dually collocated with existing 230 and 345 kV transmission lines. The project area includes the following different ROW land use allocations: avoidance (44.9 percent), exclusion (1.0 percent), and open (54.1 percent), with the majority being open to ROW development. The project would predominantly affect transmission lines (65.8 percent), followed by fencing (9.9 percent) and roads (5.3 percent). Temporary ground disturbance from construction would affect about 29,082 acres, while permanent disturbance from O&M would impact approximately 7,834 acres. Although the Proposed Action may temporarily impact existing ROW users during construction, the BLM would coordinate with permit holders to minimize these effects. The proposed transmission line would comply with BLM land use plans and some local plans but is inconsistent with the 1986 Toiyabe Forest Plan standards and guidelines for greater sage-grouse habitats and some Eureka County policies. Most of the project area would remain on BLM-administered lands, which would minimize conflicts with other federal agencies. There would be no impacts on lands, realty, or Cadastral Survey attributed to geotechnical investigations.	The Other Resource Consideration Alternative proposes a utility corridor spanning approximately 205 miles, primarily on BLM-administered lands. Approximately 145 miles (or approximately 71 percent) of the proposed utility corridor would be collocated or dually collocated with existing 230 and 345 kV transmission lines. The project area includes the following different ROW land use allocations: avoidance (38.1 percent), exclusion (0.9 percent), and open (61.0 percent). This alternative would have the highest number of areas open to ROWs, with minimal impact on existing ROW authorizations. The project would predominantly affect transmission lines (62.1 percent), followed by fencing (12.3 percent) and roads (6.2 percent). This alternative would largely align with federal, state, and local land use plans, except for some Eureka County policies. It aligns with the standards and guidelines under the 1986 Toiyabe Forest Plan and would conform to the RMPs in the BLM Carson City, Battle Mountain, and Ely District Offices, as amended by the 2015 ARMPA. Temporary ground disturbance would increase by approximately 141 acres, compared with the Proposed Action. Most of the project area would remain on BLM-administered lands, which would minimize conflicts with other federal agencies. There would be no impacts on lands, realty, or Cadastral Survey attributed to geotechnical investigations.	The BLM Preferred Alternative proposes a utility corridor spanning approximately 205 miles, primarily on BLM-administered lands. Approximately 166 miles (or approximately 81 percent) of the proposed utility corridor would be collocated or dually collocated with existing 230 and 345 kV transmission lines. The project area comprises three different ROW land use allocations: avoidance (45.0 percent), exclusion (0.1 percent), and open (54.9 percent). This alternative would cross the second-highest number of ROW exclusion areas, with minimal impact on existing ROW authorizations. The project would predominantly affect transmission lines (65.1 percent), followed by fencing (9.5 percent) and roads (4.9 percent). The alternative would largely align with federal, state, and local land use plans, except some Eureka County policies. It aligns with the standards and guidelines under the 1986 Toiyabe Forest Plan and would conform to the RMPs in the BLM Carson City, Battle Mountain, and Ely District Offices, as amended by the 2015 ARMPA. Temporary ground disturbance would decrease by approximately 39 acres, compared with the Proposed Action. Most of the project area would remain on BLM-administered lands, which would minimize conflicts with other federal agencies. There would be no impacts on lands, realty, or Cadastral Survey attributed to geotechnical investigations.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Special Designations	Under the Proposed Action, the proposed transmission line and utility corridor, including geotechnical investigations, construction, O&M, and decommissioning activities, would overlap approximately 3.6 miles of the Pony Express NHT and 4.3 miles of the Central Overland Emigrant Route-Simpson Route (an eligible NHT segment). The GLNP would cross the trails five and seven times, respectively. Of the overlapping Pony Express NHT miles, 1.9 miles are managed as ROW avoidance and 1.7 miles are managed as open to ROW development. Of the overlapping Central Overland Emigrant Route-Simpson Route miles, 2.2 miles are managed as ROW avoidance and 2.1 miles are managed as open to ROW development. ROW avoidance affords the NHT and eligible NHT segment additional protection because the area is managed for ROWs to be avoided if at all feasible. Impacts on the NHT and eligible NHT segment from geotechnical investigations, and construction and O&M activities could include direct ground disturbances from work and staging areas and temporary visual and noise impacts. These could impact the trail's scenic and visual qualities by introducing components not similar to common built features in the existing landscape. Impacts could also include disturbances from helicopter or vehicle use during annual inspections and emergency maintenance. The proposed transmission line and utility corridor, including geotechnical investigations, and construction, O&M, and decommissioning activities, would overlap 148 acres of the Illipah Creek eligible wild and scenic river (WSR) corridor and 184 acres of the Simpson Creek eligible WSR corridor. In 2022, a suitability study was completed in Nevada for the Battle Mountain and Ely District Offices. The final suitability studies determined neither the Simpson Creek nor the Illipah Creek WSR segments met the criteria to be suitable for inclusion in the National WSR System (BLM 2022a and BLM 2022b). The proposed access roads, including geotechnical investigations, and construction, O&M, and decommissioning activities, would overlap approximately 41.1 acres of the Numu Newe SMA. Impacts on the SMA from geotechnical investigations and construction activities would include direct ground disturbance from work and staging areas. These impacts could affect the historic, cultural, archaeological, natural, and educational resources for which the SMA was designated. The proposed transmission line and utility corridor, including geotechnical investigations, and construction, O&M, and decommissioning activities, would not directly overlap any wilderness areas or wilderness study areas (WSAs). Though no permanent closures would occur under the Proposed Action, recreation access could be limited due to nearby construction activities and from temporary fencing. Impacts associated with O&M activities could include disturbances from helicopter or vehicle use during annual inspections and emergency maintenance. Maintenance roads would be constructed to improve access, thereby potentially increasing recreational use and impacts on wilderness characteristics, including impacting the naturalness, outstanding opportunities for solitude or primitive and unconfined types of recreation, and any supplemental values.	Under the Other Resource Consideration Alternative, the proposed transmission line and utility corridor, including geotechnical investigations and construction, O&M, and decommissioning activities, would overlap approximately 1.4 miles of the Pony Express NHT and 5.5 miles of the Central Overland Emigrant Route-Simpson Route (an eligible NHT segment). The GLNP would cross the trails 4 and 16 times, respectively. Of the overlapping Pony Express NHT miles, 0.2 miles are managed as ROW avoidance and 1.2 miles are managed as open to ROW development. Of the overlapping Central Overland Emigrant Route-Simpson Route miles, 2.2 miles are managed as ROW avoidance and 2.8 miles are managed as open to ROW development. Impacts would be similar to those analyzed under the Proposed Action; however, there would be 0.5 fewer miles of the Pony Express NHT overlapping lands managed as open to ROW development and 0.7 more miles of the Central Overland Emigrant Route-Simpson Route overlapping lands managed as open to ROW development. The proposed transmission line and utility corridor, including geotechnical investigations and construction, O&M, and decommissioning activities, would overlap both eligible WSR segments, Illipah Creek and Simpson Creek. Impacts would be the same as those analyzed under the Proposed Action. The proposed access roads, including construction, O&M, and decommissioning, would overlap approximately 41.1 acres of the Numu Newe SMA. Impacts would be the same as those analyzed under the Proposed Action. Impacts on Wilderness and WSAs would be the same as those analyzed under the Proposed Action. None of the proposed boreholes for geotechnical investigations would overlap WSRs, NHTs, SMAs, wilderness areas, or WSAs; therefore, there would be no impacts on WSRs, NHTs, SMAs, wilderness areas, or WSAs from the geotechnical investigations.	Under the BLM Preferred Alternative, the proposed transmission line and utility corridor, including geotechnical investigations and construction, O&M, and decommissioning activities, would overlap approximately 3.8 miles of the Pony Express NHT and 4.5 miles of the Central Overland Emigrant Route-Simpson Route. The GLNP would cross the trails five and seven times, respectively. Of the overlapping Pony Express NHT miles, 1.8 miles are managed as ROW avoidance and 2.0 miles managed as open to ROW development. Of the overlapping Central Overland Emigrant Route-Simpson Route miles, 2.0 miles are managed as ROW avoidance and 2.5 miles are managed as ROW open. Impacts would be similar to those described under the Proposed Action; however, there would be 0.3 more miles of the Pony Express NHT overlapping lands managed as open to ROW development and 0.4 more miles of the Central Overland Emigrant Route-Simpson Route managed as open to ROW development. The proposed transmission line and utility corridor, including geotechnical investigations and construction, O&M, and decommissioning activities, would overlap both eligible WSR segments, Illipah Creek and Simpson Creek. Impacts would be the same as those analyzed under the Proposed Action. The proposed access roads, including construction, O&M, and decommissioning, would overlap approximately 41.1 acres of the Numu Newe SMA. Impacts would be the same as those analyzed under the Proposed Action. Impacts on Wilderness and WSAs would be the same as those analyzed under the Proposed Action. None of the proposed boreholes for geotechnical investigations would overlap WSRs, NHTs, SMAs, wilderness areas, or WSAs; therefore, there would be no impacts on WSRs, NHTs, SMAs, wilderness areas, or WSAs from the geotechnical investigations.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Special Designations *(continued)*	None of the proposed boreholes for geotechnical investigations would overlap WSRs, NHTs, SMAs, wilderness areas, or WSAs; therefore, there would be no impacts on WSRs, NHTs, SMAs, wilderness areas, or WSAs attributed to the geotechnical investigations.	*(see above)*	*(see above)*
Social Values and Economic Conditions	Under the Proposed Action, during the construction of the GLNP, the temporary increase in population in the surrounding communities due to the expected number of employees could impact social conditions and public services through increased strain on the housing market in the analysis area; reduced quality of life and a change in the rural lifestyle due to increased activity and traffic; and increased demand and strain on law enforcement, fire departments, emergency medical responders, and the municipal water systems in the analysis area. These impacts could be especially impactful in areas with limited available housing (especially temporary housing vacancies), areas with small law enforcement departments and fire departments, areas with few medical facilities, and areas with limited capacity to add more water service. However, the impacts would be short term, only lasting until the completion of the construction (about 2 years). In addition, EMMs SE-1 and TRANSP-1 through TRANSP-4 in Appendix D would help minimize these impacts. Given the short-term nature of the construction employment opportunities, there is no anticipated impact on demand for public education for employees' families during construction of the GLNP. It is anticipated that there would be no impacts on populations, social conditions, and public services during O&M activities. During decommissioning of the GLNP, impacts on social conditions and public services due to temporary increases in populations would be similar to those relating to construction; however, the impacts would likely be smaller and shorter in duration. Under the Proposed Action, geotechnical investigations, construction and decommissioning activities could temporarily reduce access to forage and impact livestock grazing through roads, access to stock water sources, temporary fencing, noise, and activity, which would displace livestock. These temporary impacts on forage and livestock could have a short-term impact on economic conditions, social conditions, and access and quality of the nonmarket values associated with livestock grazing through a reduction in jobs, labor income, total economic output, quality of life, and access and quality of nonuse and existence values, if there is an increase in cost associated with mitigating impacts or finding alternative sources of forage during this period. However, the impacts on economic conditions would only last until the construction and decommissioning activities are complete and the land is reclaimed. During O&M of the GLNP, there are no anticipated impacts on economic conditions, social conditions, and access and quality of nonmarket values due to changes in livestock grazing operations on BLM-administered lands. Geotechnical investigations under the Proposed Action would not result in any impacts on social conditions and public services, energy costs for Nevada ratepayers, economic conditions, the quality of goods with nonmarket values, or property values. Under the Proposed Action, the costs of construction for building the GLNP and decommissioning the GLNP would be passed on to the	Impacts on social conditions and public services during construction, O&M, and decommissioning of the GLNP due to population changes under the Other Resource Consideration Alternative would be similar to those under the Proposed Action. However, the transmission route would run close to the town of Austin, leading to increased impacts on social conditions in Austin. Impacts on economic and social conditions from changes in livestock grazing attributed to the geotechnical investigations for and construction, O&M, and decommissioning of the GLNP would be the same under the Other Resource Consideration Alternative as under the Proposed Action. Impacts on electricity rates and bills to residents in surrounding communities attributed to the construction, O&M, and decommissioning of the GLNP would be the same as under the Proposed Action. Impacts on economic conditions during construction, O&M, and decommissioning through changes in jobs, labor income, economic output, unemployment rates, and public services funded by property tax revenues would be similar to those under the Proposed Action. Impacts on the accessibility and quality of nonmarket values during construction, O&M, and decommissioning under the Other Resource Consideration Alternative would be similar to those under the Proposed Action. However, due to the proximity of the GLNP to the town of Austin, the impacts on access to and quality of nonmarket values would be greater in Austin, compared with under the Proposed Action. Impacts on property values during construction, O&M, and decommissioning under the Other Resource Consideration Alternative would be similar to those under the Proposed Action. However, due to the proximity of the GLNP to the town of Austin, the impacts on property values would be greater in Austin, compared with under the Proposed Action. Geotechnical investigations under the Other Resource Consideration Alternative would not result in any impacts on social conditions and public services, energy costs for Nevada ratepayers, economic conditions, the quality of goods with nonmarket values, or property values.	Impacts on social conditions and public services during construction, O&M, and decommissioning of the GLNP due to population changes would be the same under the BLM Preferred Alternative as under the Proposed Action. Impacts on economic and social conditions, under the BLM Preferred Alternative, from changes in livestock grazing attributed to the geotechnical investigations for and construction, O&M, and decommissioning of the GLNP would be the same as under the Proposed Action. Impacts on electricity rates and bills to residents in surrounding communities attributed to the construction, O&M, and decommissioning of the GLNP would be the same as under the Proposed Action. Impacts on economic conditions during construction, O&M, and decommissioning through changes in jobs, labor income, economic output, unemployment rates, and public services funded by property tax revenues would be similar to those under the Proposed Action. Impacts on the accessibility and quality of nonmarket values during construction, O&M, and decommissioning under the BLM Preferred Alternative would likely be the same as under the Proposed Action. Impacts on property values during construction, O&M, and decommissioning under the BLM Preferred Alternative would be the same as under the Proposed Action. Geotechnical investigations under the BLM Preferred Alternative would not result in any impacts on social conditions and public services, energy costs for Nevada ratepayers, economic conditions, the quality of goods with nonmarket values, or property values.

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Social Values, Economic Conditions *(continued)*	electricity customers who are served by utility providers that would use the GLNP through higher electricity costs, which could cause strain on residential customers, especially those who live in areas with relatively high electricity rates or with rates that have increased substantially over the past couple of years. The increase in electricity rates would depend on approval by the State of Nevada Public Utilities Commission (the government entity responsible for setting the electricity rate and approving any increases in the rate); therefore, the magnitude of impact on residents from increases in electricity rates is uncertain. During O&M, the transmission capacity supplied by the GLNP could allow energy sources to flow to more regions where energy sources are needed, which could result in reduced electricity prices, stabilization of the electric grid, and fewer electricity price spikes. The residents in surrounding communities and counties where the energy would be distributed would see the greatest impact from the additional transmission capacity; however, the magnitude of the impact is uncertain. Under the Proposed Action, on an annual average, the in-state expenditures from construction of the GLNP would support about 638 additional total jobs (about 400 additional direct jobs), $97.9 million more in total labor income (about $85.9 million in direct income labor), and $152.0 million more in total economic output (about $103.9 million in direct economic output) across Nevada, compared with the No Action Alternative. The additional supported jobs could help reduce the regional unemployment rates. The impacts on economic conditions would be temporary, only lasting until the completion of the construction. Property taxes would be collected from the land that is acquired through the GLNP, which would affect the quality of life of residents in the surrounding communities by supporting public services funded by property taxes. During O&M, on an annual average, the expenditures and employment are expected to support about 13 additional total jobs, about $1.2 million more in total labor income, and about $2.1 million more in total economic output across Nevada, compared with the No Action Alternative. These impacts on economic conditions would last throughout the life of the GLNP, which is expected to be 30 years. During decommissioning, direct and total impacts on economic conditions through changes in jobs, labor income, and economic output through increased expenditures would be similar but smaller and shorter in duration than those relating to construction. Under the Proposed Action, construction of the GLNP could lead to impacts on the accessibility and quality of nonmarket values, such as reduced access to clean air, subsistence resources, and cultural and tribal resources; reduced quality of life due to increased traffic and activity; reduced accessibility and quality of visual resources, natural scenery, and primitive recreational opportunities; and reduced access to nonmarket values associated with conservation of wild horses and burros. Implementing EMMs, as described in Appendix D, would help to limit the impacts on the accessibility and quality of nonmarket values from many of these changes in quality and access to resources. Additionally, changes in access to and quality of these resources would likely be short term, lasting until the completion of the GLNP's construction.	*(see above)*	*(see above)*

Resource/Resource Use	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Social Values, Economic Conditions *(continued)*	During the ongoing O&M activities, there would not likely be impacts on the accessibility and quality of nonmarket values due to changes in access to clean air, air quality-related health and safety, cultural and tribal resources, and wild horses and burros. Ongoing O&M activities could result in small impacts on the accessibility and quality of nonmarket values due to changes in access to subsistence resources associated with changes in vegetation management and the introduction and spread of invasive plant species and noxious weeds; reduced quality of life for residents due to increased traffic; and changes in quality of life from changes in the landscape character and scenic quality, as well as access to solitude, primitive landscapes, and scenery. Adherence to EMMs, as identified in Appendix D, would help to reduce the impacts of scenery changes on access to and quality of nonmarket values for the surrounding communities. Under the Proposed Action, the designation of a utility corridor could consolidate the impacts on the accessibility and quality of nonmarket values and lead to reduced access to and quality of nonmarket values in acres in the utility corridor, compared with acres away from the utility corridor. Such impacts could consist of reduced access to subsistence resources and changes in the landscape character and scenic quality due to the BLM's collocation of new applications for linear ROWs in the utility corridor. However, the magnitude of impacts on accessibility and quality of nonmarket values in the utility corridor would depend on the number of applications that the BLM receives. Decommissioning of the GLNP would likely lead to impacts on the accessibility and quality of nonmarket values from changes in air quality and access to clean air, access to subsistence resources, access to cultural and tribal resources, quality of life due to traffic and visual scenery, access to solitude and primitive landscapes, and wild horse and burro conservation that are similar to but smaller and shorter in duration than the impacts during construction. Under the Proposed Action, construction and O&M of the GLNP could lead to a small decrease in property values for those residential properties where the transmission line would be visible. However, the impacts from the GLNP on property values would likely be short term and would likely dissipate over the length of the project, especially as more screen cover and vegetation around the properties are established to shield the view of the transmission lines. The designation of a utility corridor could consolidate the impacts on property values, which could lead to an increase in impacts for those residential properties that have a direct line of sight to the utility corridor and a decrease in impacts for those residential properties farther away from the utility corridor. However, the magnitude of impacts on property values in and around the utility corridor would depend on the number of new applications for linear ROWs that the BLM receives. There could be an increase in property values attributed to the decommissioning of the GLNP for those properties that are close to and have a direct line of sight to the transmission line or structures. However, the impact from decommissioning the GLNP would likely be very small.	*(see above)*	*(see above)*

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ACRONYMS AND ABBREVIATIONS

	Full Phrase
ACEC	area of critical environmental concern
ACHP	Advisory Council on Historic Preservation
AML	appropriate management level (wild horses and burros)
APE	area of potential effect
APLIC	Avian Power Line Interaction Committee
ARMPA	Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment
BCC	bird of conservation concern
BLM	United States Department of the Interior, Bureau of Land Management
BSU	biologically significant unit
CEAA	cumulative effects analysis area
CFR	Code of Federal Regulations
COM	construction, operation, and maintenance
DAPE	direct area of potential effect
dBA	A-weighted decibels
DOD	United States Department of Defense
DOI	United States Department of the Interior
EIS	environmental impact statement
EMM	environmental management measure
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act of 1976
Forest Service	United States Department of Agriculture, Forest Service
GHMA	general habitat management area
GIS	geographic information systems
GLNP	Greenlink North Transmission Project
GLWP	Greenlink West Transmission Project
HPTP	historic properties treatment plan
HUC	hydrologic unit code
IK	Indigenous knowledge
IMPLAN	Impact Analysis for Planning Model
IPaC	Information for Planning and Consultation
KOP	key observation point
kV	kilovolt

MLRA	major land resource area
NDNH	Nevada Division of Natural Heritage
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NHT	national historic trail
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NV Energy	Nevada Power Company and Sierra Pacific Power Company
NVSO	United States Department of the Interior, Bureau of Land Management, Nevada State Office
O&M	operations and maintenance
OHMA	other habitat management area
ORV	outstandingly remarkable value
PFYC	Potential Fossil Yield Classification
PHMA	priority habitat management area
PPOD	preliminary plan of development
Proponent	NV Energy
RFFAs	reasonably foreseeable future actions
RMP	resource management plan
RMPA	resource management plan amendment
ROD	record of decision
ROE	right of entry
ROW	right-of-way
RV	recreational vehicle
SBE	standards for boundary evidence
SF-299	Application for Transportation, Utility Systems, Telecommunications, and Facilities on Federal Lands and Property (Standard Form 299)
SHPO	State Historic Preservation Office
SMA	special management area
SWReGAP	Southwest Regional Gap Analysis Project
TAWS	Targeted Annual Warning System
THPO	Tribal Historic Preservation Officer
TMDL	total maximum daily load
Toiyabe Forest Plan	Toiyabe Forest Land and Resource Management Plan

US	United States
USC	US Code
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VAPE	visual area of potential effect
VRI	visual resource inventory
VRM	Visual Resource Management
WEG	wind erodibility group
WMA	wildlife management area
WOTUS	waters of the United States
WSA	wilderness study area
WSR	wild and scenic river

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Chapter 1. Introduction

1.1 Introduction

Nevada Power Company and Sierra Pacific Power Company, doing business as NV Energy (Proponent), propose to build the Greenlink North Transmission Project (GLNP; the project) in Nevada. The GLNP would consist of a new, approximately 235-mile, 525-kilovolt (kV) overhead electric transmission line connecting to a system of 525 kV, 345 kV, and 230 kV gateway transformer facilities; substations; and ancillary project components that would be constructed between Ely and Yerington in White Pine, Eureka, Lander, Churchill, and Lyon Counties, Nevada (see Figure 1-1, Greenlink North Transmission Project, BLM Preferred Alternative). The 525 kV transmission line would generally parallel portions of United States (US) Highway 50 and an existing 230 kV transmission line for most of its length. For approximately 201 miles, the proposed 525 kV transmission line would be dually collocated with existing 230 and 345 kV transmission lines. The GLNP electric transmission facilities would be predominantly on lands administered by the US Department of the Interior (DOI), Bureau of Land Management (BLM) with shorter segments of the project crossing lands administered by the US Department of Defense (DOD), Department of the Navy; US Department of Agriculture, Forest Service (Forest Service); and private landowners. The BLM is the lead agency for the GLNP.

On September 22, 2020, the Proponent filed an Application for Transportation, Utility Systems, Telecommunications, and Facilities on Federal Lands and Property (Standard Form 299 [SF-299]) and a preliminary plan of development (PPOD, as updated in 2024; NV Energy 2024)[1] with the BLM for a Federal Land Policy and Management Act of 1976 (FLPMA) right-of-way (ROW) authorization. The Proponent also submitted a SF-299 to the Forest Service on February 9, 2023, to construct, operate, and maintain the GLNP. The BLM grants ROWs and the Forest Service grants special use permits (hereafter collectively referred to as, "ROW grants"). In the applications, the Proponent has applied for 30-year ROW grants with an option to renew and 600-foot-wide, short-term ROW grants (up to 5 years)—or 1,200-foot-wide, short-term ROW grants in areas with steep terrain—for construction. On March 22, 2021, the Proponent received approval for the various electric transmission facilities associated with the proposed project from the State of Nevada Public Utilities Commission.

This final environmental impact statement (EIS) and proposed resource management plan amendment (RMPA) has been prepared by the DOI, with the BLM, through the Nevada State Office (NVSO), as lead federal agency. The Final EIS/Proposed RMPA follows the DOI's National Environmental Policy Act (NEPA) regulations (43 Code of Federal Regulations [CFR] 46) in effect as of October 15, 2008, and the Forest Service's NEPA regulations (36 CFR 220). The NEPA process for evaluating the GLNP began on May 26, 2023, when a Notice of Intent (NOI) to prepare an EIS was published in the *Federal Register*. The Final EIS/Proposed RMPA also aligns with the directives found in Executive Order 14154, Unleashing American Energy,

[1] A plan of development thoroughly describes an applicant's project from the initial construction phase through termination and rehabilitation of the public land. It contains a detailed description of the project, facility design features, operation and maintenance features, stabilization and rehabilitation features, and termination and restoration information.

and Secretarial Orders 3417, Addressing the National Energy Emergency, and 3418, Unleashing American Energy.

1.2 Background

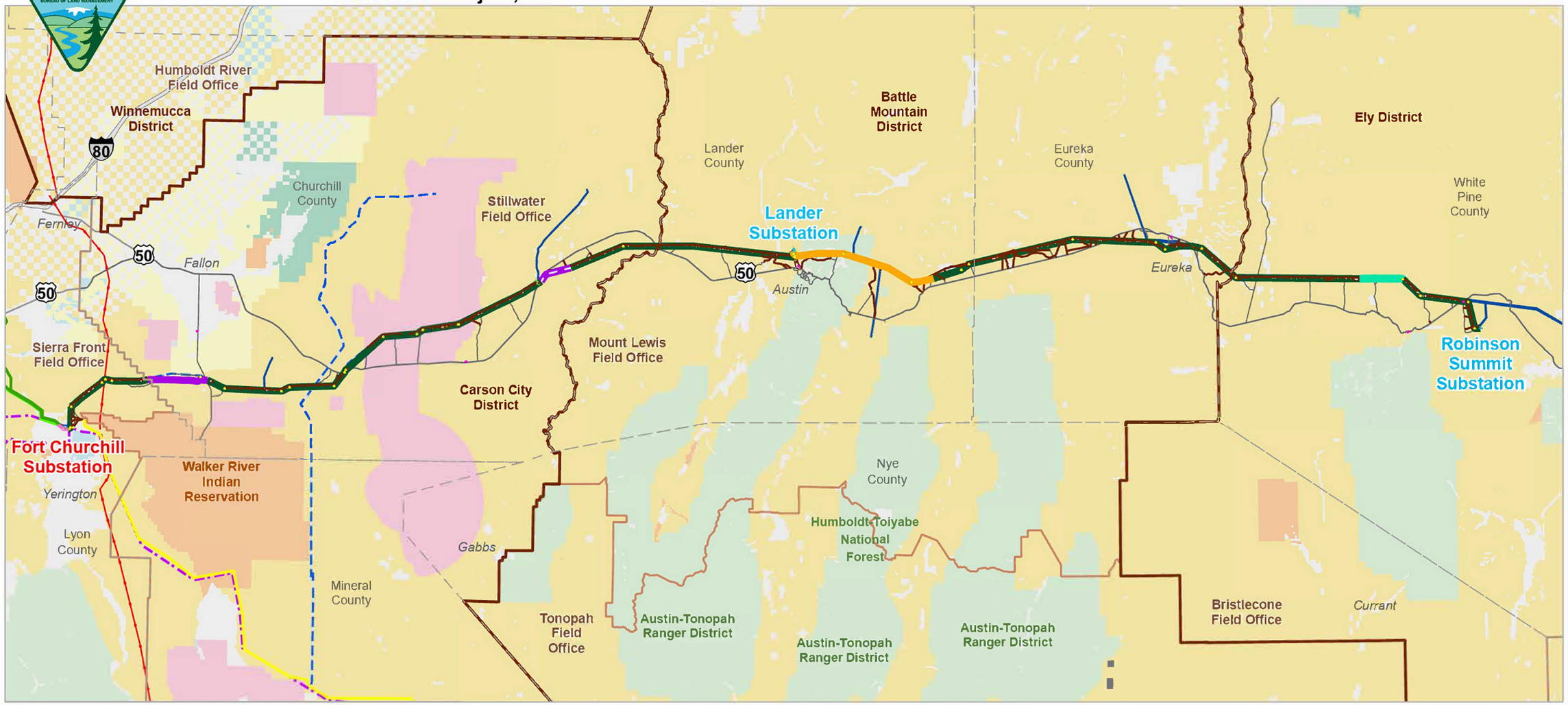
The BLM NVSO has prepared this Final EIS/Proposed RMPA for the GLNP in northern Nevada. The BLM prepared this Final EIS/Proposed RMPA in accordance with NEPA and planning regulations (43 CFR 1610). The GLNP area crosses through BLM, DOD, Forest Service, and private lands (see Figure 1-1).

1.2.1 Proponent Goals

The Proponent has submitted an SF-299 application and PPOD to the BLM and Forest Service to:

- Construct, operate, and maintain a proposed system of new 525 kV, 345 kV, and 230 kV electric transmission facilities (with one 525 kV transmission line and substation infrastructure) to deliver energy to the areas of growing load in Nevada.
- Provide for energy transmission redundancy, reliability, and resiliency, as defined below. As such, the GLNP is not dependent on the development of other projects for its justification.
  - Redundancy—Having multiple channels or backup systems in place to ensure continuous operation even if one component fails; where the loss of a single path or component does not disrupt the overall functionality of the system.
  - Reliability—The ability of a power system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components.
  - Resiliency—The optimizing and future proofing capital investment strategy, with technology that harnesses "what if" scenario planning and predictive analytics to facilitate strategic decision-making (such as using steel poles for fire protection and/or public safety outage management programs during extreme fire danger).
- Help to achieve the State of Nevada Renewable Energy Portfolio and Nevada's greenhouse gas emissions mandate.
- Facilitate access to State of Nevada-designated renewable energy zones.
- Increase northern Nevada's transmission import capacity required to meet the region's electric demand, grid reliability, and Federal Energy Regulatory Commission requests for service.
- Comply with Nevada Senate Bill 448. In July 2021, the Nevada governor signed into law an omnibus energy bill, Nevada Senate Bill 448. The bill requires the Proponent to amend its integrated resource plan to include a plan for placing certain high-voltage transmission infrastructure construction projects into service no later than December 31, 2028. On May 31, 2024, the Proponent filed an amendment to its integrated resource plan with the State of Nevada Public Utilities Commission requesting approval to complete the GLNP by December 2028.

Figure 1-1
Greenlink North Transmission Project, BLM Preferred Alternative



BLM Preferred Alternative
- 525 kV transmission line
- Distribution line
- Churchill County route
- Humboldt-Toiyabe National Forest northern route
- Desatoya Mountains Wilderness Area route
- Mining Proponent route to avoid an unpatented mining claim
- Substation
- Amplifier

- Material yard
- Pulling site
- New road
- Existing road requiring improvement

Authorized substation, separate NEPA
- Fort Churchill

Authorized transmission line, separate NEPA
- Fort Churchill-Mira Loma 345 kV T Line
- Comstock Meadows-Fort Churchill 345 kV T Line
- Fort Churchill 345/120 kV
- Fort Churchill 345/230 kV
- Greenlink West 525 kV

Existing transmission line
- Other voltage
- 120 - 128 kV
- 230 kV
- 500 kV+
- Existing road
- BLM district
- BLM field office
- County boundary

Land management
- Bureau of Land Management
- Forest Service
- Private or other
- Tribal Reservation
- Department of Defense
- Reclamation
- State of Nevada
- Fish and Wildlife Service
- Department of Energy

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Miles

Source: BLM, FS, and NVE GIS 2024
U.S. Department of the Interior, Bureau of Land Management, Nevada State Office
May 14, 2025, GreenlinkN_Intro.aprx
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
Existing transmission lines are focused around the Proposed Action; not all lines are shown.

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1.3 Purpose of and Need for Action

1.3.1 Bureau of Land Management

The BLM's purpose is to respond to the ROW application submitted by the Proponent to construct, operate, maintain, and decommission a system of transmission facilities and associated infrastructure that would transmit electricity between the Fort Churchill and Robinson Summit Substations on BLM-administered lands and on BLM and DOD jointly administered lands in the Dixie Valley Training Area. The BLM has the authority to authorize ROWs in the Dixie Valley Training Area, per Section 3014(a)(3) of the National Defense Authorization Act of 2000 (Public Law 106-65), in accordance with the FLPMA.

The need for this action is to fulfill the BLM's responsibility under the FLPMA and the BLM's ROW regulations to manage BLM-administered lands for multiple use and sustained yield (hereafter identified as multiple use), including the transmission of electric energy. If approved by the BLM, the ROW for the proposed GLNP would support the directives found in Executive Orders 14154, Unleashing American Energy, and 14156, Declaring a National Energy Emergency, and Secretary's Orders 3417, Addressing the National Energy Emergency, and 3418, Unleashing American Energy.

The GLNP as proposed would not conform to the resource management plans (RMPs) for the BLM Carson City, Battle Mountain, and Ely District Offices, as required by 43 CFR 1610.5-3(a). The BLM would need to amend these RMPs to bring the GLNP into conformance. In particular, the Proponent's proposed transmission line does not conform with the management objectives of the planning area for transmission lines greater than 100 kV. The purpose of the RMPA is to ensure that development of the GLNP conforms to the RMPs' provisions, as provided for in 43 CFR 1610.5-3(c), by providing for the designation of a utility corridor and modifying restrictions in greater sage-grouse habitat management areas and in proximity to leks.

1.3.2 Forest Service

The Forest Service's purpose is to respond to the SF-299 ROW application submitted by the Proponent to construct, operate, maintain, and decommission a transmission line over National Forest System land that would transmit electricity between the Fort Churchill and Robinson Summit Substations in the Austin-Tonopah Ranger District of the Humboldt-Toiyabe National Forest.

The need for this action is to fulfill the Forest Service's responsibility under the FLPMA and in accordance with agency regulations in 36 CFR 251 Subpart B that authorize use and occupancy on National Forest System lands. Pursuant to 36 CFR 219.10, the Forest Service must review all site-specific projects, including authorized uses of the land, to ensure they are consistent with the 1986 Toiyabe Forest Land and Resource Management Plan, as amended (Toiyabe Forest Plan), per the National Forest Management Act (16 US Code [USC] 1600–1614, as amended). The special use permit application and authorization objectives are that (1) authorizations to use and occupy National Forest System land are in the public interest while avoiding and minimizing adverse effects, and (2) proposals are in conformance with existing land and resource management plans.

1.4 Decision to Be Made

Table 1-1 summarizes the agencies' decisions to be made for the proposed GLNP. Refer to Section 2.1.2 for descriptions of the GLNP components and required BLM, Forest Service, and DOD ROW locations. The BLM, Forest Service, and DOD will use or tier to this Final EIS/Proposed RMPA to make their respective decisions under NEPA and other applicable laws. The other cooperating agencies could use this information to support their analyses and decisions, as needed.

Table 1-1. Summary of Agency Decisions to Be Made

Agency	Action
The BLM	• Approve or deny a short-term right-of-way (ROW) application and Plan of Development (POD) for geotechnical investigations. • Approve, modify, or deny the ROW for BLM-administered lands for the construction and operations and maintenance (O&M) of the GLNP transmission line and associated facilities. • Amend or not amend the Carson City Consolidated RMP, the Battle Mountain District Shoshone-Eureka RMP, and the Ely District RMP, which were amended by the Nevada and Northeastern California Greater Sage-Grouse Approved RMP Amendment (2015 ARMPA) to designate a new, approximately 198-mile utility corridor from Ely to Yerington, Nevada, which would be up to 3,500 feet in width, and modify restrictions in greater sage-grouse habitat management areas and in proximity to leks.
Forest Service	• Approve, modify, or deny the special use permit on National Forest System land for the construction and O&M of the GLNP transmission line and associated facilities, including resource protection measures, mitigation, and monitoring.

1.5 Land Use and Management Plan Conformance

1.5.1 The BLM

Actions approved or authorized by federal land management agencies must conform to the approved land use plans for the lands they administer (43 CFR 1610.5-3). The BLM must consider existing RMPs in the decision to issue a ROW grant, in accordance with 43 CFR 1610.5 5(b). Land use plans or RMPs that apply to each BLM field office or district office provide public land and resources management direction. If a proposed project would not conform with the plan, the BLM can choose to deny the project, adjust the project to conform to the RMP, or amend the RMP to address the nonconformance (BLM 2008a). Applicable RMPs for the GLNP area are the following:

- Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, Including the Greater Sage-Grouse Sub-Regions of Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah (BLM 2015b)
- Approved Resource Management Plan/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (BLM 2009)
- Record of Decision and Resource Management Plan Amendments for Geothermal Leasing in the Western United States (BLM and Forest Service 2008)

- Approved Ely District Record of Decision and Approved Resource Management Plan (BLM 2008b)
- Approved Shoshone-Eureka Resource Management Plan and Record of Decision (BLM 1986a)
- Carson City Field Office Consolidated Resource Management Plan (BLM 2001)

The action alternatives, including the Proposed Action, would cross greater sage-grouse general habitat management areas (GHMAs) and priority habitat management areas (PHMAs) within the administrative boundaries of the BLM Carson City, Battle Mountain, and Ely District Offices. Based on review of these land use plans, as amended by the 2015 ARMPA, the action alternatives, including the Proposed Action, would not be in conformance with these land use plans. Consistent with 43 CFR 1610.5-3(c) and 1610.5-5, the BLM proposes to address the action alternatives' nonconformance by designating a utility corridor of up to 3,500 feet in width and modify restrictions in greater sage-grouse habitat management areas and in proximity to leks (see Section 2.4 for further details on the plan amendments).

Under the land use plans, as amended by the 2015 ARMPA, GHMAs and PHMAs on BLM-administered lands are managed as avoidance areas for major ROWs (BLM 2015a). If adaptive management responses have been triggered (as a hard trigger, as described below), GHMAs and PHMAs become exclusion areas for high-voltage (greater than 100 kV) transmission lines that are outside designated utility corridors (BLM 2015a). If impacts from the GLNP result in habitat loss and degradation that remain after avoidance and minimization measures are applied, then compensatory mitigation projects would be required to provide a net conservation gain to greater sage-grouse through the Nevada Conservation Credit System (BLM 2015a).

The US Geological Survey (USGS) calculates the adaptive management response triggers based at a lek and neighborhood lek cluster scale. This scale is smaller than a biologically significant unit[2] (BSU) and represents population boundaries of multiple leks. The data indicate population declines across all neighborhood clusters (Coates et al. 2023).

The USGS compiles a population trend analysis and a Targeted Annual Warning System (TAWS) for the greater sage-grouse in the western US (USGS 2024). The most recent TAWS data are from February 2024.[3] The TAWS data identify "watch" and "warnings" associated with "soft" and "hard" triggers, respectively (Prochazka et al. 2024). "Watches" are assigned to populations that exhibit evidence of population decline below those of their respective climate cluster (slow signal) over 2 consecutive years. "Warnings" are assigned to populations that experienced slow signals in 2 out of 4 consecutive years or a relatively strong magnitude (fast signal) of evidence for 2 out of 3 years (USGS 2024).

[2] A biologically significant unit is a geographical area within greater sage-grouse habitat that contains relevant and important habitats and which is used as the basis for comparative calculations to support evaluation of changes to habitat.

[3] TAWS data updates are in progress, and that information is not available at the time of publication of the Final EIS/Proposed RMPA. The data will be incorporated into the BLM's publication of the ROD, assuming the data are available at that time.

Based on a review of the TAWS data, the greater sage-grouse GHMAs and PHMAs within the proposed GLNP alignment have hit soft and hard triggers over multiple years, and the triggers are unresolved (Figure 1-2, Land Use Plan Conformance, and Figure 3-7, Range-wide Population Trend Analysis for Greater Sage-grouse [All Action Alternatives, 1960–2023], in Appendix A). Per Tables J-1 and J-2 in Appendix J, hard triggers change from "avoidance areas" for major ROWs for high-voltage transmission lines greater than 100 kV to "exclusion areas" when the major ROWs would occur outside existing utility corridors (BLM 2015a [Appendix J]).

The land use plans, as amended by the 2015 ARMPA, de-designated a substantial number of RMP-level utility corridors in greater sage-grouse habitat management areas that were unoccupied by transmission infrastructure (BLM 2015a). This included the de-designation of a substantial portion of the utility corridor within which the existing Fort Churchill–Alpine 230 kV transmission line, constructed in the 1970s, occurred. A portion of the GLNP would be collocated with this existing transmission line. Based on a geographic information systems (GIS) review of the existing RMP and Section 368 utility corridors, there is no continuous utility corridor available between the Robinson Summit Substation and the Fort Churchill Substation in which the GLNP can be sited that is economically and technically viable for the Proponent.

Those land use plans amended by the 2015 ARMPA included new avoidance objectives described in Appendix B of the 2015 ARMPA as "lek buffers" (BLM 2015a). Lek buffers are not land use allocations but fit within the broader conservation objectives and planning decisions for the greater sage-grouse. The BLM prioritizes these objectives when considering new projects, to avoid their placement within the lek buffers. As described in Section 3.6, Special Status Species, some segments of the project would occur within these lek buffers.

Planning Criteria

During public scoping in March 2024, the BLM announced and made available for public input the following planning criteria:

- Criterion 1: The BLM will use a systematic interdisciplinary approach to integrate physical, biological, economic, and other sciences.
- Criterion 2: The BLM will use the best available data regarding natural resources.
- Criterion 3: The BLM will consider the present and potential uses of public lands, and where existing RMP decisions are valid, those decisions will remain unchanged.
- Criterion 4: The BLM will consider the relative scarcity of values and availability of alternative means and sites for recognizing those values.
- Criterion 5: Any plan amendments will be completed in compliance with FLPMA, NEPA, and all other relevant federal laws, executive orders, and DOI and BLM policies.
- Criterion 6: The BLM will seek coordination and consistency with other government programs, including tribal plans, policies, and controls, to the maximum extent possible.
- Criterion 7: Existing land use planning decisions will not change unless specifically amended.
- Criterion 8: Any RMP amendments will recognize valid existing rights.

1.5.2 Forest Service

The proposed route must be consistent with the standards, guidelines, and desired conditions in the 1986 Toiyabe Forest Plan (Forest Service 1986) and all of its amendments. In particular, the proposed route does not conform with standards and guidelines in amendment 17 (Forest Service 2015a) and the Greater Sage-grouse Record of Decision for Nevada and Land Management Plan Amendment (Forest Service 2015b). The 1986 Toiyabe Forest Plan standards for locating new transmission facilities require that the facilities be collocated within existing utility corridors.

The 1986 Toiyabe Forest Plan provides standards and guidelines for the management of National Forest System lands in the project areas under each alternative; specifically, the standards and guidelines in special uses and realty are to:

- (4) Manage all utility, road and transmission corridors in accordance with plans and permits issued for their construction and use. When applications for utility ROW are received, the first priority will be to use existing corridors (Forest Service 1986, p. IV-62).
- **GRSG-LR-SUA-ST-014** In PHMA, restrict issuance of new lands special use authorizations for infrastructure. Exceptions may include co-location and must be limited (e.g., safety needs) and based on rationale (e.g., monitoring, modeling, or best available science) that explicitly demonstrates that adverse impacts to greater sage-grouse will be avoided by the exception. If co-location cannot be accomplished, locate it adjacent to existing infrastructure, roads, or already disturbed areas and limit disturbance to the smallest footprint or where it best limits impacts to greater sage-grouse or their habitat (Forest Service 2015a, p. 114).
- **GRSG-LR-SUA-ST-015** In GHMA, new lands special use authorizations may be issued for infrastructure, such as high-voltage transmission lines, major pipelines, distribution lines, and communication tower sites, if they can be located within existing designated corridors or rights-of-way and the authorization includes stipulations to protect greater sage-grouse and their habitats (Forest Service 2015a, p. 114).

Two alternatives (Forest Service Southern Alternative and Forest Service Northern Alternative) were developed in coordination with the Proponent that would comply with forest plan standards. These alternatives are being analyzed in detail. The Southern Alternative would avoid crossing PHMAs and GHMAs and would follow existing ROWs as much as possible. This alternative is a component of the Other Resource Consideration Alternative, described in Section 2.2. The Northern Alternative would be collocated within an existing designated utility corridor. This alternative is a component of the BLM Preferred Alternative, described in Section 2.3. There are no plan amendments being proposed by the Forest Service.

1.6 Applicable Laws, Statutes, and Regulations

The FLPMA and its implementing regulations provide the legal framework that the BLM and Forest Service use to manage public lands and to assess the effects of their management actions. The BLM is preparing this Final EIS/Proposed RMPA in compliance with NEPA; the FLPMA; DOI and BLM policies and manuals, including the BLM NEPA Handbook, H-1790-1 (BLM 2008a); and

the Forest Service NEPA regulations (36 CFR 220). The GLNP review and possible authorization also are subject to requirements for consistency and conformance with other applicable federal laws, regulations, and policies. Pursuant to the BLM's planning regulations (43 CFR 1610.3-2), a governor's consistency review with state and local plans is also required.

Table B-1 in Appendix B lists the relevant actions and authorities that must be obtained or considered for the GLNP. Table B-2 in Appendix B provides a partial list and summary of other federal, state, and local government authorities and actions that may be applicable to this Final EIS/Proposed RMPA.

1.6.1 NEPA Substitution

The Advisory Council on Historic Preservation (ACHP) regulations (36 CFR 800) describe the process for how federal agencies comply with Section 106 of the National Historic Preservation Act (NHPA). Specifically, the process outlining the requirements of Section 106 is described in 36 CFR 800.3 through 800.6. The BLM and Forest Service are using the substitution approach described in 36 CFR 800.8(c), using the NEPA review process to comply with Section 106 as an alternative to the process set out in 36 CFR 800.3 through 800.6. The BLM sent initial notification of its intent to use substitution for the GLNP to the State Historic Preservation Office (SHPO), Tribal Historic Preservation Officers (THPOs), ACHP, and Native American tribes on February 8, 2023. Additional details specifically on the NEPA substitution process and on NHPA compliance for this project are in Section 3.8, Cultural Resources, and Section 4.2.3, Section 106 Consultation.

1.7 Lead Agency, Cooperating Agencies, and Consulting Parties

The BLM, through the NVSO, is the lead federal agency responsible for preparing this Final EIS/ Proposed RMPA and associated analyses. DOI NEPA regulations addressing the status of cooperating agencies (43 CFR 46.225 and 46.230) implement the NEPA requirement that federal agencies responsible for preparing NEPA analyses and documentation do so in cooperation with state governments, local governments, and other agencies with jurisdiction by law or special expertise.

Between February and December 2022, the BLM invited 46 various federal government agencies, state governments, county agencies, and tribal governments to participate as cooperating agencies. Refer to Table 1-2 for a list of cooperating agencies who have participated in the process. In addition to the 46 invited cooperating agencies, the ACHP and Nevada SHPO were invited to participate in the Section 106 process.

The BLM also identified issues through internal scoping among the BLM and Forest Service interdisciplinary staff. The scoping report and the BLM consultation and coordination documentation are available on the BLM National NEPA register at https://eplanning.blm.gov/eplanning-ui/project/2017033/510 and https://www.fs.usda.gov/project/htnf/?project=64198.

Table 1-2. Participating Cooperating Agencies and Consulting Parties

Agency Type	Agency or Consulting Party
Federal Agencies	• ACHP • DOD Military Clearinghouse • National Park Service • US Environmental Protection Agency (EPA) Region 9 • US Fish and Wildlife Service (USFWS) • US Forest Service
Native American Tribes	• Duckwater Shoshone Tribe • Fallon Paiute-Shoshone Tribe • Pyramid Lake Paiute Tribe • Reno-Sparks Indian Colony • Timbisha Shoshone Tribe • Yomba Shoshone Tribe • Walker River Paiute Tribe
State Agencies	• Nevada Department of Agriculture • Nevada Department of Conservation and Natural Resources • Nevada Department of Transportation • Nevada Department of Wildlife (NDOW) • Nevada Division of Minerals
Local Agencies	• City of Ely • Churchill County • Eureka County • Lander County • Lyon County • White Pine County

1.8 Pre-NOI Public Involvement and Scoping

The BLM hosted five pre-NEPA public meetings between January 2022 and April 2023 (see Table 1-3) to adequately notify the public about the project and to solicit input prior to the start of the public scoping period, in compliance with NEPA. Comments received during these activities helped guide resource considerations and alternative route and key component development.

The official scoping period that kicked off the NEPA process began with publication of the NOI in the *Federal Register* on May 26, 2023. The NOI briefly describes the purpose of and need for the GLNP, the preliminary description of the Proposed Action and alternatives considered, and a brief summary of the expected impacts of the alternatives. In addition, a preliminary project schedule for the decision-making process was included.

The BLM held three in-person and one virtual public scoping meetings in June 2023 to solicit public input. Thirteen people attended the in-person meetings. During development of the alternatives, the BLM determined that plan amendments may be needed as part of the project. As such, the BLM published a second NOI in the *Federal Register* on March 11, 2024. The 30-day period for submitting comments was from March 11, 2024, to April 11, 2024. During this revised scoping period, the BLM made the planning criteria and preliminary Chapters 1 and 2 of the Draft EIS/RMPA available for public input.

On June 10, 2024, the Conservation and Landscape Health final rule (also referred to as the "Public Lands Rule") (89 *Federal Register* 40308) took effect, which applies to all BLM-administered lands. When the BLM announced public scoping on May 26, 2023, and March 11, 2024, the BLM did not identify the consideration of the designation of areas of critical environmental concern (ACECs) as a component of the GLNP's preliminary purpose and need. In addition, the BLM did not include planning criteria specific to the consideration of the designation of ACECs.

This Final EIS/Proposed RMPA evaluates limited plan amendments that would meet the GLNP's purpose and need, and the plan amendment process is governed by the BLM's land use planning regulations. As stated in 43 CFR 1610.7-2(b): "In the land use planning process, authorized officers must identify, evaluate, and give priority to areas that have potential for designation and management as ACECs. Identification, evaluation, and priority management of ACECs shall be considered during the development and revision of resource management plans and during amendments to resource management plans when such action falls within the scope of the amendment (43 CFR 1610.4-1 through 1610.4-9)." The NOI released on March 11, 2024 (89 *Federal Register* 17510) stated the following: "The scope of this land use planning process does not include addressing the evaluation or designation of areas of critical environmental concern (ACECs), and the BLM is not considering ACEC nominations as part of this process." Therefore, this Final EIS/Proposed RMPA does not include an evaluation of ACECs.

On March 26, 2024, the BLM hosted a virtual public meeting. Fourteen people attended. No additional public scoping meetings were scheduled. Table 1-3 identifies the meeting dates and locations for the five total public scoping meetings.

Table 1-3. Public Meetings

Meeting	Date	Location
Virtual pre-NOI public input workshops	January 26, 2022	Zoom meeting
	January 27, 2022	Zoom meeting
	July 27, 2022	Zoom meeting
	December 13, 2022	Zoom meeting
	March 29, 2023	Zoom meeting
Public scoping meetings	June 12, 2023	Zoom meeting
	June 20, 2023	Sparks, Nevada
	June 21, 2023	Ely, Nevada
	June 22, 2023	Austin, Nevada
	March 26, 2024	Zoom meeting

1.8.1 Issues Identified during Pre-scoping

During the pre-scoping phase of the project, the BLM received input from tribes; county, state, and local governments; and the public. The main issues and concerns included the following:

- What is the GLNP going to cost the ratepayers?
- Can an alternative be developed to stay away from US Highway 50?

- How will the impacts from new solar developments that could tap into this line be evaluated in this process?
- How would the project impact greater sage-grouse and other wildlife?
- How would this project impact wild horses?
- Will the BLM consult with and involve tribes in this project?
- What is the relationship of this project to other projects in Nevada?
- How would this project impact raptors?
- How would this project impact recreation?
- Would this project provide opportunities for off-road racing in the ROW?
- How would this project affect wilderness, wilderness study areas (WSAs), and other conservation areas?
- How would weeds be prevented from spreading as part of the project?
- How would the project affect the Pony Express National Historic Trail (NHT) or other national or historic trails?
- What type of mitigation would be implemented?
- How will the impacts of electromagnetic fields on communities be analyzed in the analysis area?

1.8.2 Issues Identified during Scoping

A total of 27 comment letters/emails were submitted during the 45-day scoping comment period from May 26 to July 10, 2023. Of these, three were duplicates of a comment letter previously submitted in another format. During the second scoping period, the BLM received 26 unique comment submissions via email or mail, or directly through the ePlanning website. From the 26 submissions, the BLM identified a total of 224 substantive comments. The project scoping report was updated to include new information presented during the second scoping period. Additional information regarding the scoping process is included in the September 2023 scoping report and the revised April 2024 scoping report on the BLM National NEPA register at https://eplanning.blm.gov/eplanning-ui/project/2017033/510.

After evaluating the comments received during the public scoping periods, several key issues emerged. The issues were synthesized into topical areas that represent the most frequent public concerns about the GLNP. These issues and topical areas defined the focus of the NEPA analyses included in this Final EIS/Proposed RMPA. Resources that received the most comments during the public scoping period are provided below:

- Air quality and climate
- Cultural resources
- Lands and realty
- Rangeland management
- Socioeconomics
- Transportation and access

- Vegetation
- Visual resources
- Water resources
- Wildlife

1.8.3 Issues Identified for Analysis

According to the BLM's NEPA Handbook, H-1790-1 (BLM 2008a, Section 6.4), "for the purposes of BLM NEPA analysis, an 'issue' is a point of disagreement, debate, or dispute with a proposed action, based on some anticipated environmental effect." The handbook also states that an issue:

- Has a cause-and-effect relationship with the proposed action or alternatives
- Is within the scope of the analysis
- Has not been decided by law, regulation, or previous decision
- Is amenable to scientific analysis rather than conjecture

While many issues are identified during the scoping process, not all identified issues warrant analysis in the Final EIS/Proposed RMPA. Issues identified in scoping warrant inclusion in the Final EIS/Proposed RMPA if an analysis of the issue is necessary to make a reasoned choice among the alternatives, if the issue is associated with a significant impact, or if an analysis of the issue is necessary to determine the significance of the impacts. The issues identified for analysis have been included in each resource/use analysis section in Chapter 3. Table 3-1 and Table 3-2 provide rationale for the analysis of resources in the Final EIS/Proposed RMPA.

1.9 Changes Between the Draft EIS/RMPA and the Final EIS/Proposed RMPA

As a result of public, stakeholder, and cooperating agency comments on the 2024 Draft EIS/RMPA, the BLM has developed this Final EIS/Proposed RMPA.

When developing the Final EIS/Proposed RMPA, the BLM focused on addressing public comments, while continuing to meet its legal and regulatory mandates. Appendix C contains the substantive public comments received on the 2024 Draft EIS/RMPA and the BLM's responses to those comments.

Changes in this Final EIS/Proposed RMPA from the 2024 Draft EIS/RMPA are as follows:

- The BLM added a figure showing Land Use Plan Conformance (Figure 1-2) and a figure showing Public Lands Survey System boundaries (Figure 3-17, Legal Description, Extents 1–15).
- Executive Order 14154, Unleashing American Energy (January 20, 2025), and a Presidential memorandum, Ending Illegal Discrimination and Restoring Merit-Based Opportunity (January 21, 2025), require the DOI and Department of Agriculture to strictly adhere to NEPA (42 USC 4321 et seq.). Further, the order and memorandum repeal Executive Orders 12898 (February 11, 1994), 14072 (April 22, 2022), 14082

(September 12, 2022), and 14096 (April 21, 2023). Because Executive Orders 12898, 14072, 14082, and 14096 have been repealed, complying with such orders is a legal impossibility. The BLM removed the old-growth analyses under Section 3.4, Vegetation Communities and Resources, and the environmental justice analyses (pages 2-227 to 2-232 and page 2-249 in the Draft EIS/RMPA).

The BLM verifies that it has complied with the requirements of NEPA, including the DOI's regulations and procedures implementing NEPA at 43 CFR 46 and Part 516 of the Departmental Manual, consistent with the President's January 2025 order and memorandum. The BLM has also voluntarily considered the Council on Environmental Quality's rescinded regulations implementing NEPA, previously found at 40 CFR 1500–1508, as guidance to the extent appropriate and consistent with the requirements of NEPA and Executive Order 14154. The Forest Service also verifies that it has complied with the requirements of NEPA, including the Forest Service's NEPA regulations (36 CFR 220).

- The BLM has clarified and provided greater detail on geotechnical investigations, which would occur prior to construction of the GLNP components, in Section 2.1.3. As described in Section 1.5.1 and Section 2.4, the greater sage-grouse GHMAs and PHMAs within the proposed GLNP alignment have hit soft and hard triggers over multiple years, and the triggers are unresolved. The hard triggers would exclude construction activities, including geotechnical investigations, from occurring within PHMAs and GHMAs and impose seasonal restrictions. Section 2.1.3 describes the geotechnical investigations which are a component of construction activities and are within the range of effects evaluated for the Proposed Action and Alternatives.
- The Proponent reviewed an existing road needing improvement that crosses through the Walker River Indian Reservation and over the Walker River and determined this road is not needed. The road through the Walker River Indian Reservation and connecting roads on BLM-administered land were removed from the three action alternatives. Similarly, text pertaining to a Bureau of Indian Affairs ROW was removed.
- The Proponent reviewed an existing road needing improvement that crosses the Reese River and determined this road is not needed in the BLM Preferred Alternative.
- The Proponent reviewed an existing road needing improvement east of the Humboldt-Toiyabe National Forest that was proposed under the Other Resource Consideration Alternative in the Draft EIS/RMPA and determined that it needs to be included under the Proposed Action and BLM Preferred Alternative. The road has been incorporated into the GIS analyses under all the action alternatives.
- Under the BLM Preferred Alternative, the Proponent reviewed three roads needing improvement near Barrel Spring Road and determined they are not needed; this is because they are duplicative of existing roads.
- Based on comments from the NDOW, the BLM updated the USGS's TAWS GIS data on the Final EIS/Proposed RMPA map titled "Range-wide Population Trend Analysis for Greater Sage-Grouse (All Action Alternatives, 1960–2023)." More discussion about the impacts of the action alternatives on greater sage-grouse, including anthropogenic disturbance cap calculations, and more figures for greater sage-grouse were added to the Final EIS/Proposed RMPA (Figures 3-3, 3-4, 3-6 through 3-9, and 3-14).

- The BLM updated the greater sage-grouse seasonal habitat analysis in Section 3.6 to reflect the 2024 USGS habitat GIS data (Coates et al. 2024) because the 2024 data are now the best available seasonal habitat data. The greater sage-grouse habitat management area analysis in Section 3.6 uses the 2015 habitat management area data, as maintained (BLM 2015a; Forest Service 2015a).
- The proposed transmission corridor width was adjusted under the BLM Preferred Alternative based on cooperating agency comments from Eureka County and public comments from a mining proponent regarding the mining proponent's unpatented mining claims.
- Two additional alternatives proposed by the public during the 2024 Draft EIS/RMPA were evaluated and added to the alternatives not brought forward for detailed analysis in Section 2.5.
- The BLM added clarifications to better explain the analysis methods and environmental consequences of all resources.
- In coordination with the Forest Service, the BLM updated the orientation of the Forest Service utility corridor in Figure 2-6, BLM Preferred Alternative, Extents 1–15, to align with the proposed 525 kV transmission line. The corridor was designated under the 1986 Toiyabe Forest Plan, as amended, and did not have an established width. The 1986 Toiyabe Forest Plan defines a utility corridor as "A linear strip of land for the present or future location of transportation or utility rights-of-way within its boundaries" (Forest Service 1986, p. VI-6). Given that the proposed 525 kV transmission line under the BLM Preferred Alternative would be collocated with the existing 230 kV transmission line within the Forest Service utility corridor (consistent with the standards and guidelines described in Section 1.5.2), and there are no physical limitations on the utility corridor, the Forest Service verified that the proposed 525 kV transmission line would be within the existing utility corridor and in conformance with the 1986 Toiyabe Forest Plan, as amended.
- The BLM added more detailed analyses based on the finalization of field surveys for the pygmy rabbit, pinyon jay, burrowing owl, golden eagle, and Monte Neva paintbrush. Similarly, figures were updated or added to support these analyses, excluding the Monte Neva paintbrush (Figures 3-10 through 3-13).
- The BLM updated and added new EMMs in Appendix D based on field survey results and public input.
- More detail was added to the cultural resources affected environment section (Section 3.8.6) based on the results of the Draft Class III Cultural Survey.
- The BLM added Appendix C, which describes the comments on the 2024 Draft EIS/RMPA and the BLM's responses to the comments.
- The BLM added Appendix O, which includes a summary of nonproprietary information from the Historic Properties Treatment Plan.
- The BLM added Appendix Q, which includes a summary of nonproprietary information from the GLNP National Historic Trail Inventory and Assessment report.

- Additional references identified internally and from the public were cited in the document.
- The BLM made minor corrections such as clarifying the intent of text, correcting typographical errors, and updating miles, acreages, and figures.

None of the revisions described above would result in effects outside the range of effects analyzed in the Draft EIS/RMPA alternatives; therefore, these revisions would not result in the need for the BLM to supplement the EIS.

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Chapter 2. Proposed Action and Alternatives

This chapter provides a summary of the geotechnical investigations needed for the GLNP's tower design and transmission line routing and the construction, O&M, and decommissioning of the proposed electrical transmission line and associated facilities. A detailed description of the Proposed Action is provided in the GLNP PPOD on the BLM ePlanning website (https://eplanning.blm.gov/eplanning-ui/project/2017033/510). This chapter also describes and compares the key features of the Proposed Action and the action alternatives considered. The term "action alternatives" refers to the alternatives that analyze the effects from geotechnical investigations for and construction, O&M, and decommissioning of the GLNP. All the action alternatives below are described based on a full transmission line from Fort Churchill Substation near Yerington, Nevada, to the Robinson Summit Substation near Ely, Nevada. This provides a comparison across alternatives in the environmental analysis.

These alternatives are also in contrast to the No Action Alternative, which would consist of the federal land management agencies denying the ROW applications; thus, the No Action Alternative would not involve any development of an electrical transmission system or associated facilities. The No Action Alternative is the continuation of management of the federal lands under current management plans; it provides a useful baseline for comparing the environmental effects associated with the GLNP alternatives.

2.1 Proposed Action

2.1.1 Route Description

The Proponent defined a 10-mile-wide routing and siting study area to include potential alternatives for the location of a new transmission line from the Fort Churchill Substation near Yerington, Nevada, to the Robinson Summit Substation near Ely, Nevada. The Proponent reviewed the study area to identify potential feasible route corridors and the constraints and opportunities within the study area. To the extent practicable, the Proposed Action route incorporated the Proponent's preference for a 1,000-foot separation distance when paralleling existing high-voltage facilities; considered initial environmental constraints; and incorporated engineering considerations, efficiency, and constructability (NV Energy 2022, 2024). Paralleling lines, or transmission lines within a common corridor, are referred to as a contiguous ROW or two parallel ROWs. Centerline separation for these paralleling lines should be more than the longest span length of the two transmission circuits at the point of separation or 500 feet, whichever is greater, between the transmission circuits (WECC 2008).

The proposed 525 kV facilities would begin at the Fort Churchill Substation located approximately 10 miles north of Yerington, Nevada, in Lyon County. The Fort Churchill Substation's construction is occurring on private or Proponent-owned land, as authorized under the Greenlink West Transmission Project (GLWP) Final EIS and Record of Decision; it is not a component of the GLNP. The GLNP facilities, including the 525 kV transmission line; new and improved roads; and, where applicable, distribution lines, would overlay approximately 679 miles[4] in northern Nevada through portions of Lyon, Churchill, Lander, Eureka, and White Pine

[4] This total does not include existing access roads that do not require improvements.

Counties. In Lander County, the facilities would connect to the proposed Lander Substation, approximately 3 miles northwest of Austin, Nevada. The facilities would terminate at the Robinson Summit Substation, approximately 17 miles west of Ely, Nevada, in White Pine County.

The 525 kV transmission line would generally follow US Highway 50 for most of its length. The proposed GLNP facilities would cross BLM-administered land, DOD-administered land, National Forest System land, and private land (BLM, FS, and NVE GIS 2024; see Figure 1-1 and Table 2-1). The proposed transmission line would also pass through an approximately 8-mile-long and 0.5-mile-wide congressionally created gap in between the northern and southern units of the Numu Newe Special Management Area (SMA), as designated by the National Defense Authorization Act of 2023 (Figure 3-21, Special Management Areas).

Table 2-1. Proposed Action Linear Features and Surface Management

Linear Feature	Miles[1]
BLM (total)	**579.4**
525 kV transmission line	203.4
Existing access road requiring improvement	336.4
New access road	37.3
Distribution line	2.3
Forest Service (total)	**33.0**
525 kV transmission line	9.7
Existing access road requiring improvement	21.3
New access road	2.0
DOD (total)	**43.8**
525 kV transmission line	18.4
Existing access road requiring improvement	23.1
New access road	2.3
Private (total)	**22.4**
525 kV transmission line	3.4
Existing access road requiring improvement	18.1
New access road	0.9
Total	**678.6**

Source: BLM, FS, and NVE GIS 2024

[1] The linear feature miles may not sum to the nearest 0.1-mile due to rounding

The BLM would designate a new utility corridor that would connect to the existing approximately 18-mile-long and 0.5-mile-wide legislative utility corridor that crosses through the Dixie Valley Training Area, as designated under the National Defense Authorization Act of 2023, and the existing approximately 10-mile-long utility corridor that crosses through the Humboldt-Toiyabe National Forest, Austin-Tonopah Ranger District, as designated by the 1986 Toiyabe Forest Plan, as amended (see Figure 2-2, Extents 8–9; Figure 2-4, Extents 8–9). Approximately 168 miles (or approximately 85 percent) of the proposed utility corridor would be collocated or dually collocated with existing 230 and 345 kV transmission lines. This

collocation with existing transmission lines would prevent unnecessary and undue degradation, as required under the FLPMA.

2.1.2 Federal ROW Actions

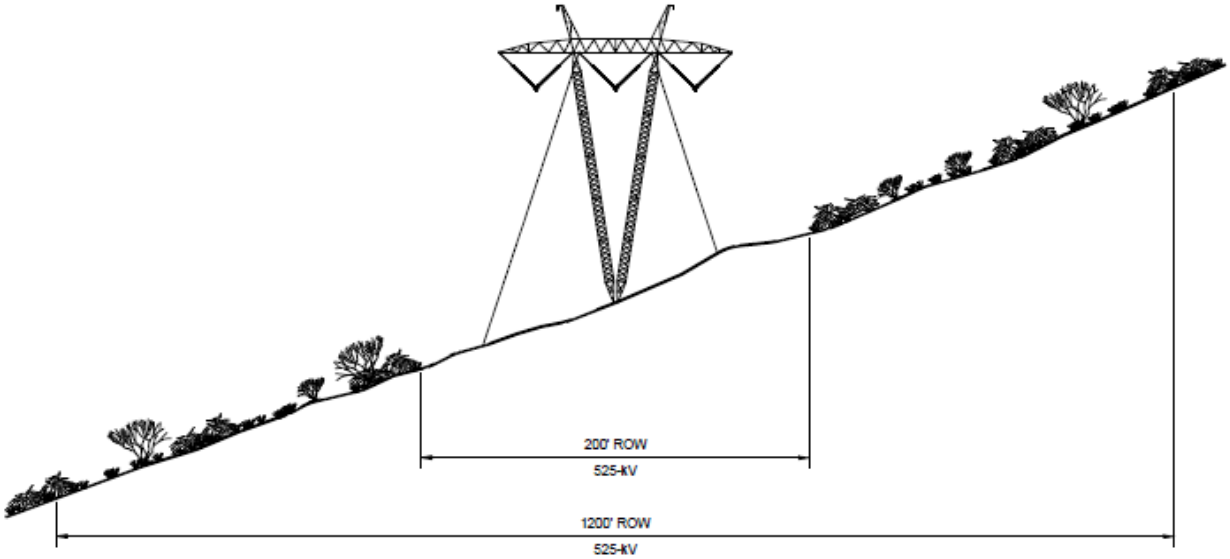
The Proponent would need to obtain ROW authorizations from the BLM and Forest Service (collectively referred to as "federal agencies"). The Proponent has applied to the federal agencies for ROW grants. In general, short-term ROW grants are 600 feet wide (1,200 feet in areas with steep terrain) for preconstruction activities (including geotechnical investigations) and construction of the 525 kV transmission line, and 100 feet wide for construction of the distribution lines. The Proponent has requested maximum 200-foot-wide ROW grants for O&M and decommissioning of the 525 kV transmission line, and 50-foot-wide ROW grants for the distribution lines (see Diagram 2-1).

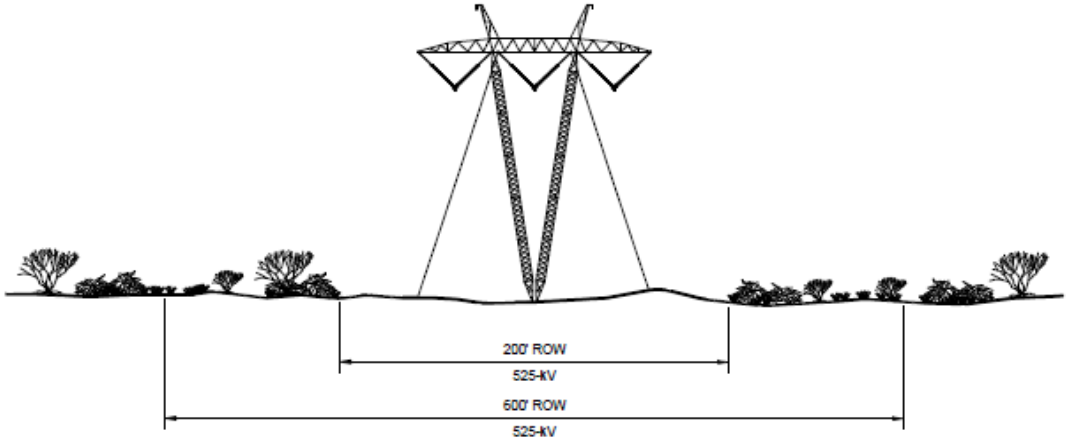
Through a routing constraint and opportunity study (NV Energy 2022), the Proponent has estimated the centerline and infrastructure requirements for the Proposed Action and other action alternatives. In some areas, the Proponent may need to adjust the ROW grants to avoid certain natural and cultural resources and to accommodate the terrain, slope, or other facilities. These potential ROW grants' variations are within the scope of the EIS/RMPA analysis.

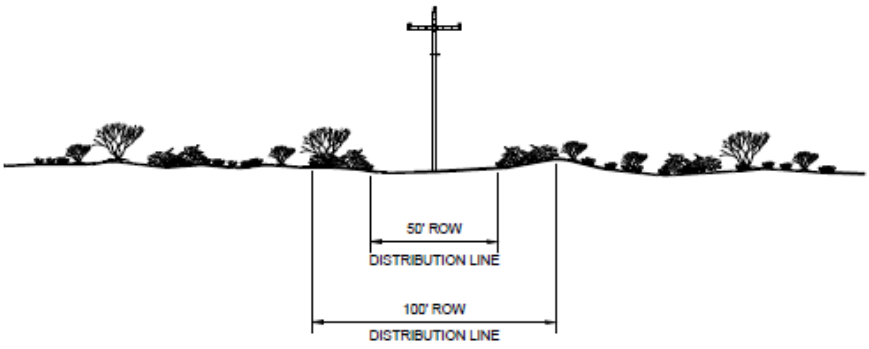
The Proposed Action is to construct, operate, and maintain safe construction of the GLNP facilities, and maintain sufficient clearance between conductors and the edges of the ROW grants, as required by the National Electrical Safety Code (NESC 2023). While most maintenance access roads would be within the 200-foot-wide ROW, some access roads would be outside the ROW to optimize the use of existing roads; the Proponent would need to obtain ROW grants for these roads, if casual use is exceeded.

The Proponent has requested 30-year ROWs grant from the federal agencies for the purposes of constructing, operating, maintaining, and decommissioning the GLNP with an option for renewal at the end of the grants. The ROW grants' renewal would be subject to additional environmental review. In addition to the ROW grants, permits and easements would need to be acquired from other state and local entities and private landowners.

Diagram 2-1. Transmission (525 kV) and Distribution Lines ROWs







Source: NV Energy 2024

2.1.3 Geotechnical Investigations

Geotechnical investigations provide information on essential soil properties and geohazards. They are a necessary step in the design process for electrical transmission line routing and tower and angle structure engineering. Geotechnical investigations on National Forest System lands are not expected to result in adverse effects on resources; therefore, they are being evaluated under a separate categorical exclusion in compliance with Forest Service's NEPA regulations (36 CFR 220).

The Proponent's proposed geotechnical investigations would occur prior to construction of the GLNP components (described in Section 2.1.4) and within the BLM's proposed utility corridor. The geotechnical investigations would be subject to the land use plan conformance and amendments as described in Section 1.5.1 and Section 2.4, respectively. The GLNP's design and baseline resource surveys caused delays in the BLM's processing of the Proponent's January 2024 short-term ROW application under the categorical exclusion for geotechnical investigations (under Department Manual 516 DM 11.9 E.19). As a result, the BLM has evaluated geotechnical investigations on BLM-administered lands in this Final EIS/Proposed RMPA.

The Proponent would access up to 141 geotechnical borehole locations, spaced roughly 3 miles apart, on BLM–administered lands (see Figure 2-2, Extents 1–15) using a combination of existing access roads and overland travel. Overland travel is a "drive and crush" method, where access routes are used without vegetation clearing or exposing underlying soils. The following list provides more detail on the access needs and locations for the proposed boreholes:

- There would be 80 proposed boreholes within or adjacent to existing access roads. No overland travel access would be required. The use of existing roads to access the proposed borehole locations is not anticipated to exceed casual use level, as described in 43 CFR 2801.5(b). The Proponent would use drill rigs and support equipment to access each borehole location only once and no road maintenance is proposed.
- There would be 61 proposed boreholes that would require overland travel access. An average of 0.1 miles of overland travel would be needed to access the borehole locations, with the longest being approximately 1.2 miles.
- There would be 108 proposed boreholes within greater sage-grouse habitat management areas. Of these, 70 boreholes would be within PHMAs, 19 would be within GHMAs, and 19 would be within OHMAs.
- There would be 12 proposed boreholes within the Dixie Valley Training Area. None of these would be within greater sage-grouse habitat management areas.

The Proponent would utilize a combination of existing paved and unpaved roads to access borehole locations. Drill rigs and support vehicles (full-size, four-wheel drive pickup trucks to be used to transport the drill crew and equipment) would drive within the footprints of existing access roads, including two-track roads. At each borehole, a wheeled or tracked drill rig would be used to collect subsurface data to a depth of 30 to 50 feet or up to 100 feet, if there are no restrictive features (such as rock or cemented soil layers) within the borehole. Each borehole would be between 4 to 6 inches depending on the type of drill rig used (such as a hollow-stem

auger, mud or air rotary, continuous diamond core, air hammer, or sonic drill rig) and the type of borehole being completed (core or auger). As an alternative to drilling, cone penetration testing equipment, which pushes a shaft into the ground to collect data, may be used depending on the soil and rock types expected within the completion depth of each borehole. Additional low-impact, surface geophysical testing (such as refraction microtremor "ReMi" geophysical surveys or electrical resistivity testing) would also be conducted.

All drilling and vehicle parking would be confined to a 50-foot by 50-foot work area at each borehole location to minimize surface disturbance. No blading or digging other than drilling or cone penetration testing would occur at any borehole location. The access routes to borehole locations would be approximately 12 feet in width. To access boreholes that are not adjacent to existing access roads, the drill rig and support vehicles would use overland travel within a 50-foot-wide travel lane. This width would allow vehicles enough clearance to avoid rocks, trees, or other dangerous terrain.

Visible surface disturbance from accessing boreholes would occur from tire or track imprints within overland travel lanes and where vehicles park. At each borehole location, the first 6 to 8 inches of topsoil under the auger would be set aside and replaced after the borehole is backfilled to restore the disturbed area. The drilling activities would result in minimal surface disturbance within a 3-foot diameter area around the center of each borehole.

2.1.4 GLNP Components

Temporary disturbance would occur during construction, which is projected to be up to 5 years. Permanent disturbance would occur for the life of the GLNP. This is anticipated to be up to 30 years and could be renewed. Table 2-2 shows the estimated temporary and permanent disturbance areas from the Proposed Action.

Table 2-2. Temporary and Permanent Disturbance Areas

GLNP Component	Quantity	Temporary Disturbance	Permanent Disturbance[1]
525 kV tangent structure work area	1,065	200 x 250 feet	None
525 kV dead-end and angle structure work area	83	200 x 400 feet	None
525 kV guard structure work area	69	200 x 100 feet	None
525 kV structure pad[2, 3, 4]	327	None	100 x 100 feet
525 kV structure pad in greater sage-grouse habitat[3, 5]	821	None	200 x 200 feet
Distribution line structure work area	46	100 x 100 feet	None
Distribution line structure pad[3]	46	None	50 x 50 feet
525 kV mid-span pull sites[4]	40	200 x 600 feet	None
525 kV mid-span pull sites in greater sage-grouse habitat	99	200 x 600 feet	None
525 kV point of intersection pull site[4]	16	700-foot radius	None
525 kV point of intersection pull site in greater sage-grouse habitat	42	700-foot radius	None
Construction and material yards	5	25 acres (on average)	None
Helicopter yards	52	15 acres (on average)	None
Lander Substation	1	None	109 acres
Robinson Summit Substation (expansion)	1	None	46 acres
Optical amplifier sites	3	None	300 x 300 feet

GLNP Component	Quantity	Temporary Disturbance	Permanent Disturbance[1]
Fiber-optic cables (underground)	4 linear miles	None	8 feet wide
Access road turn radii	1,966	20 x 20 feet (two per intersection)	None
Access roads[6]	391 linear miles	None	25 feet wide[7]
Maintenance roads[6]	238 linear miles	None	25 feet wide[7]

Sources: NV Energy 2024 and Stacey Atella, POWER Engineers Project Manager, personal communication with Holly Prohaska, AECOM Project Manager, on May 10, 2025.

[1]All temporary disturbance areas would be reclaimed. NV Energy's 2024 Plan of Development uses construction disturbance estimates, whereas the EIS uses maximum disturbance estimates. Therefore, the EIS miles and acres may be greater than the numbers above.

[2]Permanent structure pad dimensions are independent of the structure type.

[3]The structure pad would fall within the structure work area.

[4]Located outside greater sage-grouse habitat.

[5]Even though the permanent physical ground disturbance for the structures would be limited to the foundations, the operational footprint maintained by the Proponent for the permanent 525 kV structure pads would be 200 x 200 feet in greater sage-grouse habitat and 100 x 100 feet in areas outside greater sage-grouse habitat.

[6]Includes only new and existing unpaved roads that may require improvements.

[7]The access road width is approximate.

The proposed GLNP components would consist of transmission and distribution lines, substations, amplifier sites, access roads, and construction or material yards (see Figure 2-1, Greenlink North Transmission Project Proposed Action, and Figure 2-2, Greenlink North Transmission Project Proposed Action, Extents 1–15, in Appendix A). Descriptions of the conductors, insulators, and grounding systems are provided in the PPOD (NV Energy 2024). All poles would be electrically grounded through ground rods. The lines would meet or exceed the requirements of the National Electrical Safety Code (NESC 2023).

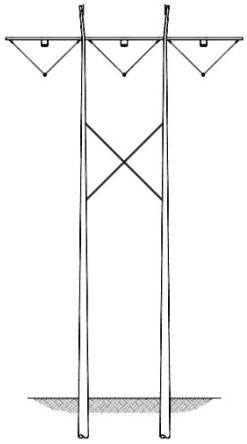
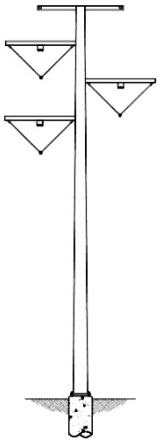
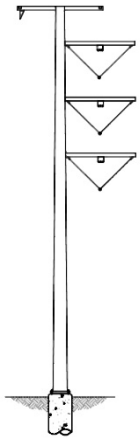
Transmission and Distribution Lines

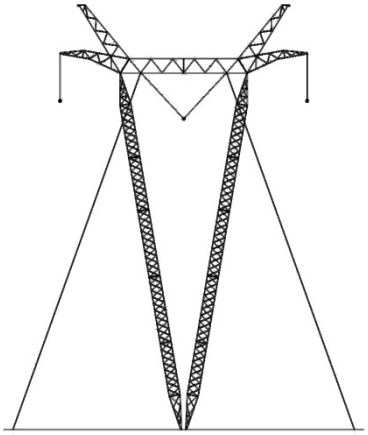
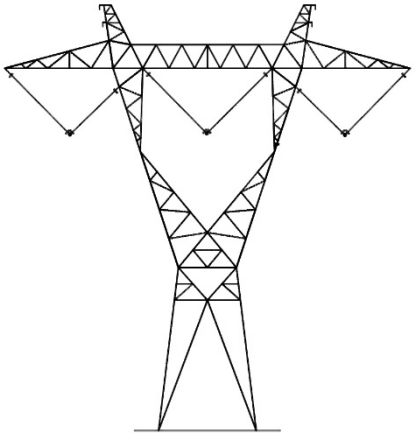
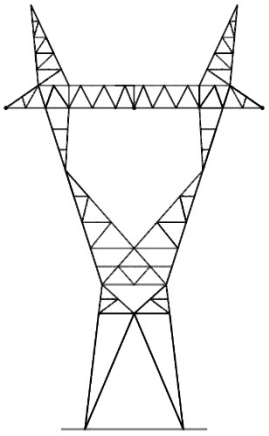
525 kV Fort Churchill to Robinson Summit Line

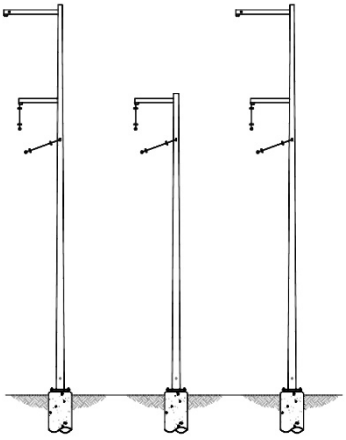
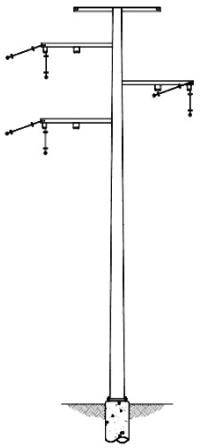
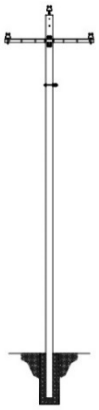
The 525 kV Fort Churchill to Robinson Summit line is anticipated to include the placement of approximately 1,065 tangent structures and 83 dead-end and angle structures. Tangent 525 kV structures would consist of steel pole H-frame, steel monopole, or steel lattice towers. Dead-end and angle structures would consist of steel monopole, steel three-pole, or steel lattice towers. Table 2-3 provides typical drawings of 525 kV transmission structures to be installed. Only H-frame structures would be placed within and up to 5 miles of greater sage-grouse habitat management areas (PHMAs, GHMAs, or other habitat management areas [OHMAs]) and within and up to 5 miles of suitable pinyon jay habitat (see EMMs BIO-25 and GRSG-5 in Appendix D).

The 525 kV transmission line would consist of three phases per circuit with three conductors per phase. The transmission line would also include one extra high-strength steel shield wire and one optical ground fiber-optic shield wire for control and operation of the transmission system. The typical distance between structures would be approximately 1,200 feet. The minimum ground clearance for the 525 kV transmission line would be approximately 35 feet at an operating conductor temperature of 212 degrees Fahrenheit. All poles would be electrically grounded through the use of ground rods. The line would meet or exceed the requirements of the National Electrical Safety Code.

Table 2-3. Proposed Transmission and Distribution Line Characteristics

Structure Type	Description
525 kV steel pole, H-frame tangent 	• Typical Height: 100 to 180 feet • Typical Distance between Structures: 1,200 feet • Minimum Ground Clearance: 35 feet • Foundation Depth: approximately 15 to 30 feet • Foundation Footprint: 5 to 10 feet in diameter • Construction Footprint Requirements: 200 x 250 feet • Operations Footprint Requirements: 200 x 200 feet in greater sage-grouse habitat; 100 x 100 feet outside greater sage-grouse habitat
525 kV steel delta monopole tangent 	• Typical Height: 100 to 180 feet • Typical Distance between Structures: 1,200 feet • Minimum Ground Clearance: 35 feet • Foundation Depth: approximately 15 to 30 feet • Foundation Footprint: 6 to 12 feet in diameter • Construction Footprint Requirements: 200 x 250 feet • Operations Footprint Requirements: 100 x 100 feet
525 kV steel monopole vertical tangent 	• Typical Height: 120 to 180 feet • Typical Distance between Structures: 1,200 feet • Minimum Ground Clearance: 35 feet • Foundation Depth: approximately 15 to 30 feet • Foundation Footprint: 6 to 12 feet in diameter • Construction Footprint Requirements: 200 x 250 feet • Operations Footprint Requirements: 100 x 100 feet

Structure Type	Description
525 kV steel lattice guyed tangent 	• Typical Height: 105 to 160 feet • Typical Distance between Structures: 1,200 feet • Typical Distance between guyed wires: 100 to 190 feet • Minimum Ground Clearance: 35 feet • Pedestal Foundation Depth: approximately 4 feet • Construction Footprint Requirements: 200 x 250 feet • Operations Footprint Requirements: 100 x 100 feet
525 kV steel lattice self-supporting tangent 	• Typical Height: 100 to 150 feet • Typical Distance between Structures: 1,200 feet • Minimum Ground Clearance: 35 feet • Foundation Depth: approximately 15 to 30 feet • Construction Footprint Requirements: 200 x 250 feet • Operations Footprint Requirements: 100 x 100 feet
525 kV steel lattice self-supporting dead-end/angle 	• Typical Height: 100 to 150 feet • Typical Distance between Structures: 1,200 feet • Minimum Ground Clearance: 35 feet • Foundation Depth: approximately 25 to 40 feet • Construction Footprint Requirements: 200 x 400 feet • Operations Footprint Requirements: 100 x 100 feet

Structure Type	Description
525 kV steel three-pole dead-end/angle 	• Typical Height: 100 to 180 feet • Typical Distance between Structures: 1,200 feet • Minimum Ground Clearance: 35 feet • Foundation Depth: approximately 25 to 40 feet • Foundation Footprint: 6 to 12 feet in diameter • Construction Footprint Requirements: 200 x 400 feet • Operations Footprint Requirements: 100 x 100 feet
525 kV steel monopole delta dead-end/angle 	• Typical Height: 100 to 180 feet • Typical Distance between Structures: 1,200 feet • Minimum Ground Clearance: 35 feet • Foundation Depth: approximately 25 to 40 feet • Foundation Footprint: 6 to 12 feet in diameter • Construction Footprint Requirements: 200 x 400 feet • Operations Footprint Requirements: 100 x 100 feet
Distribution pole 	• Typical Height: 45 to 50 feet • Typical Distance between Structures: 230 feet • Minimum Ground Clearance: 22 feet • Foundation Depth: approximately 25 to 40 feet • Construction Footprint Requirements: 100 x 100 feet • Operations Footprint Requirements: 50 x 50 feet

Source: NV Energy 2024

Distribution

The proposed new substations and telecommunications facilities would require electric distribution service to power the control equipment and lighting, run temperature controls, and charge emergency backup batteries. As shown in Table 2-1, approximately 2 miles of new distribution lines would be required.

Distribution lines would be energized at 12 kV or 25 kV and are anticipated to include the combined placement of approximately 23 tangent, angle, and/or dead-end structures per mile. Structures may consist of wood or steel monopoles (single pole) and range between 45 and 50 feet tall. Dead-end and angle structures may also require guy wires and anchors. A typical drawing of a distribution pole to be installed is shown in Table 2-3.

The distribution lines would consist of three phases per circuit with one conductor per phase. The distribution line may also include fiber-optic cable installed below the energized conductor for operation and control of the transmission system. The typical distance between structures would be approximately 230 feet. The minimum ground clearance for the distribution lines would be approximately 22 feet. The lines would meet or exceed the requirements of the National Electrical Safety Code.

Guard Structures

During wire-pulling activities, temporary guard structures would be erected during construction at road, railroad, and electric line crossings to protect these features and the public if the wire falls. Guard structures would consist of construction equipment with special attachments or wood, H-frame structures placed on either side of the crossing to prevent ground wires, conductors, or equipment from falling on underlying facilities and disrupting road and rail traffic and electric lines. The need for guard structures at distribution line crossings would be determined once the route alignments have been field verified. Guard structures may not be required for roads with low volume or very limited use. In such cases, other safety measures, such as barriers, flaggers, or other traffic controls, would be used. Following stringing and tensioning of all ground wires and conductors, the guard structures would be removed, and the area would be restored.

Substations

The GLNP would include construction of the Lander Substation and improvements to the existing Robinson Summit Substation. These substations would include the installation of fiber-optic cables for control and operation of the transmission system.

Lander 525 and 230 kV Substation

The new Lander 525 and 230 kV Substation would be constructed approximately 1 mile northwest of the existing Austin 230 kV Substation and approximately 3 miles northwest of Austin in Lander County, Nevada. It would require an area of approximately 109 acres (see Table 2-2). The proposed substation would also require the construction of two new 525 kV transmission line getaways and two new 230 kV transmission line getaways. All substation and transmission line realignment work would be on BLM-administered lands.

Robinson Summit 525/345 kV Substation Expansion

The existing Robinson Summit 525/345 kV Substation would be expanded to the south of the existing substation; this would require an additional area of approximately 46 acres (see Table 2-2). The proposed expansion would also require the construction of one new 525 kV transmission line getaway. All substation expansion and transmission line realignment work would be on BLM-administered lands.

Telecommunications

As previously described, the Proponent would install an optical ground wire as a component of the 525 kV transmission line for control and operation of the transmission system. A mix of telecommunications systems would be used to provide secure and reliable communications for the control system's real-time requirements, protection, and day-to-day O&M needs.

US Highway 50 Fiber-Optic Cable and Microwave Radio Facilities

In addition to the optical ground wire, the Proponent would utilize an existing underground fiber-optic cable along US Highway 50, along with existing microwave site facilities, to provide a diverse and redundant telecommunications path pursuant to the North American Electric Reliability Corporation reliability standards. Underground and overhead optical fiber would be used to connect the Lander Substation and telecommunications sites to existing US Highway 50 splice boxes.

Optical Amplifier Sites

The optical data signal degrades with distance as it travels through the fiber-optic cable. This would require the installation of signal-boosting equipment within existing or proposed substation sites (amplifier sites) as well as greenfield signal regeneration sites. For simplicity, both types of sites are referred to as amplifier sites hereafter. The proposed amplifier sites are summarized in Table 2-4 and depicted on Figure 2-2, Greenlink North Transmission Project Proposed Action, Extents 1–15 in Appendix A. The proposed amplifier sites would also require electric distribution service and installation of a backup generator.

Table 2-4. Amplifier Sites

Site	Acres
Amplifier Site 5	2.1
Amplifier Site 6	2.1
Lander Substation Amplifier[1]	N/A
Amplifier Site 7	2.1
Robinson Summit Substation Amplifier[1]	N/A

Source: NV Energy 2024

[1]The amplifier is within the substation footprint and is included in the acreage calculation for the substation.

Access and Maintenance Roads

Roads enable access to the ROW grant areas and structure sites for construction and long-term maintenance of the transmission line and associated facilities. Existing roads would be the primary means to access the GLNP for construction and O&M. The use of existing roads, to the extent possible, would prevent unnecessary and undue degradation, as required under the FLPMA. In some cases, existing improved and unimproved dirt roads could require widening or

other improvements to accommodate construction and maintenance equipment. Three types of existing roads would be used for access:

- **Paved roads:** Paved roads are expected to be accessible under any conditions by all construction and O&M equipment; they are not expected to require either maintenance or improvement.
- **Unpaved (dirt or gravel) roads that do not require improvements:** These roads are graded, used frequently, and should be accessible under most weather conditions. These roads would not need improvement for construction and O&M access, but they would be maintained (typically light grading and erosion-control features such as rolling dip with lead-out ditch and brushing) to keep the road in acceptable condition for construction, O&M, and other authorized uses. Maintenance activities would not increase the existing road prism or increase surface disturbance.
- **Unpaved roads that could require improvements:** These include minimally improved and unimproved dirt roads and two-track roads that would need improvements to safely accommodate construction and O&M equipment.

The normal width on access roads requiring improvement would be about 25 feet. Improvements could include vegetation removal; curve widening; roadbed widening; surface improvement by blading and moving rocks to either side; and installing natural drainage crossings, water bars, and other erosion-protection measures. In addition, a 75-foot-wide turning radius would be added at roadway intersections and turnout locations, as necessary, to accommodate oversized equipment and vehicles. Each turn radius area would measure 20 by 20 feet (NV Energy 2024).

The Proponent would construct new access roads, where needed, from existing access roads and between adjacent structure sites in flat areas with a low density of vegetation. The new access roads would be graded for the equipment needed to construct foundations, erect structures, and conduct stringing. The width on new access roads would average 25 feet (NV Energy 2024).

In addition to access roads to the ROW, a maintenance road would also be required along the entire length of the transmission line for O&M and patrol activities. Approximately 238 miles of 25-foot-wide maintenance roads would be needed for the 525 kV transmission line and associated facilities (NV Energy 2024, 441.4 miles are analyzed in this Final EIS/Proposed RMPA to ensure all possible roads are covered). All new and improved access and maintenance roads would be maintained as permanent.

During construction, overland travel would be used, where feasible, within the ROW areas. Overland travel is a "drive and crush" method, where access routes are used without vegetation clearing or exposing underlying soils. During O&M, any overland travel would be limited to the transmission line and distribution line ROWs. All overland travel would occur within the ROW grant areas.

Construction and Material Yards

Temporary work areas, referred to as construction or material yards, would be required for materials and equipment storage and staging for construction activities. These areas would potentially include concrete batch plants and helicopter fly yards, if determined necessary. Five preliminary construction or material yards would be located at approximately 50-mile intervals along the transmission line route. Construction or material yard site selections incorporate the Proponent's preferences for placement on private lands, placement of 1 yard in each county crossed by the route, placement along or near paved roads and in areas of low natural resource sensitivity, and areas approximately 25 acres in size.

The yards would serve as field offices, reporting locations for construction crews, parking space for vehicles and equipment, storage of construction materials, and structure fabrication and assembly. Material yards were identified as close as practicable to railroad sidings. It is anticipated that the Proponent would receive materials at the main material yards where the materials would be turned over to the contractor for hauling to job sites.

Fencing

New fences would be installed around the proposed substations and telecommunication sites for perimeter security. The fence heights would be 13 and 9 feet, respectively (NV Energy 2024). In addition, temporary fences could be used for sensitive area avoidance or emergency stabilization and rehabilitation.

2.1.5 GLNP Construction

The preconstruction, construction, and O&M activities are described in the PPOD (NV Energy 2024). The PPOD provides directions to the Proponent's construction personnel, construction contractors and crews, the compliance inspection contractor, environmental monitors, and agency personnel regarding specifications of construction. The PPOD also provides direction for facility lighting and facility inspections under O&M activities.

The environmental management measures (EMMs) from the BLM's and Forest Service's Records of Decision (RODs) and BLM Approved RMPA would be incorporated into the construction, operation, and maintenance (COM) plan and individual framework plans and attached to the Notice to Proceed. The design features and mitigation measures also would be incorporated as conditions of approval of the ROW and special use permit grants. The Proponent would be responsible for ensuring its contractors and employees implement the design features, mitigation measures, and framework plans. The federal agencies with jurisdictional responsibilities would monitor that implementation.

The federal agencies would use a compliance inspection contractor to ensure the measures prescribed in the RODs, BLM Approved RMPA, and COM plan are implemented and achieve the desired resource protection. For this project, the COM plan would be incorporated by reference into the RODs that would be issued based on the analysis in the Final EIS/Approved RMPA. Any change to the COM plan after issuance of the Notice to Proceed would require NEPA review through a variance of or amendment to the COM plan.

The Proponent would be ready to mobilize upon project approval. Final engineering and boundary surveys would determine the exact locations of towers, access roads, and other project features before the start of construction. The overall construction period would be approximately 2 years from receipt of a Notice to Proceed, depending on a number of factors, such as the weather, seasonal restrictions, and availability of labor and materials.

To accommodate construction activities, the Proponent would require a 600-foot-wide, short-term ROW (1,200 feet in areas with steep terrain) for the proposed 525 kV transmission line and associated facilities. Temporary work pads would be needed for each structure and would be sized based on the structure type (see Table 2-3, Proposed Transmission and Distribution Line Characteristics).

2.1.6 Construction Workforce Numbers, Vehicles, Equipment, and Time Frames

Construction activities would generally occur at the same time from the Lander Substation to the Fort Churchill Substation and from the Robinson Summit Substation to the Lander Substation, with construction of the transmission line, substations, and telecommunications facilities occurring in an overlapping, sequential manner.

Project construction would require at least 50 to 70 workers at any given time, with a maximum of 500 workers during peak construction. Depending on the weather, construction crews would work 8- to 12-hour workdays, 6 to 7 days per week. Construction vehicles and heavy equipment would be required for construction of the project (see Table 2-5).

The equipment would be delivered to the site by flatbed combination truck and/or trailer and would mostly remain on-site until construction is finished. Locally available gravel, rock, and sand would be transported to the GLNP site.

Table 2-5. Typical Construction Equipment and Uses

Equipment	Use
Three-fourths-ton and 1-ton pickup trucks	Transport construction personnel
Two-ton flatbed trucks and flatbed boom trucks	Haul and unload materials
Rigging trucks	Haul tools and equipment
Mechanic trucks	Service and repair equipment
Aerial bucket trucks	Access poles, string conductor, and other uses
Shop vans	Store tools
Bulldozers	Grade access roads and pole sites, and reclaim the sites
Road graders	Construct, maintain, and upgrade roads; recontour temporarily disturbed areas
Front-end loaders	Support road building, remove foundation spoils, etc.
Scrapers	Construct and upgrade roads
Compactors	Construct access roads
Truck-mounted or tracked diggers or backhoes	Excavate structure holes and footings
Skid steers	Move soils, dress out disturbed areas, and use for light contouring
Small mobile cranes (12 tons)	Load and unload materials
Large mobile cranes (75 tons and larger)	Erect structures
Transports	Haul poles and equipment

Equipment	Use
Drill rig with augers	Excavate and install fences and install foundation anchors
Puller and tensioners	Pull conductor and wire
Cable reel trainers	Transport cable reels and feed cables into conduit
Semitrailers and tractors	Haul structures and equipment
Splice trailers	Store splicing supplies and air condition manholes
Take-up trailers	Install conductor
Air compressors	Operate air tools
Air tampers	Compact soil around structure foundations
Portable generators	Provide electricity for office trailers and tools
Dump trucks	Haul excavated materials and import backfill
Fuel and equipment fluid trucks	Refuel and maintain vehicles
Water trucks	Suppress dust and fire, hydroseed, and water plants
Winch trucks	Install and pull sock line and conductors into position
Helicopters	Transport equipment and personnel, erect structures, and pull conductor sock line and hard line
Concrete trucks	Deliver concrete
Excavators/mini excavators	Conduct earthwork at sites, access roads, and substation foundations
Wheel loaders	Conduct earthwork at sites and access roads, and restore the sites
Forklifts	Use for miscellaneous tasks along the transmission line and at substation sites and material yards
Mobile batch plants	Mix the concrete

Source: NV Energy 2024

2.1.7 Operations and Maintenance

Once the new facilities are operational, the Proponent's O&M personnel would conduct regular inspections of the transmission lines, substations, telecommunication facilities, and distribution lines. Annual line inspections would be conducted by helicopter, all-terrain vehicles, or line trucks; these inspections would include visual review of the lines along the access roads. Approximately every 10 years, the Proponent would conduct structure-climbing inspections. These inspections would consist of accessing the structures using four-wheel-drive vehicles on existing access roads and maintenance roads. The Proponent's field inspectors would climb the structures to examine the hardware, structure condition, and insulators.

Aside from annual inspections, the Proponent would also need to access the lines when structure maintenance is required or if there is an emergency. Under these circumstances, the Proponent would access the lines by trucks using existing access roads, by helicopter, or by other means necessary. Further details regarding O&M will be provided in the Proponent's COM plan, after the RODs and BLM Approved RMPA are completed.

2.1.8 Decommissioning

Typically, transmission lines that have been regularly maintained continue to provide service longer than the projected service life. The service life depends on the electrical demand. At some period in the future, the GLNP may no longer be cost-effective to continue operating. At that time, the Proponent would decommission the GLNP, and all project facilities would be dismantled and removed in accordance with applicable county, state, and federal laws.

The Proponent would file a restoration and decommissioning plan, to be approved by the BLM and other applicable agencies, before terminating the ROWs. Access routes and other sites disturbed during decommissioning would be reclaimed and revegetated in accordance with the decommissioning plan approved by the federal agencies. Such activities would not commence until written approval of the plan is received from the agency authorized officer. Additional and appropriate NEPA review would be required at that time.

2.1.9 Proposed Environmental Management Measures

To reduce the impacts on resources from the GLNP, the Proponent has committed to environmental management measures EMMs, which are also referred to as project design features. These measures, along with best management practices, standard operating procedures, and requirements from the BLM and Forest Services' applicable RMPs and manuals, are considered in the impact analysis for each resource/use. In this Final EIS/Proposed RMPA, EMMs refer collectively to the best management practices and standard operating procedures. These EMMs are listed in Appendix D.

2.2 Other Resource Consideration Alternative

The Other Resource Consideration Alternative would follow the route under the Proposed Action except for one adjustment described below. See Figure 2-3, Other Resource Consideration Alternative, and Figure 2-4, Other Resource Consideration Alternative, Extents 1–15, in Appendix A for reference. This alternative would also require the evaluation of the same BLM land use planning amendments as identified under the Proposed Action. The proposed 3,500-foot-wide utility corridor would be approximately 205 miles in length on approximately 85,800 acres of BLM-administered lands. Approximately 145 miles (or approximately 71 percent) of the proposed utility corridor would be collocated or dually collocated with existing 230 and 345 kV transmission lines.

This alternative would also require geotechnical investigations as described under the Proposed Action. The Proponent would access up to 146 borehole locations. There would be 102 proposed boreholes within greater sage-grouse habitat management areas. Of these, 67 would be within PHMAs, 18 would be within GHMAs, and 17 would be within OHMAs. There would be 82 proposed boreholes within or adjacent to existing roads and 64 proposed boreholes that would require overland travel access.

Under this alternative, the Proponent has developed the Forest Service Southern Alternative in coordination with the Forest Service that would be consistent with the 1986 Toiyabe Forest Plan (as amended), specifically amendment 17 (Forest Service 2015a) to avoid greater sage-grouse GHMAs and PHMAs. The alternative would cross approximately 8 miles of the Humboldt-Toiyabe National Forest and generally follow US Highway 50 past Austin, Nevada, and existing ROWs until reconnecting with the Proposed Action route (see Figure 2-4, Extent 9, in Appendix A). Due to the mountainous terrain in this area, the 1,200-foot disturbance corridor, as described in Section 2.1.2, would be used for portions of the Forest Service Southern Alternative route. This alternative would be within a BSU that has not exceeded the 3 percent anthropogenic disturbance cap. It also would avoid greater sage-grouse GHMAs and PHMAs and follow existing ROWs as much as possible.

Table 2-6. Other Resource Consideration Alternative Linear Features and Surface Management

Linear Feature	Miles[1]
BLM (total)	**572.4**
525 kV transmission line	210.2
Existing access road requiring improvement	316.8
New access road	43.1
Distribution line	2.3
Forest Service (total)	**26.8**
525 kV transmission line	7.9
Existing access road requiring improvement	14.8
New access road	4.1
DOD (total)	**43.4**
525 kV transmission line	18.4
Existing access road requiring improvement	23.1
New access road	1.9
Private (total)	**28.1**
525 kV transmission line	4.2
Existing access road requiring improvement	22.7
New access road	1.2
Total	**670.7**

Source: BLM, FS, and NVE GIS 2024

[1]The linear feature miles may not sum to the nearest 0.1-mile due to rounding.

Under the Other Resource Consideration Alternative, the quantity of GLNP components would be similar to those under the Proposed Action, as shown in Table 2-2. However, the quantities of the transmission line structure work areas, structure pads in and outside greater sage-grouse habitat, and pull sites would differ, as shown in Table 2-7.

Table 2-7. Other Resource Consideration Alternative Temporary and Permanent Disturbance Areas

GLNP Component	Quantity[1]	Temporary Disturbance	Permanent Disturbance
525 kV tangent structure work area	1,097	200 x 250 feet	None
525 kV dead-end and angle structure work area	85	200 x 400 feet	None
525 kV structure pad	327	None	100 x 100 feet
525 kV structure pad in greater sage-grouse habitat	856	None	200 x 200 feet
525 kV mid-span pull sites	39	200 x 600 feet	None
525 kV mid-span pull sites in greater sage-grouse habitat	103	200 x 600 feet	None
525 kV point of intersection pull site	16	700-foot radius	None
525 kV point of intersection pull site in greater sage-grouse habitat	44	700-foot radius	None

Source: Stacey Atella, POWER Engineers Project Manager, personal communication with Holly Prohaska, AECOM Project Manager, on May 10, 2025.

[1]These quantities are estimates that were not included in the PPOD (NV Energy 2024) and are based on the Proposed Action alignment's preliminary design. They are included here to provide a comparison between the action alternatives.

2.3 BLM Preferred Alternative

The BLM has identified the preferred alternative, which is the Proposed Action with the following five changes. See Figure 2-5, BLM Preferred Alternative, and Figure 2-6, BLM Preferred Alternative, Extents 1–15, in Appendix A for reference. The BLM Preferred Alternative would differ from the Proposed Action in the following ways:

- BLM Preferred—Proposed Churchill County Alternative route segment (see Figure 2-6, Extent 2, in Appendix A)
- Forest Service Preferred—Proposed Forest Service Northern Alternative route segment (see Figure 2-6, Extents 8–9, in Appendix A)
- Desatoya Mountains Wilderness Area Alternative route segment (see Figure 2-6, Extent 6, in Appendix A)
- A portion of the proposed utility corridor narrowed to 2,000 feet in Eureka County to minimize overlap with lands identified for disposal (see Figure 2-6, Extent 12, in Appendix A)
- Mining proponent's route segment to minimize overlap with unpatented mining claims (see Figure 2-6, Extents 13–14, in Appendix A)

This alternative would also require the evaluation of the same land use planning amendments as identified under the Proposed Action. The proposed 3,500-foot-wide utility corridor would be approximately 205 miles in length on approximately 83,400 acres of BLM-administered lands. Approximately 166 miles (or approximately 81 percent) of the proposed utility corridor would be collocated or dually collocated with existing 230 and 345 kV transmission lines.

This alternative would also require geotechnical investigations as described under the Proposed Action. The Proponent would access up to 150 borehole locations. There would be 109 proposed boreholes within greater sage-grouse habitat management areas. Of these, 71 would be within PHMAs, 19 would be within GHMAs, and 19 would be within OHMAs. There would be 80 proposed boreholes within or adjacent to existing roads and 70 proposed boreholes that would require overland travel access.

During the public scoping period, Churchill County suggested an alternative segment to realign the Proposed Action south of the public purpose conveyance parcels that will be transferred to Churchill County (see Figure 2-6, Extent 2, in Appendix A) as a result of the National Defense Authorization Act of 2023. This alternative segment would be approximately 8 miles long and would slightly reduce the disturbance footprint of the 525 kV transmission line on BLM-administered lands (the 525 kV transmission line is 10 miles long in this area under the Proposed Action).

From the Lander Substation, an alternative adjustment would be made along National Forest System lands. The route would travel north of and parallel to the Proposed Action route (see Figure 2-6, Extent 8, in Appendix A). The alternative route would cross approximately 10 miles of the Humboldt-Toiyabe National Forest and approximately 9 miles of adjacent BLM-administered lands to the east. The route would parallel an existing 230 kV transmission line until reconnecting with the Proposed Action route (see Figure 2-6, Extent 9, in Appendix A).

The reconnection with the Proposed Action route 10 miles east of the Humboldt-Toiyabe National Forest would provide the most technical feasibility to reduce the cost, line angles, and disturbances from the proposed 525 kV transmission line. The alternative route would be collocated within an existing designated utility corridor.

The other adjustment would be made in the vicinity of the Desatoya Mountains Wilderness Area, which was designated as wilderness under the National Defense Authorization Act of 2023. This approximately 6-mile alternative segment would adjust the 525 kV transmission line further north than the Proposed Action (see Figure 2-6, Extent 6, in Appendix A) and away from the Desatoya Mountains Wilderness Area.

Two alternatives were suggested during the 2024 Draft EIS/RMPA review period that the BLM has carried forward under the BLM's Preferred Alternative. Eureka County suggested adjustments to the proposed 525 kV transmission line alignment to avoid lands identified as available for disposal to Eureka County in Township 19 North, Range 53 East and Township 20 North, Range 53 East (see Figure 3-24, Legal Description, Extent 12, in Appendix A). The BLM has carried forward an approximately 6-mile segment that would narrow the utility corridor to 2,000 feet between two pulling sites (see Figure 2-6, Extent 12). This would minimize overlap but would not completely avoid the lands identified as available for disposal. A mining proponent suggested an alternative segment to avoid an unpatented mining claim (see Figure 2-6, Extents 13–14, in Appendix A). The BLM has carried forward an approximately 7-mile segment that would adjust the line 300 feet north in White Pine County and would minimize overlap but would not completely avoid the mining proponent's unpatented mining claims.

Table 2-8. BLM Preferred Alternative Linear Features and Surface Management

Linear Feature	Miles[1]
BLM (total)	**557.9**
525 kV transmission line	202.8
Existing access road requiring improvement	316.1
New access road	37.0
Distribution line	2.0
Forest Service (total)	**32.6**
525 kV transmission line	9.6
Existing access road requiring improvement	21.0
New access road	2.0
DOD (total)	**43.8**
525 kV transmission line	18.4
Existing access road requiring improvement	23.1
New access road	2.3
Private (total)	**21.5**
525 kV transmission line	3.7
Existing access road requiring improvement	16.9
New access road	0.9
Total	**655.8**

Source: BLM, FS, and NVE GIS 2024

[1]The linear feature miles may not sum to the nearest 0.1 mile due to rounding.

This alternative would comply with the amendment 17 standards and guidelines that require new transmission lines to be collocated with existing utility corridors in greater sage-grouse PHMAs and GHMAs (Forest Service 2015a).

Under the BLM Preferred Alternative, the quantity of GLNP components would be similar to those under the Proposed Action, as shown in Table 2-2. However, the quantities of the transmission line structure work areas, structure pads in and outside greater sage-grouse habitat, and pull sites would differ, as shown in Table 2-9.

Table 2-9. BLM Preferred Alternative Temporary and Permanent Disturbance Areas

GLNP Component	Quantity[1]	Temporary Disturbance	Permanent Disturbance
525 kV tangent structure work area	1,068	200 x 250 feet	None
525 kV dead-end and angle structure work area	83	200 x 400 feet	None
525 kV structure pad	326	None	100 x 100 feet
525 kV structure pad in greater sage-grouse habitat	826	None	200 x 200 feet
525 kV mid-span pull sites	39	200 x 600 feet	None
525 kV mid-span pull sites in greater sage-grouse habitat	99	200 x 600 feet	None
525 kV point of intersection pull site	16	700-foot radius	None
525 kV point of intersection pull site in greater sage-grouse habitat	42	700-foot radius	None

Source: Stacey Atella, POWER Engineers Project Manager, personal communication with Holly Prohaska, AECOM Project Manager, on May 10, 2025.
[1]These quantities are estimates that were not included in the PPOD (NV Energy 2024) and are based on the Proposed Action alignment's preliminary design. They are included here to provide a comparison between the action alternatives.

Table 2-10 displays comparisons between the Proposed Action and the alternatives for miles of surface management and estimated total acres of disturbance.

Table 2-10. Proposed Action and Alternatives Comparison

Comparison Criteria	Proposed Action Route	Other Resource Consideration Alternative	BLM Preferred Alternative
General			
Combined transmission components' length (miles)[1]	678.6	670.7	655.8
Surface Management			
BLM (miles)	579.4	572.4	557.9
Forest Service (miles)	33.0	26.8	32.6
DOD (miles)	43.8	43.4	43.8
Private (miles)	22.4	28.1	21.5
Disturbance Estimates			
Total disturbance (acres)[1]	36,917	36,756	36,830

Source: BLM, FS, and NVE GIS 2024
[1]These totals include the 525 kV transmission line and access roads, and, where applicable, distribution lines. Each area includes three temporary disturbance buffers and one permanent disturbance buffer for the temporary and permanent (30 years with an option to renew) ROWs. The buffers are described in further detail in Section 3.1, Introduction.

2.4 Plan Amendments

On March 11, 2024, the BLM announced that it was considering plan amendments for the GLNP. The second *Federal Register* NOI stated, "The plan amendments are being considered to allow the BLM to evaluate modifying restrictions on major rights-of-way (ROWs) within greater sage-grouse habitat management areas and in proximity to leks and to establish a new 235-mile utility corridor between Ely, Nevada and Yerington, Nevada…" (89 *Federal Register* 17510). Since the publication of the *Federal Register* notice, the length of the utility corridor has been revised to 198 miles under the Proposed Action, 205 miles under the Other Resource Consideration Alternative, and 205 miles under the BLM Preferred Alternative, to exclude non-BLM-administered lands.

To address potential nonconformance with the existing land use plans, the BLM has evaluated in this Final EIS/Proposed RMPA the following amendments to the existing land use plans, as amended by the 2015 ARMPA:

- Designate a new utility corridor on BLM-administered lands;
- Exempt the BLM utility corridor from lek avoidance buffers; and
- Exempt the BLM utility corridor from a seasonal restriction for activities in greater sage-grouse winter range.

As described under Section 1.5.1, the BLM would designate a utility corridor, up to 3,500 feet in width, on BLM-administered lands. The utility corridor would occur on approximately 82,600 acres of BLM-administered lands under the Proposed Action (Figure 2-2, Greenlink North Transmission Project Proposed Action, Extents 1–15); on approximately 85,800 acres under the Other Resource Consideration Alternative (Figure 2-4, Other Resource Consideration Alternative, Extents 1–15); and on approximately 83,400 acres under the BLM Preferred Alternative (Figure 2-6, BLM Preferred Alternative, Extents 1–15). The terminus of the GLNP utility corridor would be approximately 1 mile east of the Robinson Summit Substation where it would connect into an existing Section 368 corridor. This would ensure the long-term viability of both the GLNP and Section 368 utility corridors.

A utility corridor width of up to 3,500 feet would provide enough spatial leeway to ensure proper spanning between existing 230 kV and 345 kV transmission lines, where collocated, and to shift the transmission line as needed. The minimum distance requirements to avoid electrical interference between transmission lines would depend on the height of the proposed 525 kV transmission line, which would vary depending on the topography.

The designation of the BLM utility corridor would exempt the GLNP and any future energy transmission infrastructure from the soft and hard trigger requirements incorporated into the land use plans, as amended by the 2015 ARMPA. The GLNP would occur within current hard trigger (exclusion) areas on approximately 13,813 acres under the Proposed Action; on approximately 13,779 acres under the Other Resource Consideration Alternative; and on approximately 13,832 acres under the BLM Preferred Alternative. Under the Adaptive Management Plan in the 2015 ARMPA (Appendix J), these areas are exclusion areas for high-voltage transmission lines greater than 100 kV outside of a utility corridor (BLM 2015a, MD SSS 20).

The BLM would exempt the BLM utility corridor from lek avoidance buffers described in Appendix B (BLM 2015a, MD SSS 3)—which range in distance from 0.25 miles for noise and up to 3.1 miles for surface disturbance—that would affect geotechnical investigations, construction activities, and O&M activities. As described in Section 3.6.3, various segments of the 525 kV transmission line would occur within the greatest extent of lek avoidance buffers (3.1 miles).

The proposed 525 kV transmission line would occur within the 3.1-mile lek avoidance buffers for approximately 134 miles under the Proposed Action; on approximately 117 miles under the Other Resource Consideration Alternative; and on approximately 98 miles under the BLM Preferred Alternative. Approximate locations of leks are shown in Figure 3-6, Greater Sage-Grouse Leks (2023 Lek Status), Extents 1–5. The transmission line's proximity to leks would be unavoidable. Exempting the BLM utility corridor from the lek avoidance buffers would ensure the viability of the utility corridor if future applications for energy transmission projects were submitted to the BLM.

The BLM would also exempt the BLM utility corridor from a seasonal restriction period in winter habitats (November 1 to February 28) that would affect geotechnical investigations, construction, O&M, and decommissioning activities of the GLNP (BLM 2015a, MD SSS-3). The BLM has reviewed the NDOW GIS data for the three areas subject to seasonal restrictions: breeding, brood-rearing, and winter habitats. Under the action alternatives, including the Proposed Action, approximately 190 miles of the proposed 525 kV transmission line would intersect all three categories of seasonal habitats. As a result, the seasonal restriction periods combined would result in a 45-day construction window per year (September 16 to October 31) for the GLNP. Approximately 45 miles of the transmission line are outside the greater sage-grouse habitat areas and would not be affected by these seasonal restrictions.

Construction of the 235-mile GLNP 525 kV transmission line cannot occur over a 2- to 3-year period with such seasonal restrictions in place. Mobilizing and demobilizing construction activities during a 45-day work window would cause greater environmental impacts and significant increases in project costs. Exempting the BLM utility corridor from the winter habitat seasonal restriction would allow for geotechnical investigations, construction, O&M, and decommissioning activities to occur between September 16 and February 28 each year and allow any future energy transmission project in the BLM utility corridor to occur during this same period.

Section 202 of the FLPMA requires the BLM to develop, maintain, and revise land use plans to provide for the management of tracts or areas of public lands on the basis of multiple use. The 2015 ARMPA does not prevent the BLM from amending its land use plans, including the proposed designation of a new utility corridor. All other decisions incorporated into the existing land use plans, as amended by the 2015 ARMPA, would remain in effect.

2.5 Alternatives Considered and Eliminated from Detailed Analysis

The BLM assessed the transmission line route under the action alternatives for the alternatives' ability to be technically and economically feasible and their ability to meet the Proposed Action's purpose and need. The following alternatives were considered but eliminated from detailed analysis in this Final EIS/Proposed RMPA because they would be ineffective in

responding to the purpose and need, technically or economically infeasible, and not in conformance with basic policy objectives for the management of an area.

2.5.1 Mason Valley Wildlife Management Area Alternative 1

During the pre-NOI public meetings, the NDOW and Nevada Division of State Lands suggested an alternative that would reroute the 525 kV transmission line to the western boundary of the Mason Valley Wildlife Management Area (WMA; see Figure 2-8, Alternatives Considered but Eliminated from Detailed Analysis, Routes near the Proposed Action, in Appendix A). During the alternatives' technical feasibility analysis, the Proponent adjusted their proposed route to avoid crossing a GLWP alternative segment at the Fort Churchill Substation. This adjusted the Proposed Action to the same location as the Mason Valley WMA Alternative. Therefore, this alternative was determined to be redundant and was dismissed from detailed analysis.

2.5.2 Mason Valley Wildlife Management Area Alternative 2

The NDOW also suggested an alternative that would reroute the 525 kV transmission line outside the Mason Valley WMA. The Proponent determined this alternative would be infeasible because it would move the transmission line closer to the Fort Churchill Substation and exceed the minimum spacing requirements between electrical transmission components, as required by the National Electrical Safety Code (NESC 2023). Rerouting the transmission line outside the Mason Valley WMA would also require additional heavy-angle, dead-end structures, which would result in increased ground disturbance. The authorized GLWP transmission alignment and GLNP proposed transmission alignment are sited parallel where they enter the Fort Churchill Substation; therefore, any further changes to the angle structure location would impact both alignments.

2.5.3 Reduced-Disturbance Alternative

This alternative was developed to reduce disturbance of the 525 kV transmission line by collocating it with existing ROWs or existing utility corridors. The potential reduced-disturbance areas included three small segments: (1) a 2-mile segment in the Desert Mountain area, (2) an 8-mile segment near Kobeh Ranch, and (3) a 4-mile segment in the Ruby Hill area (see Figure 2-8, Alternatives Considered but Eliminated from Detailed Analysis, Routes near the Proposed Action, in Appendix A). During the alternatives' technical feasibility analysis, the Proponent adjusted the Proposed Action to avoid mountain topography in the Desert Mountains area. Instead, the route was adjusted to cross through valley topography, which aligned with the 2-mile reduced-disturbance segment. Therefore, this segment was determined to be redundant and was dismissed from detailed analysis.

The other two segments were dismissed from detailed analysis because of their increased disturbance on private lands and reduced technical feasibility. The segment near Kobeh Ranch would cross private land (Kobeh Ranch) and irrigation pivots. The Ruby Hill area segment would cross private land, an occupied house, and irrigation pivots; it would have reduced construction feasibility, compared with the Proposed Action.

2.5.4 Pre-NOI Northern Alternative

During the first public involvement meeting, attendees voiced concern over the proposed route mainly following US Highway 50. They suggested an alternative north of US Highway 50 that instead would follow Interstate 80 (see Figure 2-7, Alternatives Considered but Eliminated from Detailed Analysis, Northern Routes, in Appendix A). The BLM reviewed current resource management planning direction and constraints in the locations north of the proposed route and produced a route that was feasible. The BLM then evaluated this alternative for preliminary impacts and compared them with the proposed route. Adding additional miles to the transmission route increased the impacts substantially and added impacts that were not present with the Proposed Action.

Table 2-11 displays the comparison between the Proposed Action and the Northern Alternative for surface management, greater sage-grouse habitat, NHT crossings, and the cost to Nevada ratepayers. In addition to the increase in disturbance, the Northen Alternative would be economically infeasible, and it would not be acceptable to the State of Nevada Public Utilities Commission, who would likely deny the project. Therefore, the proposed Northern Alternative was evaluated but dismissed from detailed analysis.

Table 2-11. Proposed Action and the Northern Alternative Comparison

Comparison Criteria	Proposed Action Route	Pre-NOI Northern Alternative
General		
Transmission line route length (miles)[1]	235	363
Surface Management		
BLM (miles)	204	239
Forest Service (miles)	10	0
DOD (miles)	18	0
Bureau of Reclamation (miles)	0	15
State of Nevada (miles)	0	1
Private (miles)	3	108
Greater Sage-Grouse Habitat		
PHMA (miles)	45	43
GHMA (miles)	40	55
OHMA (miles)	32	54
National Historic Trails		
California NHT crossing (count)	0	4
California NHT parallel (miles)	0	0
Pony Express NHT crossing (count)	5	2
Pony Express NHT parallel (miles)	0	0
Central Overland Emigrant Route-Simpson Route crossing (count)	7	1
Central Overland Emigrant Route-Simpson Route parallel (miles)	0	0
Disturbance Estimates		
Cost to Nevada ratepayers (millions of US dollars)[2]	752	1,162

Source: BLM, FS, and NVE GIS 2024

[1]These totals are for the transmission line route only and do not include roads, distribution lines, or links.

[2]Based on an estimated $3.2 million per mile of transmission line.

2.5.5 Greater Sage-Grouse Avoidance Alternative

An alternative was considered where the transmission line and utility corridor would completely avoid greater sage-grouse habitat. However, there is no possible transmission line route that would connect the Robinson Summit Substation to the Fort Churchill Substation without crossing through greater sage-grouse habitat (see Figure 2-9, Alternatives Considered but Eliminated from Detailed Analysis, Avoid Greater Sage-Grouse Habitat, in Appendix A). Therefore, this alternative was dismissed from detailed analysis.

2.5.6 Utility Corridor Alternatives

During the 2024 revised public scoping period, the BLM announced that it was considering the establishment of a 208-mile-long by 3-mile-wide utility corridor for approximately 372,769 acres of BLM-administered lands. The BLM received several comments requesting that the BLM reconsider the width of the proposed utility corridor. There is no BLM policy that establishes a standard utility corridor width. For example, the Carson City Field Office RMP-level utility corridors were designated as 2 miles in width (BLM 2001), the Ely District RMP-level utility corridors were designated as 0.5 or 0.75 miles in width (BLM 2008b), and West-Wide Energy Corridors (Section 368) average 3,500 feet (approximately 0.66 miles) in width (BLM 2009). The Battle Mountain District RMP does not specify any designated utility corridor widths. The National Defense Authorization Act of 2023 created a legislative 0.5-mile utility corridor through the Dixie Valley Training Area and northern and southern units of the Numu Newe SMA. The area that this 0.5-mile utility corridor crosses does not include greater sage-grouse PHMAs or GHMAs.

During the 2024 revised public scoping period, some commenters suggested the BLM reduce the width to a half mile. A 0.5-mile utility corridor would not provide enough spatial leeway to ensure proper spanning between existing transmission lines and to shift the transmission line as needed to avoid or minimize impacts on greater sage-grouse leks, to the extent practical. This is particularly concerning for the portions of the utility corridor that overlap greater sage-grouse PHMAs and GHMAs. The minimum distance requirement to avoid electrical interference between transmission lines depends on the height of the proposed 525 kV transmission line, which would vary depending on the topography.

A 3,500-foot-wide utility corridor would meet the project's purpose and need and has been incorporated into the action alternatives. Therefore, the 3-mile utility corridor and half-mile utility corridor alternatives have not been carried forward for detailed analysis.

2.5.7 Alternatives for Lander Substation Sites

In their routing and siting study (NV Energy 2022), the Proponent identified two alternatives (referred to as L2 and L3) for siting the Lander Substation. Both sites would be 71 acres in size and located east of Austin, Nevada, in the Bean Flat area north of US Highway 50. Siting of the alternative substation sites focused on proximity to existing access roads and transmission lines, placement outside designated utility corridors, and flat terrain that avoids known 100-year floodplains, streams, and sensitive species habitat.

The L2 alternative would be sited adjacent to a designated BLM utility corridor on private land. Due to a lack of nearby distribution needed to service the substation, this alternative would

require 14 more miles of distribution line installation than the Proposed Action. In addition, there would be a high concern for corrosive soils on-site that can damage steel infrastructure.

The L3 alternative would be sited adjacent to a designated BLM utility corridor on both private and BLM-administered lands. It would require new or improved access roads that would increase the cost, compared with the L2 alternative or the Proposed Action. Due to a lack of nearby distribution needed to service the substation, this alternative would require 23 more miles of distribution line installation than the Proposed Action.

The L2 and L3 alternatives would increase the disturbance and cost of the GLNP due to additional access road or distribution line costs, compared with the Proposed Action. Therefore, both alternatives have not been carried forward for detailed analysis.

2.5.8 Revised Northern Alternative

The Nature Conservancy submitted an alternative to route the 525 kV transmission line from the Fort Churchill Substation that would end at a proposed new substation in Wells, Nevada. The 525 kV transmission line would follow an existing transmission line northward to the Interstate 80 corridor near Nixon, Nevada, and then mostly parallel Interstate 80 to Wells, Nevada (see Figure 2-7, Alternatives Considered but Eliminated from Detailed Analysis, Northern Routes, in Appendix A). It would also follow the designated West-wide Energy Corridor, which was designated under Section 368(a) of the Energy Policy Act of 2005. The Nature Conservancy suggested this alternative to avoid disturbance along US Highway 50. It should be noted that there is already disturbance from existing transmission lines adjacent to US Highway 50; it is not an unaltered route.

The Nature Conservancy proposed that the line should connect and end at a new substation in Wells; however, this would not meet the Proponent's need to create redundancy and would be technically infeasible due to multiple crossings over private lands and steep topography. To make this alternative more technically feasible, the BLM adjusted the route to follow an existing transmission line south, perpendicular to Interstate 80, that connects to the proposed Robinson Summit Substation (see Figure 2-7, Alternatives Considered but Eliminated from Detailed Analysis, Northern Routes, in Appendix A).

Table 2-12 displays the comparison between the Proposed Action and the Revised Northern Alternative for surface management, greater sage-grouse habitat management areas and leks, NHT crossings, and the cost to Nevada ratepayers. Adding additional miles to the transmission route would increase the impacts substantially and add impacts that would not be present under the Proposed Action. For example, the Proposed Action would not cross or parallel the California NHT; the Revised Northern Alternative would cross the California NHT 14 times and would parallel 15 miles of the trail.

Table 2-12. Proposed Action and the Revised Northern Alternative Comparison

Comparison Criteria	Proposed Action Route	Revised Northern Alternative
General		
Transmission line route length (miles)[1]	235	505
Surface Management		
BLM (miles)	203	294
Forest Service (miles)	10	0
DOD (miles)	18	0
Bureau of Reclamation (miles)	0	6
Private (miles)	3	205
Greater Sage-Grouse Habitat Management Areas		
PHMA (miles)	50	39
GHMA (miles)	44	70
OHMA (miles)	34	48
Greater Sage-Grouse Leks[2]		
Active	17	6
Pending active	7	5
Inactive	10	8
Historical	12	5
Unknown	13	8
National Historic Trails		
California NHT crossing (count)	0	14
California NHT parallel (miles)	0	15
Pony Express NHT crossing (count)	5	2
Pony Express NHT parallel (miles)	0	0
Central Overland Emigrant Route-Simpson Route crossing (count)	7	1
Central Overland Emigrant Route-Simpson Route parallel (miles)	0	0
Disturbance Estimates		
Cost to Nevada ratepayers (millions of US dollars)[3]	752	1,616

Source: BLM, FS, and NVE GIS 2024

[1]These totals are for the transmission line route only and do not include roads, distribution lines, or links.

[2]Leks within 4 miles of the Proposed Action route and Revised Northern Alternative. Lek status is from 2024.

[3]Based on an estimated $3.2 million per mile of transmission line.

Notably, under the Revised Northern Alternative, the 525 kV transmission line would traverse 202 more miles of private land than the Proposed Action. These miles include occupied houses, ranches, and businesses in Hazen, Fernley, Lovelock, Primeaux, Carlin, Elko, Deeth, and Wells, Nevada. Also, the route would directly cross the downtown areas of Carlin and Elko, Nevada. Within these areas, the alternative would cross through the Fernley WMA; the glide path for the Wells Municipal Airport, which would present an aviation hazard; an active mine northwest of Interstate 80 in Fernley; the active South Arturo Mine; the Valmy Power Plant; the Butte/Buck/White Pine greater sage-grouse population management unit south of US Highway 93; agricultural and pivot irrigation structures; a retention pond; an old mine pit; and multiple historic sites.

The project would cross multiple 345 kV, 120 kV, and 60 kV transmission lines and circuits near the existing Oreana, Limerick, Lonetree, and Robinson Summit Substations and the South Arturo Mine. To accommodate the proposed transmission line, the Tracy–Valmy 345 kV and Eagle–Oreana 120 kV transmission lines would need to be modified where they converge near

Lovelock, Nevada. The 525 kV transmission line would also parallel a long railroad section between Oasis and Currie, which would require alternating current interference mitigation. The 525 kV transmission line would also cross Interstate 80 multiple times between Battle Mountain and Carlin, Nevada, and inaccessible terrain on the north side of Lone Mountain, through Pequop Summit, and through other unnamed mountains.

In addition to the increase in disturbance compared with the Proposed Action, this alternative would be economically infeasible, and it would not be acceptable to the State of Nevada Public Utilities Commission, who would likely deny the project. Therefore, the Revised Northern Alternative was dismissed from detailed analysis.

2.5.9 Fort Churchill to Wells, Nevada, Transmission Alternative

During the 2024 revised scoping period, the Nature Conservancy requested that the BLM revise the Revised Northern Alternative so that the transmission line would terminate in Wells, Nevada. This alternative would route the 525 kV transmission line from the Fort Churchill Substation to follow an existing transmission line northward to the Interstate 80 corridor near Nixon, Nevada, and then mostly parallel Interstate 80. Unlike the Revised Northern Alternative, the 525 kV transmission line would continue to parallel Interstate 80 until its termination at a proposed new substation in Wells, Nevada, and would tie into the Southwest Intertie transmission line. The entire route would be 348 miles. See Figure 2-7, Alternatives Considered but Eliminated from Detailed Analysis, Northern Routes, in Appendix A.

The Fort Churchill to Wells, Nevada, Transmission Alternative would have similar increases in disturbances on private lands as described under the Revised Northern Alternative, compared with the Proposed Action. Table 2-13 displays the comparison between the Proposed Action and the Fort Churchill to Wells, Nevada, Transmission Alternative for surface management, greater sage-grouse habitat management areas and leks, NHT crossings, and the cost to Nevada ratepayers. This alternative would place the project within 1 mile of the Wells Municipal Airport, which could be a hazard to aviation. However, the Federal Aviation Administration would determine the actual risk. This alternative would also affect existing infrastructure on private lands in Welcome, Nevada.

Table 2-13. Proposed Action and the Fort Churchill to Wells, Nevada, Transmission Alternative Comparison

Comparison Criteria	Proposed Action Route	Fort Churchill to Wells Alternative
General		
Transmission line route length (miles)[1]	235	348
Surface Management		
BLM (miles)	203	163
Forest Service (miles)	10	0
DOD (miles)	18	0
Bureau of Reclamation (miles)	0	6
State of Nevada (miles)	0	0
Private (miles)	3	179

Comparison Criteria	Proposed Action Route	Fort Churchill to Wells Alternative
Greater Sage-Grouse Habitat Management Areas		
PHMA (miles)	45	5
GHMA (miles)	40	31
OHMA (miles)	32	30
Greater Sage-Grouse Leks[2]		
Active	17	10
Pending active	7	2
Inactive	10	0
Historical	12	1
Unknown	13	9
National Historic Trails		
California NHT crossing (count)	0	12
California NHT parallel (miles)	0	15
Pony Express NHT crossing (count)	5	1
Pony Express NHT parallel (miles)	0	0
Central Overland Emigrant Route-Simpson Route crossing (count)	7	1
Central Overland Emigrant Route-Simpson Route parallel (miles)	0	0
Disturbance Estimates		
Cost to Nevada ratepayers (millions of US dollars)[3]	752	1,114

Source: BLM, FS, and NVE GIS 2024

[1]These totals are for the transmission line route only and do not include roads, distribution lines, or links.

[2]Leks within 4 miles of the Proposed Action route and Fort Churchill to Wells Alternative. Lek status is from 2024.

[3]Based on an estimated $3.2 million per mile of transmission line.

Aside from the increased disturbance compared with the Proposed Action, this alternative would not meet the purpose and need to transmit electricity between the Fort Churchill and Robinson Summit Substations. Electricity transmission between these two points is necessary to meet the Proponent's goals, especially to increase transmission redundancy. In order to address the Proponent's redundancy requirement, a new 525 kV transmission line would also need to be developed between the Robinson Summit Substation and Wells, Nevada. Therefore, the Fort Churchill to Wells, Nevada, Transmission Alternative was dismissed from detailed analysis.

2.5.10 Churchill County Alternative

Churchill County suggested another alternative to avoid public purpose conveyance parcels in the county, which would realign a segment of the Proponent's proposed route north into lands administered by the Bureau of Reclamation (see Figure 2-8, Alternatives Considered but Eliminated from Detailed Analysis, Routes near the Proposed Action, in Appendix A). In addition to increasing disturbance on public lands, this route would not completely avoid the conveyance parcels. Therefore, this alternative was dismissed from detailed analysis.

2.5.11 Blackbird Ranch Alternative

A private ranch owner suggested an alternative to realign a segment of the southern Humboldt-Toiyabe National Forest alternative northeast to avoid the Blackbird Ranch LLC property. During the alternatives development and after the public scoping period, the Forest Service revised the southern Humboldt-Toiyabe National Forest scoping alternative to avoid greater sage-grouse habitat areas. The finalized alternative (part of the Other Resource Consideration

Alternative) no longer runs adjacent to the Blackbird Ranch LLC property. Therefore, this alternative was dismissed from detailed analysis.

2.5.12 Underground Transmission Alternatives

Underground Fort Churchill to Robinson Summit Transmission Alternative

During the 2024 revised scoping period, Defenders of Wildlife suggested an alternative to put the entire 235-mile transmission line underground. While visual impacts of an underground transmission can be less than those from an overhead transmission line, depending on the existing landscape character and terrain, the cost is 10 to 15 times more (POWER Engineers 2014). The Proponent estimates that the cost of 1 mile of overhead transmission line is approximately $1.8 million, while the cost of an underground transmission line is approximately $18 to $27 million per mile. There would also be an additional cost of $6 to $8 million for reactor stations spaced approximately every 20 miles along the entire transmission line for a total cost of $372 to $556 million for a 20-mile section.

The physical impact of an underground transmission line is two to five times more than the impact of an overhead transmission line. This is due to constructing an underground duct bank for the entire length of the ROW and reactor stations at 20-mile intervals. Also, overhead transmission lines can span cultural, paleontological, and sensitive wildlife habitat (such as riparian areas and wetlands) as well as mining operations and access, whereas underground transmission lines must cross through or be routed around such areas. The Underground Transmission Alternative would have the potential for greater impacts on both surface and subsurface resources, as compared with the Proposed Action.

Underground transmission lines are susceptible to reduced reliability and extensive repair durations. The increased number and sensitivity of technically sophisticated components increase the risk of failure and degrade the electric system reliability. The typical time needed to repair a failed component is substantially longer when compared with repairs associated with overhead transmission line components (US DOE 2024). Repairs require additional effort to locate, excavate, and fix; repairs may take a few weeks to several months. The average repair time for a single downed overhead transmission line is 1 day.

The BLM considered, but eliminated, the Underground Fort Churchill to Robinson Summit Transmission Alternative from detailed analysis because it would be technically and economically infeasible, it would potentially have more environmental impacts because of its greater temporary and permanent ground disturbance than the Proposed Action, and it would not achieve the Proponent's goals of improving the electric system reliability.

Underground Transmission Alternative for Greater Sage-Grouse Lek Avoidance

During the 2024 revised scoping period, Defenders of Wildlife also suggested an alternative to build an underground line where it would be within 4 miles of leks. There are 59 leks of various status within 4 miles of the GLNP (status as of 2023, the most recent status available during the EIS/RMPA preparation). This alternative would result in more disturbance and habitat loss near leks, compared with the Proposed Action, because of the surface disturbance associated with putting the transmission line underground. The anticipated effects from the presence of a transmission line near leks would be reduced under this alternative; however, given the

increased amount of disturbance near leks, in addition to the economic and technical reasons described above under the Underground Fort Churchill to Robinson Summit Alternative, the Underground Transmission Alternative for Greater Sage-Grouse Lek Avoidance has not been carried forward for detailed analysis.

2.5.13 Solar Proponent-Proposed Alternative

During the 2024 revised scoping period, a solar company suggested an alternative to avoid the pending Pine Nut Energy Center project area. The alternative would adjust the line near the Fort Churchill Substation approximately 1 mile to the west (see Figure 2-8, Alternatives Considered but Eliminated from Detailed Analysis, Routes near the Proposed Action, in Appendix A). This adjustment would cross through two other pending solar projects (the Artemesia and Winston projects) and would increase potential conflicts with other infrastructure near the Fort Churchill Substation.

From a technical feasibility standpoint, this alternative would add five new pull sites and three new heavy-angle dead-end structures, which would result in increased ground disturbance. The new structures would also increase the project costs by approximately $8 million. The project would cross through environmentally sensitive areas that were previously avoided in the Proponent's routing and siting study (NV Energy 2022), including wetlands and floodplains. The 525 kV transmission line would cross the Fort Churchill–Alpine 230 kV transmission line twice, which would pose a reliability risk. Under the Proposed Action, the 525 kV transmission line would not cross the Fort Churchill–Alpine 230 kV transmission line.

In addition, under the Solar Proponent-Proposed Alternative, a portion of the project would cross over a water feature that is used for Open Mountain Energy's Whitegrass No. 1 geothermal energy plant. For these reasons, and the increased potential for conflicts with other infrastructure near the Fort Churchill Substation, the Solar Proponent-Proposed Alternative has not been carried forward for detailed analysis.

2.5.14 Conservation Alternative

During the 2023 scoping period, the BLM received a request to consider a "conservation alternative." The Conservation Alternative includes the following components: (1) deny the ROW applications, (2) accept nominations for ACECs and reclassify the areas to visual resource management (VRM) Class II, and (3) classify any unclassified VRM areas as VRM Class II. In the NOI published in the *Federal Register* on May 26, 2023 (88 *Federal Register* 34178), the BLM did not announce the evaluation of any plan amendments and did not make the required planning criteria available for public comment. Plan amendments would be necessary to designate an ACEC and/or to reclassify or classify VRM areas. Therefore, the BLM could not have evaluated plan amendments at that time.

On March 11, 2024, the BLM released a second NOI (89 *Federal Register* 17510), which stated the BLM would evaluate plan amendments to establish a new utility corridor. As explained in this Final EIS/Proposed RMPA, a new utility corridor is necessary because multiple BLM land use plans were amended by the 2015 ARMPA, which allocated certain areas as avoidance and exclusion for major ROWs greater than 100 kV outside utility corridors (BLM 2015a, pp. 59).

Therefore, the evaluation of the designation of a utility corridor is within the scope of the GLNP's purpose and need.

The conservation alternative has not been carried forward for detailed analysis for the following reasons:

- Denying the ROW applications is within the scope of the No Action Alternative (see Section 2.6, No Action Alternative). Therefore, the Conservation Alternative is substantially similar to the No Action Alternative (BLM 2008a, Section 6.6.3).
- The designation of BLM-administered lands as an ACEC or reclassification to VRM Class II, or both, is outside the scope of the plan amendment under consideration in this Final EIS/Proposed RMPA. As stated in 43 CFR 1610.7-2(b), "In the land use planning process, authorized officers must identify, evaluate, and give priority to areas that have potential for designation and management as ACECs. Identification, evaluation, and priority management of ACECs shall be considered during the development and revision of resource management plans and during amendments to resource management plans when such action falls within the scope of the amendment."

  The second NOI (89 *Federal Register* 17510) stated, "The scope of this land use planning process does not include addressing the evaluation or designation of areas of critical environmental concern (ACECs), and the BLM is not considering ACEC nominations as part of this process." Therefore, these plan amendments are outside the scope of this project and would be ineffective in responding to the purpose and need (BLM 2008a, Section 6.2.1). If the BLM were to reclassify the BLM-administered lands within the GLNP area to VRM Class II, the GLNP would not be in conformance, and the VRM Class II lands within the utility corridor would have to be reclassified to VRM Class III.
- Unclassified VRM areas on BLM-administered lands are a legacy from BLM RMPs completed primarily in the 1980s; these RMPs did not include the assessment of a visual resource inventory (VRI) that would lead to the designation of VRM classes during an RMP revision. Classifying unclassified areas would be ineffective in responding to the project purpose and need and outside the scope of this Final EIS/Proposed RMPA. Though portions of the GLNP are within unclassified VRM areas, the BLM completed a VRI for the entire state in 2023. The VRI is used to analyze impacts on unclassified VRM areas (see Section 3.10, Visual Resources).

2.5.15 White Pine–Eureka County Alternative

On June 5, 2024, the BLM met with representatives from Churchill, Lander, Eureka, and White Pine Counties. During this meeting, Eureka County identified a 3-mile area of concern due to the presence of five active greater sage-grouse leks. Additionally, the Proposed Action's 525 kV transmission line would cross through lands available for disposal to Eureka County. To bypass these areas of concern, Eureka County proposed a 47.6-mile alternative (see Figure 2-8, Alternatives Considered but Eliminated from Detailed Analysis, Routes near the Proposed Action, in Appendix A). Under this alternative, the transmission line would be 18.9 miles longer than it would be under the Proposed Action and 28.7 miles longer than it would be under the BLM Preferred Alternative.

The additional 18.9 miles would increase the cost of the project by $100,017,000. In addition, this route would require 17 miles of new access roads, which would increase the cost of the project by $799,000. This would be a total cost increase of $100,816,000, compared with the Proposed Action.

The 47.6-mile route would cross through 1 mile of PHMA and 24.7 miles of GHMAs for greater sage-grouse. This alternative would have 16 line angles, which is 12 more than the Proposed Action. This would increase the number of pull sites, dead-end structures, and permanent disturbances. The route would also require numerous creek crossings that may result in erosion near streambanks or affect the constructability of the project. The Proposed Action transmission line route avoids creek crossings, to the extent feasible, and would not have as many creek crossings through Eureka and White Pine Counties.

A portion of the Proposed Action's 525 kV transmission line would be collocated with the existing Fort Churchill–Alpine 230 kV transmission line from the 1970s. The White Pine–Eureka County Alternative would not be collocated with this existing line, and the BLM would require the Proponent to retroactively apply anti-perch components and nesting deterrents as mitigation for the greater sage-grouse. However, the existing 230 kV transmission line has K-frame structures that cannot be retroactively fitted with anti-perch components or nesting deterrents. Installation of such deterrents would also require extended line outages, which cannot be done.

Based on the economic and technical feasibility issues, and the potential for greater environmental impacts compared with the Proposed Action, this alternative has not been carried forward for detailed analysis.

2.5.16 Lander County Alternative

On June 5, 2024, the BLM met with representatives from Churchill, Lander, Eureka, and White Pine Counties. During this meeting, Lander County suggested a 1.3-mile alternative segment to adjust the proposed 525 kV transmission line where it enters the Lander Substation (see Figure 2-8, Alternatives Considered but Eliminated from Detailed Analysis, Routes near the Proposed Action, in Appendix A) to avoid greater sage-grouse leks. Based on a GIS review using lek data obtained from the NDOW in 2024 (with lek status as of 2023; NDOW GIS 2024), the proposed 525 kV transmission line would not cross any leks in this area. In addition, per the BLM NEPA Handbook, H-1790-1 (BLM 2008a, Section 6.6.3), this alternative is not substantially different from the Proposed Action and would have substantially similar effects compared with the Proposed Action. Therefore, this alternative has not been carried forward for detailed analysis.

2.5.17 Eureka County Alternatives

During the 2024 Draft EIS/RMPA public review period, the BLM received a request from Eureka County to consider three alternative segments to avoid lands identified as available for disposal to Eureka County. These include an approximately 3-mile alternative segment in Township 19 North, Range 53 East; an approximately 3-mile alternative segment in Township 20 North, Range 53 East; and an approximately 5-mile alternative segment in Township 19 North, Range 54 East in Eureka County (see Figure 2-8, Alternatives Considered but Eliminated

from Detailed Analysis, Routes near the Proposed Action, and Figure 3-17, Legal Description, Extent 12, in Appendix A).

The first two segments would require at least one additional pulling site and would adjust the proposed 525 kV transmission line such that it would overlap with Amplifier Site 7 (described in Section 2.1.3). Therefore, adjusting the proposed 525 kV transmission line would be technically infeasible. However, the BLM did carry forward an alternative segment that would narrow the proposed utility corridor to 2,000 feet in width to minimize overlap with lands identified as available for disposal in Eureka County. This alternative segment is described under Section 2.3. The third alternative segment would move the proposed 525 kV transmission line closer to active and pending active leks, compared with the Proposed Action. Therefore, this alternative has not been carried forward for detailed analysis.

2.5.18 Lower-Voltage (100 kV or Less) Transmission Line Alternative

During the 2024 Draft EIS/RMPA public review period, the BLM received a request to consider an alternative that uses a transmission line with 100 kV or less voltage instead of the proposed 525 kV transmission line. While a transmission line with 100 kV or less voltage would conform to the land use plans, as amended by the 2015 ARMPA, the lower voltage would not meet the Proponent's needs, as described below. Therefore, this alternative would not meet the GLNP's purpose and need.

The Robinson Summit to Fort Churchill capacity requirement is 3.5 billion volt-amperes. The power-handling capacity of a transmission line depends on its voltage and current. Higher-voltage lines can transport more power than lower-voltage lines while requiring less current. A lower current reduces power losses caused by resistance, making high-voltage lines more efficient. In this case, the power losses of a 100 kV or less transmission line would exceed its capacity to transfer 3.5 billion volt-amperes from Robinson Summit to Fort Churchill.

The voltage, conductor, and structures for the proposed 525 kV transmission line were designed based on a conductor optimization study performed by the Proponent's transmission planning and engineering departments. The conductor optimization study took into consideration the construction and line losses, and other costs over the life of the facility. The Proponent's transmission planning group determined that 525 kV was the voltage needed to meet electric system requirements and the current and long-term energy needs of Nevada customers, to provide sufficient renewable interconnection capabilities in northern Nevada, and to provide stability for the transmission system in Nevada.

Additionally, together, the GLNP and GLWP will complete a high-voltage loop in Nevada with the existing 525 kV transmission system that traverses the east side of the state, which will further increase reliability of the overall transmission system. Notwithstanding these factors, the electrical losses alone for a transmission system operating at less than 100kV across Nevada would render the system ineffective. Therefore, this alternative has not been carried forward for detailed analysis.

2.6 No Action Alternative

Under the No Action Alternative, the BLM would not grant a ROW, the Forest Service would not grant a special use permit for construction and operation of the GLNP, and the BLM would not amend its land use plans. The GLNP facilities would not be built, and existing land uses and present activities in the GLNP area would continue. The land on which the GLNP would be located would be available to other uses that are consistent with the respective district office or field office land use plans (see Figure 2-10, No Action, and Figure 2-11, No Action, Extents 1–15, in Appendix A).

Chapter 3. Affected Environment and Environmental Consequences

3.1 Introduction

This chapter describes the existing conditions of the physical, biological, cultural, and socioeconomic resources that have the potential to be affected by activities related to the Proposed Action, the other action alternatives, and the No Action Alternative described in Chapter 2. To comply with NEPA, the BLM and Forest Service are required to address specific elements of the environment that are subject to requirements specified in statutes, regulations, or executive orders; these are called supplemental authorities. Table 3-1 lists the resources with supplemental authorities. Table 3-2 lists additional affected resources addressed in the Final EIS/Proposed RMPA. Resources that may be affected by the Proposed Action and the other action alternatives are discussed further in Chapter 3. Those elements listed as not present in the GLNP area boundary, or present but would not be affected, are not carried through in this Final EIS/Proposed RMPA. Appendix E includes the resources identified where significant impacts are not expected to occur.

For organizational purposes, Chapter 3 is divided into sections by subject area from the BLM's land use planning handbook (BLM Handbook H-1601-1, BLM 2025). The chapter is consistent with the BLM NEPA Handbook (H-1790-1).

Table 3-1. Supplemental Authorities

Supplemental Authority	Presence	Rationale/Reference Section
Air quality	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.2, Air Quality and Climate.
Areas of critical environmental concern	Not present	There are no BLM-administered or National Forest System ACECs within the GLNP area.
Cultural resources	Present/may be affected	Section 3.8, Cultural Resources
Floodplains	Present/may be affected	Section 3.3, Water Resources
Invasive, nonnative species	Present/may be affected	Section 3.4, Vegetation Communities and Resources (including At-risk Species, Noxious Weeds and Invasive Plants, and Riparian Areas)
Migratory birds	Present/may be affected	Section 3.5, Fish and Wildlife
Native American concerns	Present/may be affected	Section 3.9, Native American Religious Concerns
Prime or unique farmlands	Present/may be affected	Section 3.2, Soils Resources
Threatened and endangered species	Present/may be affected	Section 3.6, Special Status Species
Wastes and materials (hazardous and solid)	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.10, Public Health and Safety.
Water quality (surface water and groundwater)	Present/may be affected	Section 3.3, Water Resources

Supplemental Authority	Presence	Rationale/Reference Section
Wetlands and riparian zones	Present/may be affected	Section 3.4, Vegetation Communities and Resources (including At-risk Species, Noxious Weeds and Invasive Plants, and Riparian Areas)
Wild and scenic rivers	Present/may be affected	Section 3.12, Special Designations (National Historic Trails, Special Management Areas, Wild and Scenic Rivers, Wilderness, and Wilderness Study Areas)
Wilderness and WSAs	Present/may be affected	Section 3.12, Special Designations (National Historic Trails, Special Management Areas, Wild and Scenic Rivers, Wilderness, and Wilderness Study Areas)

Table 3-2. Additional Resources

Resource	Presence	Rationale/Reference Section
Lands with wilderness characteristics	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.7, Lands with Wilderness Characteristics.
Climate	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.2, Air Quality and Climate.
Geology and minerals	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.3, Geology and Minerals.
Forest products	Present/not affected	The Proposed Action and the action alternatives would not affect forest woodland production. Impacts on forest vegetation communities are analyzed under Section 3.4, Vegetation Communities and Resources.
Inventoried roadless areas	Not present	The GLNP area does not cross through inventoried roadless areas on National Forest System lands.
Lands, realty, and cadastral survey – land use authorizations	Present/may be affected	Section 3.11, Lands, Realty, and Cadastral Survey
National conservation areas	Not present	There are no BLM-administered national conservation areas in the GLNP area.
National historic trails	Present/may be affected	Section 3.12, Special Designations (National Historic Trails, Special Management Areas, Wild and Scenic Rivers, Wilderness, and Wilderness Study Areas)

Resource	Presence	Rationale/Reference Section
Noise	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.10, Public Health and Safety.
Paleontological resources	Present/may be affected	Section 3.7, Paleontological Resources
Rangeland management	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.5, Livestock Grazing.
Recreation	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.9, Recreation and Visitor Services.
Research natural areas	Not present	There are no BLM-administered or National Forest System research natural areas in the GLNP area.
Social values and economic conditions	Present/may be affected	Section 3.13, Social and Economic Conditions
Soils	Present/may be affected	Section 3.2, Soil Resources
Special status species	Present/may be affected	Section 3.6, Special Status Species
Transportation and travel management	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.8, Transportation and Travel Management.
Vegetation	Present/may be affected	Section 3.4, Vegetation Communities and Resources (including At-risk Species, Noxious Weeds and Invasive Plants, and Riparian Areas)
Visual resources, including night skies	Present/may be affected	Section 3.10, Visual Resources
Water quantity (surface water and groundwater)	Present/may be affected	Section 3.3, Water Resources
Wildlife	Present/may be affected	Section 3.5, Fish and Wildlife
Wild horses and burros	Present/may be affected	Impacts would not be significant. There would not be a reasoned difference across alternatives. See Appendix E, Section E.6, Wild Horses and Burros.

Each resource carried through for analysis in Chapter 3 includes the issues identified for analysis, the analysis area, the methodology for evaluating the potential impacts of each alternative described in Chapter 2, the affected environment, and an analysis of impacts for each alternative. Cumulative impacts under each resource are described in Section 3.14. Appendix F describes the reasonably foreseeable future actions (RFFAs) in the cumulative impact analyses. Appendix D contains the EMMs that could be implemented under the action alternatives.

The affected environment is based on the analysis area (described in the next paragraph), which encompasses all the alternative project areas. All the resources carried through for analysis in

Chapter 3 include this analysis area. Some resources analyze a larger or buffered region around this area. See the *Analysis Area* and *Methodology* sections under each resource.

The analysis for each alternative is based on the applicable project area. The Proposed Action's project area is 36,917 acres. The Other Resource Consideration Alternative's project area is 36,756 acres. The BLM Preferred Alternative's project area is 36,830 acres. Each project area includes three temporary disturbance buffers and one permanent disturbance buffer for the temporary and permanent ROWs described in Chapter 2.

The temporary ROW disturbance buffers are grouped into the following categories based on site-specific terrain: areas with flat or nearly flat terrain, areas with roads, and areas with steep slopes. The areas with flat or nearly flat terrain were assigned a 300-foot buffer (600-foot corridor). The areas with roads were assigned a 50-foot buffer (100-foot corridor). The areas with steep slopes were assigned a 600-foot buffer (1,200-foot corridor). The permanent ROW disturbance buffer is a 100-foot buffer (200-foot corridor width). The permanent ROW buffer is included for comparison purposes between the alternatives; however, only portions of the permanent ROW buffer would be impacted.

The BLM used GIS data to perform acreage calculations. Calculations depend on the quality and availability of data. Most calculations in this Final EIS/Proposed RMPA are rounded to the nearest 100 acres or tenth of a mile. Given the scale of the analysis and the compatibility constraints between datasets, all calculations are approximate; they serve for comparison and analytic purposes only.

3.2 Soil Resources

3.2.1 Issues Identified for Analysis

How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect soil resources?

3.2.2 Analysis Area

The soils analysis area is the same as the project areas for each alternative, as described under Section 3.1, Introduction. The Proposed Action's project area is 36,917 acres. The Other Resource Consideration Alternative's project area is 36,756 acres. The BLM Preferred Alternative's project area is 36,830 acres.

3.2.3 Affected Environment

Soils in the analysis area are derived from alluvium (water-transported), colluvium (gravity-transported), eolian (wind-transported), and volcanic ash sediments (NRCS 2023). The dominant soil orders in the analysis area are Aridisols, Mollisols, Entisols, and Inceptisols (NRCS 2023). The Aridisols have a dry soil temperature regime and are typically clayey; some have calcareous (calcium carbonate-rich), saline, or sodic (sodium-rich) properties; and some have hardened layers of cemented silica. The Mollisols have similar properties as the Aridisols but also have a thick and dark organic-rich surface layer. The Inceptisols have an aquic (wet) soil moisture regime and are slightly weathered (moderate clay accumulation in the subsoil). Entisols are characteristically young and shallow soils with little to no weathering (minimal clay accumulation in the subsoil).

Soils Susceptible to Erosion

Wind and water erosion are the major soil resource concerns in the analysis area. Soil erosion is influenced by many factors, such as wind, precipitation, and soil moisture and structure. Soils can be naturally susceptible to erosion because factors such as slope, vegetation type and density, ground cover, wind, and soil moisture properties. Slope influences the lateral movement of water in soil, which can result in runoff and soil erosion. Plant roots, organic matter, and biological soil crust provide resistance to erosion at the soil surface (Pellant et al. 2020).

Wind erosion is the movement of soil particles due to wind direction and speed, which results in the displacement or loss of topsoil is some areas, increased sediment deposition in other areas, and impacts on ambient air quality from elevated dust levels. Wind erosion and dust emissions can have negative impacts on ecosystems by disrupting biogeochemical connectivity and altering ecological processes. As dust is transported across various scales, from individual plants to global ecosystems, it can affect plant growth, soil fertility, and nutrient cycling. Increased dust production due to climate change and intensified land use may exacerbate these effects, leading to degraded soil quality, reduced agricultural productivity, and shifts in ecosystem dynamics. These disruptions could further affect biodiversity and ecosystem services, especially in dryland regions (Field et al. 2010).

Wind erodibility groups (WEGs) are groupings of soils with similar properties affecting their resistance to soil blowing. WEGs are rated from 1 to 8, from most to least susceptible to wind erosion. Soils in WEGs 1 and 2 are considered highly susceptible to wind erosion because of their fine sandy texture and minimal rock fragments. Most of the soils in WEGs 1 and 2 occur in Lyon and Churchill Counties, where sandy and eolian-derived soils are common.

Water erosion is the detachment of soil particles by water and can occur as sheet or rill erosion. Sheet erosion occurs when a uniform layer of soil is removed, usually due to rainfall (Weil and Brady 2019). Rill erosion occurs when detached particles are transported by running water that results in channel flow and slope is a contributing factor (Weil and Brady 2019). These types of water erosion can be quantified with an index called Kw factor, which is a relative index of susceptibility of bare soil to particle detachment and transport by rainfall (Soil Science Division Staff 2017). Its values range from 0.02 for the least erodible soils and 0.64 for the most erodible. Soil properties that affect Kw factor include texture (clay, silt, and sand content), organic matter content, structure (the arrangement of soil aggregates and the pore spaces between them), and the rate of water movement through the soil.

Soils high in clay content have low Kw values (between 0.02 and 0.20) because they are not susceptible to detachment. Sandy soils also have low Kw values because of large pore spaces in their structure, which provide water drainage and low runoff potential. Silty loams are medium-textured soils that have moderate Kw values (between 0.21 and 0.40) because they are moderately susceptible to detachment and runoff. Soils with high silt content have high Kw values (greater than 0.40) and are the most erodible because they are easily detached and produce high rates of runoff (Michigan State University 2002; USDA 2016).

Soil aggregate stability decreases when compactional forces reduce soil porosity and infiltration capacity to the point that surface runoff increases, which increases the potential for water

erosion (Pellant et al. 2020). Soils that lack vegetation cover are more susceptible to erosion and runoff (Zobeck and Van Pelt 2014; Wei 2023). This is because plants increase soil aggregate stability at their roots to reduce wind erosion and intercept water at the soil surface to reduce water velocity and runoff.

For many arid and semiarid western rangelands soils, the sustainable soil loss rate is estimated at less than or equal to 2.2 tons per hectare, per year, due to their shallow depth, low organic matter content, and slow rate of soil formation in erratic and dry climates (Weltz et al. 2014). According to Weltz et al. 2014, soil loss rates of 2.2 to 4.5 tons per hectare, per year, put the long-term sustainability of these rangelands at risk, and soil loss rates greater than 4.5 tons per hectare, per year, are unsustainable.

Sensitive Soils and Soil Resources

The Farmland Protection Policy Act of 1980 seeks to minimize federal programs that contribute to unnecessary and irreversible conversion of farmland to non-agricultural use. It states that land will be administered in a manner, as practicable, compatible with state government, local government, and private programs and policies to protect farmland. The Natural Resources Conservation Service (NRCS) classifies three types of farmlands: prime, unique, or of statewide importance.

Prime and unique farmlands are defined as lands that are used for the production of high-value food and fiber crops. These lands have the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops (Soil Survey Division Staff 2017). The productivity of prime farmlands that occur in the analysis area is limited by one or more factors such as dryness, lack of drainage, and excess sodium and salts. Unique farmlands do not occur in the analysis area. Farmlands of statewide importance are defined as land used to produce food and fiber crops that does not quite meet the criteria for prime or unique farmland. This land can economically produce high yields of crops when treated and managed according to acceptable farming methods. The productivity of farmlands of statewide importance in the analysis area is limited by dryness; irrigation is necessary to make these areas productive.

Hydric soils are those formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions (little to no available oxygen) in the upper part of the soil. The NRCS uses county soil survey data to rate soil map units for hydric components. According to these surveys, there are less than 100 acres in the analysis area with at least 33 percent hydric components (BLM, FS, and NVE GIS 2024). However, there are likely more hydric soils in the analysis area that were either not documented in the county soil surveys or have not been field verified. Hydric soils are sensitive soils because they support wetland vegetation and habitats, and they are susceptible to soil compaction.

Biological soil crusts are an intimate association between soil particles and cyanobacteria, algae, micro fungi, lichens, and bryophytes (in different proportions) that live within or atop the uppermost millimeters of soil. They are found in all dryland regions of the world and in all vegetation types within these lands. In these landscapes, biological soil crusts often cover all soil spaces not occupied by trees, grasses, or shrubs, and can comprise over 70 percent of the living

ground cover (Rosentreter et al. 2007). Biological soil crusts have not been inventoried in the analysis area, but they have the potential to occur.

The microscopic biocrust communities function ecologically to stabilize soils, fix nitrogen and carbon, regulate water cycling in and out of soils, capture dust, accumulate organic matter, supply nutrients to vascular plants, enhance or reduce seedling establishment, promote chemical and physical weathering, provide wildlife habitat, and regulate soil food web interactions (Rosentreter et al. 2007; Warren et al. 2021).

Physical soil crusts may also occur in the analysis area. These are thin layers on the soil surface that are structurally different from the material immediately beneath them. In contrast to biological soil crusts, physical crusts reduce soil porosity and water infiltration (Belnap et al. 2001; Pellant et al. 2020). They are formed when rainfall hits the soil surface and breaks up soil aggregates, allowing smaller particles to wash in. Upon drying, the soil components glue together and form a crust that is often harder than the underlying material because it contains evaporated salts and minerals. Soils with higher silt content are more vulnerable to crusting, as are soils with low organic matter content and high sodium or calcium carbonate content (Belnap et al. 2001).

Soil Reclamation Potential

Most of the soils in the soils analysis area are rated by NRCS as "poor" for reclamation material due to their high salinity, sodium, or carbonate content; sandiness; dryness; low organic matter content; or a combination of these factors (NRCS 2023). High salinity can limit the ability of plant roots to absorb water; and high sodium content can cause clay dispersion, which decreases soil aggregation and soil water-holding capacity (NDSU Extension Service 2021). High carbonate content often corresponds with a high soil pH, which can limit soil nutrient availability for plant uptake (Weil and Brady 2019). Soils that are too sandy and dry will drain easily and not retain moisture.

3.2.4 Environmental Consequences

Methodology

Soil map units, which contain information about soil properties and interpretations, were downloaded from the NRCS soil survey geographic database and clipped to the ROW areas using GIS mapping. This information was used to quantify acres of potentially erodible soils, hydric soils, and farmlands in the analysis area. The online interactive version of the NRCS soil survey geographic database, Web Soil Survey, was used to summarize general information about the soils in the analysis area, including dominant soil orders, parent material, and the soil reclamation potential (NRCS 2023). Biological and physical crusts were analyzed qualitatively.

Indicators

- Soils susceptible to erosion
  - Acres of soils with Kw factor ratings greater than 0.40
  - Acres of soils in WEGs 1 and 2

- Sensitive soils and soil resources
  - Acres of soils rated as prime farmlands or farmlands of statewide importance
  - Acres of hydric soils
  - Presence of biological or physical soil crusts
- Soil reclamation potential

Assumptions

- Soils rated as WEG 1 or 2 and soils with moderate or high Kw factor ratings would be the most vulnerable to surface disturbance and would have the greatest soil erosion potential.
- In general, runoff generation and soil erosion typically increase as the slope increases (Pellant et al. 2020).
- Biological soil crusts and physical soil crusts have not been inventoried in the analysis area but have the potential to occur because they are common in arid climates (Belnap et al. 2001; Rosentreter et al. 2007).
- Reclamation activities would coincide with best management practices and would depend on soil resiliency, which is the soil's inherent ability to recover from impacts. In cases where soil is completely lost, soil reclamation would not be possible.

Direct and Indirect Impacts from the No Action Alternative

Under the No Action Alternative, no surface disturbance from GLNP facilities would occur. There would be no changes to current soil erodibility and sensitive soil conditions.

Direct and Indirect Impacts from the Proposed Action

Under the Proposed Action, approximately 29,082 acres of temporary disturbance and 7,834 acres of permanent disturbance would occur. However, the anticipated ground disturbance associated with the Proposed Action transmission lines and ancillary project components would be smaller than these areas.

The proposed utility corridor could increase the potential for surface disturbance on soils susceptible to erosion. It could also increase the potential for surface disturbance on farmlands and biological soil crusts. However, it could reduce impacts on these soil resources outside the utility corridor if future projects were collocated within the utility corridor.

Within the project area, there are approximately 1,208 acres of soils with Kw factor greater than 0.40 and approximately 2,796 acres of soils in WEGs 1 and 2. These areas would be the most at risk for erosion from surface disturbance during geotechnical investigations, construction, O&M, and decommissioning. Table 3-3 shows the acres of prime farmlands and farmlands of statewide importance within the temporary and permanent ROW areas. Most of the prime farmlands occur in Eureka and Lander Counties along the proposed transmission line route and along existing or proposed roads. Most farmlands of statewide importance occur along the proposed transmission route near Eureka, Nevada, and near the Lander Substation. If these areas are disturbed, their production potential would decrease to the point that they may no longer be classified as prime farmlands or farmlands of statewide importance.

Table 3-3. Farmlands under the Proposed Action

Farmland Classification Name	Acres
Prime farmlands, if irrigated and drained	9
Prime farmlands, if irrigated and reclaimed of excess salts and sodium	1,837
Prime farmlands, if irrigated, and if the product of soil erodibility and climate factor does not exceed 60	11
Farmlands of statewide importance	1
Farmlands of statewide importance, if irrigated	2,460
Total	**4,318**

Source: BLM, FS, and NVE GIS 2024

Where soils are graded and leveled for the placement of transmission line foundations, access roads, temporary use areas, and the other ancillary facilities, the topsoil would be removed so that only the bare mineral soil remains, and the mineral soil would be compacted. Where vegetation removal from geotechnical investigations and construction activities occur, impacts on soils would include reduced aggregate stability and increased potential for wind and water erosion. Fencing would have similar impacts, but the fence installation would not require soil removal. The soil around the fence posts would be susceptible to ponding and water erosion.

Wind and water erosion impacts would be minimized through use of EMMs GEO_SOIL-8 and GEO_SOIL-13 (see Appendix D). In addition, the Proponent would conduct site-specific evaluations of soils prior to construction on areas with steeps slopes, erodible soils, or biological soil crusts to minimize surface-disturbing impacts (see EMM GEO_SOIL-12 in Appendix D).

Operation of vehicles during construction, operation, and decommissioning would decrease soil porosity, reduce water infiltration, and displace surface soil particles. In turn, the potential for erosion would increase, especially for soils with Kw factor ratings greater than 0.40 and for soils in WEGs 1 and 2. The most severe impacts on soils would occur during the construction period, during which the most vehicle use would occur. Vehicles used for grading, excavation, and moving of soils would cause the most surface disturbance and potential for soil erosion. Once the facilities are constructed, including access roads, surface disturbance from the workforce vehicles during O&M and decommissioning activities would be less severe.

Heavy equipment and repeated vehicle use over the same areas would increase the potential for compaction (Taghavifar and Mardani 2014). As described in EMM GEO_SOIL-3 in Appendix D, compacted soils in agricultural areas would be de-compacted. For prime farmlands and farmlands of statewide importance, this may or may not increase their production potential, and would be dependent upon site-specific conditions. Hydric soils (approximately 66 acres) and other wet soils would be the most at risk for compaction. Construction activities would be prohibited on wet soils unless a stabilizer or matting is used to protect these soils (see EMM GEO_SOIL-2 in Appendix D). However, hydric and other wet soils may still be compacted from vehicles used during O&M activities.

Surface disturbance from vehicle use on biological soil crusts would decrease the abundance of biological communities and reduce the crust's function to provide soil stability. These effects would increase the potential for soil erosion. The time it takes for organisms to recover would

depend on the biological composition of the crust; cyanobacteria recover faster than moss and lichen after physical disturbance (Belnap et al. 2001). As described in EMM GEO_SOIL-12, specialized construction techniques would be required in areas with biological soil crusts to minimize or avoid disturbance. In contrast, surface disturbance on physical soil crusts would increase their porosity and water infiltration.

As described in *Affected Environment*, most soils are rated as poor for reclamation potential. Organic matter amendments, which would increase the water-holding capacity and aggregate stability of the soil (Weil and Brady 2019), may be necessary before the soil can be used for reclamation. Where soil was previously compacted, tilling may be necessary to loosen the soil. This would increase the porosity and the capacity for water infiltration. After the topsoil is replaced, calcium amendments and artificial drainage and irrigation may also be required to promote leaching of the undesirable salts (NRCS 2009). Reseeding would reestablish vegetation cover within a few years, which would promote soil aggregate stability and minimize the erosion potential.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Impacts on soils under the Other Resource Consideration Alternative would be similar to those described under the Proposed Action. However, there would be approximately 52 more acres of soils with Kw factor greater than 0.40 and approximately 201 more acres of soils in WEGs 1 and 2 within the Other Resource Consideration Alternative project area. This would increase the potential for water and wind erosion, compared with the Proposed Action. In addition, there would be approximately 84 more acres of prime farmlands, if irrigated and reclaimed of excess salts and sodium, and approximately 232 more acres of farmlands of statewide importance, if irrigated. This would increase the potential for reduced productivity of these farmlands or conversion to non-farmlands, compared with the Proposed Action. Impacts on soils from the proposed utility corridor would be the same as described under the Proposed Action.

Direct and Indirect Impacts from the BLM Preferred Alternative

Impacts on soils under the BLM Preferred Alternative would be similar to those described under the Proposed Action. There would be approximately 28 fewer acres of soils with Kw factor greater than 0.40, 45 fewer acres of soils in WEGs 1 and 2, and 36 fewer acres of farmlands of statewide importance, compared with the Proposed Action. This would decrease the potential for water and wind erosion and reduced productivity of farmlands or the potential for conversion to non-farmlands. There would be approximately 30 fewer acres of prime farmlands, if irrigated and reclaimed of excess salts and sodium. This would decrease the potential for reduced productivity of prime farmlands or conversion to non-farmlands within the BLM Preferred Alternative project area. Impacts on soils from the proposed utility corridor would be the same as those described under the Proposed Action.

3.3 Water Resources

3.3.1 Issues Identified for Analysis

- How would geotechnical investigations, construction, operations, maintenance, and decommissioning of the GLNP affect existing water rights?
- How would contaminants and nonpoint source pollution from construction, O&M, and decommissioning of the GLNP affect water quality?
- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect surface waters, such as the Reese and Walker Rivers and natural springs?
- What quantity and sources of water would be required for the GLNP and how would these requirements affect surface water and groundwater?

3.3.2 Analysis Area

The analysis area for water resources comprises the hydrologic unit code (HUC) 12 sub-watersheds (see Table 3-4) that overlap with the GLNP. These watersheds total approximately 2,713,112 acres (4,239 square miles). The analysis area is within the Basin and Range physiographic province and the Great Basin hydrographic region, as identified by GIS and available hydrologic data from the USGS (USGS 2023a).

3.3.3 Affected Environment

The affected environment pertaining to water resources involves surface water and groundwater resources in a high desert, central basin, and range-type ecoregion. Precipitation in most of the lower-elevation areas is around 10 inches (on average) or less per year (USGS 2023a). Some of the higher-elevation areas that occur in the analysis area near Eureka and Austin may exhibit 12–14 inches of precipitation on average per year.

Surface Water

Topography of the Basin and Range province is characterized by isolated, generally north–south-trending mountain ranges separated by arid to semiarid alluvial basins with surface waters internally draining throughout several drainage features (Planert and Williams 1995). Many of the known basins in the area have dry playas in their lowest depressions that are left by the evaporation of intermittent lakes in the region; these serve hydrologic functions as well as provide biology for plants and animals. It has also been noted that parts of some valleys have become encrusted to a depth of several inches with alkaline salts, which cover the surface as a powdery crust (NSWP 1999; Planert and Williams 1995).

The USGS National Hydrography Dataset (NHD) divided and subdivided the country into progressively smaller hydrologic units based on surface features (USGS 2022c). Table 3-4 lists the HUC 12 sub-watersheds within the analysis area.

Each subbasin/watershed contains numerous streams and washes. Most of these are not perennial or intermittent throughout their length; ephemeral streams and washes are more common.

Table 3-4. HUC 12 Sub-watersheds in the Analysis Area

Watershed Name or HUC Code	Acres
Allen Springs-Frontal Stinking Springs	32,602
Antelope Spring	12,985
Bade Creek	15,509
Barrel Spring	19,491
Barton Creek	27,180
Bass Flat	25,332
Bench Creek	34,174
Big Creek	37,380
Blackbird Spring	21,467
Camp Creek	26,779
Cape Horn-Spencer Hot Spring	63,303
Cleaver Peak	11,531
Cottonwood Creek-Illipah Creek	33,317
Deer Spring	20,744
Diamond Field Jack Wash	21,912
Divide Spring	16,597
Dry Creek	27,390
Elevenmile Wash-Dixie Valley Wash	100,774
Fox Ditch-Walker River	164,808
Gandolfo Canyon-Reese River	114,909
Grubb Flat-Coils Creek	114,909
Halstead Creek	16,465
Horse Canyon-Frontal Edwards Creek Valley	28,547
Hot Springs-Antelope Wash	28,417
Jackrabbit Spring-Stoneberger Creek	21,757
Jakes Valley-Illipah Creek	140,222
Kelly Creek	15,707
Kobeh Valley-Slough Creek	50,598
Labou Flat	135,798
Lahontan Reservoir-Carson River	155,328
Lower Eastgate Wash	57,783
Lower Edwards Creek-Frontal Edwards Creek Valley	67,508
Lower Roberts Creek	75,876
Midas Canyon-Reese River	23,685
New Pass Creek-Frontal Edwards Creek Valley	32,917
North Spring	39,416
Paiute Wash	14,100
Parker Butte-Walker River	21,760
Pinto Creek	24,887
Porter Canyon-Porter Creek	83,063
Rutherford Canyon	27,233
Rye Patch Spring	28,898
Salt Wells Marsh-Fourmile Flat	60,272
Sam Spring Wash	19,714
Sammy Springs	15,710
Simpson Creek	24,884
Slough Creek-Frontal Diamond Valley	229,894
South Branch Carson River	124,695
Sulphur Spring	15,075
Tollhouse Canyon	30,192

Watershed Name or HUC Code	Acres
Twin Springs	11,422
Upper Antelope Creek	28,974
Water Canyon	13,579
White Hill Spring	15,709
Windlass Spring	11,931
Wonder Wash-Dixie Valley Wash	23,713
160401070302	17,546
160600011801	34,723
160600050608	23,788
160600060408	39,852

Sources: USGS GIS 2024; NDWR 2023c

The analysis area contains waters that usually have an established series of floodplains that help reduce flow velocity, help filter out some contaminates, provide habitat for aquatic organisms, provide rare plant habitat, and help to reduce sedimentation. Floodplains occur in the hyporheic zone or zone of mixing where surface water and groundwater interactions are common. According to the PPOD and available Federal Emergency Management Agency (FEMA) floodplain data (FEMA GIS 2023), most of the area is within Zone X (area of moderate to minimal flood hazards) or D (undetermined risk areas). The high-risk areas (Zone A, AE, AH, and AO) crossed by the proposed project are the Dixie Valley wash, Edwards Creek, Smith Creek, Reese River, Willow Creek, and Rye Patch Canyon sections.

Major wetlands and riparian areas identified in the area include palustrine, emergent mapped wetlands near the Reese River with small portions of palustrine scrub-shrub, freshwater emergent, and freshwater forested/shrub wetlands as well. Also, palustrine emergent, scrub-shrub along Willow Creek, including a section of 1 mile west of Willow Creek, is identified as scrub-shrub wetlands. There are also lake and riverine wetland areas but in smaller amounts (USGS 2022). For further information on wetlands and riparian areas affected, see Section 3.4, Vegetation Communities and Resources.

Impaired waters are any surface water or groundwater affected by point or nonpoint source contaminants. The Nevada Division of Water Resources (NDWR) considers impaired to mean any waterbody not supporting its beneficial uses (NDEP 2022). A total maximum daily load (TMDL) establishes the maximum amount of a pollutant allowed in a waterbody and serves as the starting point or planning tool for restoring water quality. The Nevada 2020–2022 Water Quality Integrated Report prepared by the Nevada Division of Environmental Protection identified one perennial stream (the Reese River below State Route 722 for 0.2 miles) that did not meet state water quality standards (referred to as impaired waters) within the GLNP analysis area (NDEP 2022).

The causes of impairment for the 0.2 miles of the total 197-mile Reese River were temperature, beryllium, and fluoride, which exceed water quality standards. Currently, the stream does not have an EPA-approved TMDL. The State is mandated by federal regulations (40 CFR 130.7) to set priorities for impaired waters and develop TMDLs; this stream has been identified as a low-priority stream according to the State of Nevada. No other streams in the analysis area have been identified as being impaired.

Waters of the US (WOTUS) are another concern within Nevada. Agencies interpret the term to include traditional navigable waters, the territorial seas, and interstate waters. Impoundments of areas are considered WOTUS and tributaries to WOTUS (EPA 2023). Furthermore, the term could also mean wetlands adjacent to WOTUS or relatively permeant, standing, or continuously flowing bodies of water with connections to waters described as WOTUS. There are no mapped WOTUS areas in the affected area.

Groundwater

The NDWR and the USGS have divided the state into 14 major hydrographic (valley) regions and 256 hydrographic basins (NDWR 2022). The GLNP would cross portions of 4 of the hydrographic regions and 10 of the hydrographic basins. The hydrographic regions include Humbolt River (Region 4), Carson River (Region 8), Walker River (Region 9), and Central (Region 10) (NDWR 2022, NDWR GIS 2023). Groundwater aquifers in the region are not continuous, or regional, due to the complex faulting in the region. Principal groundwater aquifers in the analysis area, collectively called the Basin and Range aquifers, fall within three categories: basin-fill aquifers, carbonate-rock aquifers, and volcanic-rock aquifers (USGS 2023a). The basin-fill deposits form the most productive aquifers and are generally in individual alluvial basins that are drained internally and are separated by low-lying mountains. Basin-fill aquifers are considered highly permeable and primarily consist of unconsolidated to moderately consolidated, well to poorly sorted beds of gravel, sand, silt, and clay deposited on alluvial fans, pediments, floodplains, and playas (USGS 1995). Most of the GLNP overlaps the Basin and Range basin-fill aquifers (NDWR 2022).

Basins are rarely hydraulically connected in the subsurface by fractures or solution openings in the underlying bedrock (Planert and Williams 1995). Many valleys and basins drain internally, meaning the water from precipitation that falls within the basin recharges the aquifers and ultimately discharges to the land surface and tends to evaporate within the basin. Two active groundwater monitoring wells are within a 5-mile radius of the temporary ROW area. These wells have been monitored on average for the past 13 years, and the depth-to-groundwater ratio ranges from approximately 5 to 40 feet deep approximately 5 miles north of US Highway 50 and 15 miles northwest of Eureka (USGS 2023c).

Based on this information, shallow aquifers exist upgradient of the GLNP. Furthermore, according to available information, four seeps and springs are identified along the route. These surface expressions provide habitat for wildlife and provide water to support a diverse amount of life downgradient. Groundwater surface expressions (that is, springs and seeps) are somewhat common, flow is variable, and groundwater flow depends on how much water makes it into the system each year. Sometimes, these can be the only water source for miles in these high desert Basin and Range environments.

Water Use and Water Rights

Typical water use concerns in the analysis area are a combination of public supply, domestic, commercial, industrial, thermoelectric, mining, irrigation, and livestock use (NDWR 2023). Water rights in Nevada are defined as belonging to the public and subject to appropriation by the State Engineer's Office. They also fall under the "first in time, first in right" system of

granting water rights to the first person to put the water to beneficial use (NDWR 2023a). The water use within the analysis area would be subject to the requirements of Nevada Water Law.

3.3.4 Environmental Consequences

Methodology

Information for water resources and the existing conditions was obtained from several sources, including scientific literature, government agencies, and institutions, which include the BLM, EPA, USGS, Nevada Division of Environmental Protection, and NDWR.

The Water Pollution Control Act of 1948 was the first major US law to address water pollution. Growing public awareness and concern for controlling water pollution led to sweeping amendments in 1972. As amended in 1977, the law became commonly known as the Clean Water Act, codified generally in 33 USC 1251 et. seq. The Clean Water Act's objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. It also works to limit regulatory and nonregulatory pollution discharge from multiple sources and to regulate quality standards for surface waters.

According to available information, waters in Nevada are property of the public in the state and are subject to laws described in the Nevada Revised Statutes (NRS) (NDWR 2023a). Water law in Nevada regarding water rights considers two concepts: prior appropriation and beneficial use. The first grants priority to senior water right holders, or "first in time," "first in right." The second concept is beneficial uses, such as mining, irrigation, recreation, commercial and industrial, and municipal uses. The NDWR, led by the state engineer, is the lead agency responsible for managing groundwater resources and should be contacted prior to use of water in the analysis area.

Executive Order 11988, Floodplain Management (3 Code of Federal Regulations [CFR] 1, 1977) requires an evaluation of impacts on floodplains for all federal actions. It also directs federal entities to reduce floodplain impacts and minimize flood risks to human safety. The 100-year floodplain was used to determine where flooding may be a hazard to the GLNP. FEMA data were available for counties within the GLNP analysis area.

Executive Order 11990, Protection of Wetlands (3 CFR 1, 1977) requires federal agencies to evaluate their actions' effects on wetlands and to minimize impacts. Riparian areas are water-dependent ecosystems bordering streams, springs, and lakes. They form ecological links between the terrestrial and aquatic components of the landscape. Wetlands and riparian areas provide important ecological functions, including floodwater attenuation, wildlife habitat, sediment trapping, and nutrient retention (BLM 2007).

Riparian areas within the GLNP analysis area were identified and analyzed in Section 3.4, Vegetation Communities and Resources.

Indicators

- Changes to existing water right allocations
- Changes in flow dynamics across the analysis area regarding water use for GLNP

- Changes in surface water and groundwater quality in the analysis area watersheds
- Changes in the hydrology of the perennial Reese and Walker Rivers, including changes in springs and seeps

Assumptions

- Surface disturbance within known watersheds in the area would affect surface water and groundwater quality and quantity in downgradient environments.

Direct and Indirect Impacts from the No Action Alternative

It is anticipated that under the No Action Alternative, the current uses and trends for water resources in the area would continue to occur. Under the No Action Alternative, there would be no impacts on water resources attributed to the geotechnical investigations, construction, O&M, and decommissioning of the GLNP. Existing disturbances along most of the proposed route occur from the existing roads in the area. Potential impacts would likely continue along those existing routes. Invasive species may continue to spread, and rutting or other erosion concerns could continue to be created along the existing two-track roads.

Direct and Indirect Impacts from the Proposed Action

Water Rights and Water Supply

Water would be obtained from municipal or commercial sources. These sources are subject to allocations by the Nevada State Water Engineer, who has responsibility to ensure the water basin is not overallocated. At this time, no effects on existing water rights have been identified, and no new water rights or wells would be needed under the Proposed Action. Dewatering is not anticipated for geotechnical investigations or construction; therefore, there would be no impacts on water rights or water supply anticipated from dewatering. However, if it is later determined during final design and siting of the GLNP that dewatering may be needed, the Proponent would obtain a dewatering permit from the appropriate agencies, as described in EMM WATER-18 (see Appendix D).

A comment was received during the March 2024 revised scoping process that raised concerns about the impacts from construction of the Proposed Action where the transmission line would cross Lander County pipelines. Under the Proposed Action, segments of access roads would cross water pipelines and wells in four areas in Lander County. Prior to construction, the Proponent would coordinate with local municipalities to avoid impacts, where feasible. If watering facilities are damaged or destroyed by activities, the facilities would be repaired or replaced to their pre-disturbed condition, as required by the landowner or land management agency (see EMM WATER-19).

Water would be necessary for the construction and O&M of the transmission line, new access roads, and the existing roads needing improvement. Some water would be needed during the geotechnical investigations and the decommissioning phase. Water would be used for mixing cement concrete, dust control on service or access roads, and cleaning of equipment. All water use would be subject to ensuring the underlying water right place of use and manner of use align with the GLNP use purposes. Water use in the Diamond Valley Hydrographic Basin would be subject to the Diamond Valley Groundwater Management Plan (State of Nevada 2019), as

approved by the State of Nevada State Engineer in Order #1302 on January 11, 2019, and upheld by the Nevada Supreme Court on June 16, 2022.

Water needs over the life of the GLNP construction phase may be subject to change. Table 3-5 provides the annual estimate of water use over the life of GLNP construction. The water estimates for transmission line and amplifier site construction along all segments would be approximately 57,100 to 233,000 gallons per day (a typical construction water truck holds around 4,000 to 5,000 gallons). The water estimates for construction yards would be about 35,500 to 183,775 gallons per day. The water estimates for substation construction (new and expanded substations) would be approximately 17,000 to 75,800 gallons per day. The water estimates for restoration would be approximately 600 to 2,900 gallons per day.

Table 3-5. Estimated Annual Construction Water Use

Component	Year 1 (acre-feet)	Year 2 (acre-feet)	Year 3 (acre-feet)
Transmission line and amplifier sites	0	261	64
Construction yards	40	206	181
Substations	0	85	19
Restoration	0	1	3
Total	**40**	**553**	**267**

Source: Lee Simpkins, NV Energy Environmental Manager, personal communication with Holly Prohaska, AECOM Project Manager, on May 17, 2024.
Note: This is a preliminary estimate of water use and time frames. The final amounts and timing of water use would depend on factors such as weather conditions and the final construction schedule. Construction yards assume 4,000 gallons per day per acre per duration of site operations. This is a conservative estimate because the whole site would not need daily dust control. The transmission line estimates assume the application of water six times (0.1 inches) per day for 30 days for each 1-mile stretch and include water for foundations.

These water estimates depend on several factors (the climate and weather, soil type, length of construction, construction sequencing, and others). For example, dust control would not be constant and not be required every day. No measurable changes to water levels of downstream hydrologic systems are expected. Water necessary for the construction and O&M efforts of the Proposed Action is not anticipated to affect existing groundwater levels or any seeps and springs in the area.

If water is used in the reclamation process to aid in seed germination, the details would be in the reclamation plan (a component of the COM plan), developed between the Proponent and the land-managing agencies and approved by the land management agency. The acre-feet allocation for water being used would depend on available sources and the amount of supplemental irrigation agreed upon in the site-specific reclamation planning. This reclamation plan would include details on seeding and how seeds may benefit from water being applied during the planting process. However, applying additional water to aid in reclamation of seeded plant species could increase the number of invasive species and noxious weeds. EMMs REC-1 through REC-3 (see Appendix D), which detail the requirements for herbicide use for the life of the project, would mitigate this impact.

Surface disturbance from the construction activities under the Proposed Action could change surface water and groundwater flow paths, but not to the extent that surface water or groundwater supply would be adversely affected. EMM WATER-14 (see Appendix D) would be applied to avoid hydrologic conduits between aquifers.

Water Quality

Typical impacts from the Proposed Action on water quality in the area would include all the surface-disturbing activities that move soils and increase erosion, causing sedimentation that affects downgradient environments. Activities associated with these impacts are the geotechnical investigations near or on access roads, construction of all access roads, including for O&M; all road crossings; and any staging areas or pads for substations. They also would include any temporary or permanent surface disturbance for operations, including fencing construction and installation. There are also potential soil-erosion concerns from decommissioning activities after the life of the project. The proposed EMMs in Appendix D (WATER-1 to WATER-20) would help to reduce impacts on water quality until final reclamation work can take place.

If most of the surface-disturbing activities take place in the utility corridor, this could reduce impacts on water resources outside the utility corridor and increase water resource concerns inside the established area if future ROWs are collocated within the utility corridor. The proposed disturbance has the potential to affect approximately 29,082 acres of HUC 12 sub-watersheds in the analysis area. EMMs WATER-1 through WATER-5 (sediment-control structures and stormwater controls) in Appendix D would help reduce these impacts.

Currently, no WOTUS exist within the analysis area, as per the GIS review and USGS NHD data review. If features are later determined to be WOTUS by the US Army Corps of Engineers, they would be avoided or impacts on those features could be minimized through project design (that is, spanning drainages and wetlands and avoiding access road crossings) and EMM WATER-16 (see Appendix D). If WOTUS are later identified, a Section 404 Clean Water Act permit from the US Army Corps of Engineers and a 401 Certification from the Nevada Division of Environmental Protection may be required. An Individual Permit or a Nationwide Permit 57 Electric Utility Line and Telecommunication Activities may also be required. The Proponent would obtain such permit(s) prior to surface-disturbing activities.

As described under Section 3.3.3, Affected Environment, the Reese River is considered an impaired water below State Route 722 for 0.2 miles. EMM WATER-16 requires the Proponent to develop a management plan to avoid, reduce, and minimize adverse effects on impaired streams.

Geotechnical Investigations

The use of overland travel and existing access roads for geotechnical investigations would minimize surface disturbance and sedimentation that affects water quality. While the borehole locations would vary slightly for each action alternative, approximately 30 acres would be disturbed regardless of alternative, spread across the entire analysis area. Surface disturbance in these areas could increase the potential for sedimentation; however, the disturbance would be localized and less severe than the disturbance from construction activities described below. The

Proponent would restore disturbed areas thus minimizing any long-term effects on water quality.

Construction

Under the Proposed Action, impacts on surface water resources would be associated with ground-disturbing activities, such as the clearing, grubbing, and blading to remove vegetation for construction of the access roads, proposed amplifiers, microwave radio facilities, substation sites, and transmission line structures. Installation of fences would also cause ground disturbance, though not to the same extent as the other construction activities. These ground-disturbing activities would result in soil erosion and would increase the potential for sedimentation in downgradient environments. The use of EMM WATER-1, which requires a stormwater pollution prevention plan (a component of the COM plan), and EMM WATER-12, which requires avoidance of construction equipment in flowing streams and placement of structures outside active stream channels, would reduce impacts on water quality from surface disturbance. Additionally, the Proponent would use existing roads, where possible, to help reduce sedimentation.

Other impacts on surface water quality from roads could be from inadequately sized culverts at crossings or poorly constructed low-water crossings that create excess rutting, therefore potentially increasing erosion rates where vehicles would pass through them. Additional impacts from culverts could be from scoring; changes in channel gradients, aggradation, or degradation of the stream channels; and potential changes in aquatic habitats in the area. The Proponent would consult with the appropriate land management agency prior to siting and design for stream crossings on federal lands (location, alignment, and approach for culvert, drive-through, and ford crossings; see EMMs WATER-7 and WATER-8 in Appendix D).

Surface disturbance from construction activities and contaminants from point and nonpoint sources could reduce water quality in surface water, shallow aquifers, and the associated water tables. Point sources would include potential spills from any staging areas, refueling areas, and access roads along the total length of the proposed transmission line. Nonpoint sources are those that do not discharge directly into a waterbody. For example, herbicides and pesticides used for other agricultural work upgradient of the GLNP could become mobile and flow into the analysis area. Both point source and nonpoint source contaminants could affect the water quality standards set forth by the Nevada Division of Environmental Protection and the standards in the ambient standards for waterbodies from the EPA. EMMs HZMAT-1, HAZMAT-12, WATER-14, WATER-16, WATER-17, and WATER-20 (see Appendix D) would be applied to help reduce water quality impacts from point and nonpoint sources in surface and groundwater, including seeps and springs.

Construction activities would result in an increased amount of fugitive dust. Fugitive dust can affect evapotranspiration rates from plants and decrease water quality. Any increase in the amount of sediments reaching known wetlands or riparian areas can impact the physical and biological functions of these zones by limiting the amount of interactions, changing flow characteristics and surface channel morphology, and potentially changing water quality downgradient of these sensitive areas. Changes in flow dynamics would affect where wetlands and riparian areas exist, potentially affecting wildlife that may rely on these zones for habitat.

See Section 3.4, Vegetation Communities and Resources for more details on impacts on wetlands and riparian areas. EMMs AIR-9, AIR-11, AIR-16, and BIO-44 in Appendix D would reduce these impacts from fugitive dust.

Known 100-year floodplains could also be impacted from increased sedimentation during construction activities. The proposed 525 kV transmission line and ancillary facilities would cross 474 acres of FEMA-mapped 100-year floodplains (FEMA GIS 2023; see Figure 3-1, Floodplains, in Appendix A). When an increase in sediments flows down the stream channels, this can cause increased scoring potentials, affect water quality, impact aquatic habitats for micro- and macroinvertebrates, affect the floodplain's ability to filter out potential contaminants, and potentially change the morphological characteristics of the channel itself. These changes in the channels' morphological characteristics also could result in other impacts in downgradient environments, especially if water in the channel being affected is used for drinking water purposes or other domestic needs.

According to the PPOD, the greatest span between structures is anticipated to be 1,500 feet (NV Energy 2024). Floodplain development permits may be required where the floodplain distance exceeds the span distance. The GLNP would cross the following FEMA floodplains that are greater than 1,500 linear feet: the Reese River, Stoneberger Creek, Coils Creek, and Roberts Creek. The Proponent would contact the local EPA office for a Section 404 permit, if applicable. The Proponent would obtain any state permits prior to any surface disturbance.

All construction vehicles and equipment staging or storage, and all ground-disturbing construction activities, including installation of fences, would be avoided within 300 feet from the riparian areas and wetlands of any streams and other water features (floodplains), unless such features are adequately protected (see EMM WATER-20 in Appendix D). In addition, EMM WATER-10 requires the use of flood-control devices and building foundations on structures near floodplains that prevent scour or effects from 100-year storm events. Therefore, any impacts from storm events that create flood-level velocities on known 100-year floodplains would be negligible.

Impacts on wetlands and riparian areas from the Proposed Action would include activities that would clear, grub, or blade to remove plants and disrupt soils from the planned construction within these identified zones along the proposed project route. See Section 3.4, Vegetation Communities and Resources for more details. The proposed 525 kV transmission line and ancillary facilities would cross 712 acres of wetlands and riparian areas (USGS NHD GIS 2020). Riverine areas are the most common type of wetland along the route.

Operations and Maintenance

Impacts on water quality from O&M under the Proposed Action would be similar to the impacts from construction, but they would be less in magnitude. There would be more long-term impacts from O&M compared with some of the proposed short-term effects from road construction. Existing routes would be used, where possible, to help reduce erosion and sedimentation concerns, with some segments upgraded for safety standards. Furthermore, although these routes would have permanent disturbance, they would undergo site stabilization techniques on any exposed soils and reclamation activities to help minimize surface disturbance for the life of the project (see EMM REC-19 in Appendix D). Sediment retention (as required

under EMM WATER-4 in Appendix D) would help keep sediments on-site during O&M activities and would reduce impacts on downgradient water quality. Overall, these practices would work to reduce potential impacts on water quality standards in downgradient environments.

Impacts on surface water quality from road crossings would continue in the operations phase and include continued erosion of stream banks and sedimentation of road runoff from stormwater events. Permanent improvements to crossing structures could result in temporary, minor discharges of sediment but would reduce long-term impacts associated with maintenance. Any installed culverts along the Proposed Action route could get blocked by debris in streams and cause water to back up and potentially flood areas, creating unsafe working conditions and affecting surface water quality and quantity downgradient. EMM WATER-8 in Appendix D would ensure that culverts and crossings comply with State of Nevada best management practices.

Northern Nevada is expected to receive less water from precipitation and experience more frequent and intense storms (NOAA 2022). More frequent and intense storms and drier conditions would increase the potential for flooding and wildfires that can cause sedimentation in waterbodies. Under the Proposed Action, stormwater design elements, surface operating plans, and erosion- and sediment-control structures would be in place to reduce impacts on water quality. Any new culverts would require inspection, maintenance, and repairs throughout the GLNP's operational life to help minimize water quality impacts from various erosion and point source spills throughout the life of the project. Stabilization measures like those indicated in EMM WATER-4 (see Appendix D) would be implemented in conformance with state and federal water quality regulations.

Impacts for maintenance of the proposed roads and other infrastructure associated with the Proposed Action along the proposed route include the potential increases in erosion from repeatedly driving along the routes, which creates dust, or driving during wet periods, which creates excess rutting. During precipitation events, water runoff in rutted areas would increase sedimentation in downgradient environments. Furthermore, water quality could be impacted not only by the increases in sediments leaving the area, but it could also be contaminated by accidental spills such as hydrocarbons from oil leaking from trucks, antifreeze spills, or the occasional gasoline spills in refueling staging areas.

Vegetation management during the operations phase has the potential to impact water quality through increased sedimentation from bare ground increases or spills from vehicles being used to access the sites. The use of herbicides to control noxious weeds or nonnative, invasive plant species could have short-term impacts on water quality. Surface water quality could be affected by runoff, leaching, and drift of herbicides from wind.

The standard operating procedures from the BLM vegetation management programmatic EISs for noxious weed control are incorporated by reference and would be followed by the Proponent to minimize the spread of invasive plant species and noxious weeds on BLM-administered lands (BLM 2007, 2016). If herbicide application takes place within newly constructed road areas and other proposed disturbance areas, the land management agency or private landowner must grant permission (see EMM REC-2 in Appendix D).

The GLNP would not include the application of herbicides directly to surface water or groundwater expression sites like springs or seeps. Impacts could occur on downgradient environments from wind drift in application areas in upland sites. In areas of the permanent ROW and near-surface waters, such as the Reese River portion, herbicides registered for aquatic use would be used, but the use would be based on approval by the ROW agency. Buffer zones would be established between treatment areas and waterbodies to minimize impacts; the width of the buffer zones would be developed based on herbicide and site-specific criteria outlined by the BLM (BLM 2016).

The eventual growth of compatible vegetation in treated areas would help to moderate water temperatures, buffer the input of sediment and herbicides from runoff, and promote bank stability in identified surface water areas or known wetland and riparian zones. The reclamation plan will have more information on herbicide use and vegetation management for the life of the project.

Decommissioning

During decommissioning, the Proponent would remove all structures needed for operations, and reclamation and restoration would take place to return the area to preconstruction conditions. Most of the decommissioning and reclamation components of the Proposed Action would have less impacts than the construction phase. Most areas needed for temporary use would undergo surface reclamation, and permanent areas would undergo site stabilization to reduce sedimentation into downgradient water features (see EMMs REC-7, REC-8, REC-11, and REC-19 in Appendix D). In addition, the ROW agencies would ensure through monitoring the Proponent has abided by the requirements under the terms of the ROW grants.

After the RODs and BLM Approved RMPA are issued, the Proponent will prepare a COM plan to be approved by the ROW agencies. Within the COM plan, the reclamation plan will describe methods to de-compact soils and the spreading of any salvaged growth media and seeding with agency-approved seed mixes. Seed mixes would be in consideration of site specifics; these specifics could change along the GLNP route, especially at the major drainage crossings like the Reese River, which may require a different seeded species than the upland sites, based on the soil and ecological site descriptions (see EMMs REC-9 and REC-19 in Appendix D).

Surface Water Hydrology

Under the Proposed Action, approximately 1.9 miles of perennial, 4.4 miles of intermittent, and 115 miles of ephemeral drainages would overlap the analysis area (USGS 2022b, USGS NHD GIS 2020). Most impacts on the Reese River and other drainage crossings would be from increased sediments from the geotechnical investigations, construction, operations, and decommissioning phases of the Proposed Action, as indicated above. Also, increased sediments can impact flow dynamics, impact water quality standards, and change channel morphology.

When the GLNP has to work around the Reese River, there is the potential for impacts on the river and the floodplain features throughout the length of this perennial surface water. Impacts would include increased sediments or contamination from point sources when construction or O&M activities are conducted in these zones. EMMs WATER-10 and WATER-20 (see Appendix D) would help reduce scouring, inundation, and sedimentation impacts from construction

activities and flooding. Additionally, the Proponent has committed to spanning the Reese River, if needed, or using existing access roads to avoid work within the Reese River.

The Walker River, which has been identified as at risk due to consumptive water use (USGS 2015), would not be impacted to a degree that requires detailed analysis. This is mainly because the Walker River watershed is farther south of the analysis area, and although flow from groundwater can reach that watershed, it is not expected the amount of water use from the GLNP would affect the Walker River drainages' current flow velocities or water quality standards.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Water Rights and Water Supply

Under the Other Resource Consideration Alternative, all water rights activities and water use allocations associated with the geotechnical investigations, construction, O&M, and decommissioning and reclamation phases would be the same as discussed under the Proposed Action. No new water rights would be needed for this alternative. If it is determined that new water rights would be needed for this alternative, the Proponent would need to obtain the appropriate permits from the Nevada State Engineer's Office.

All water use activities associated with the geotechnical investigations, construction, O&M, and decommissioning and reclamation of the infrastructure and roads involved with the Other Resource Consideration Alternative would be the same as discussed above in the Proposed Action section. Water use allocations and flow dynamics would be the same as or similar to the allocations discussed for the Proposed Action.

Water Quality

Under the Other Resource Consideration Alternative, proposed disturbance would have the potential to affect approximately 28,942 acres of HUC 12 sub-watersheds in the analysis area. Similar to the Proposed Action, if most of the surface-disturbing activities take place in the utility corridor, this could reduce impacts on water resources outside the utility corridor and concentrate impacts inside the established area if future ROWs are collocated within the utility corridor. The impacts on water quality from the temporary and permanent disturbances would be similar to those discussed under the Proposed Action. However, when compared with the Proposed Action, this alternative would have the potential to impact 860 fewer acres, which would decrease the potential for sedimentation and reduced water quality in the analysis area.

The construction and O&M impacts on floodplains would be same as those discussed above for the Proposed Action. However, according to the available data, there would be a slight difference in the amount of acres of crossed floodplain. Under the Other Resource Consideration Alternative, the GLNP would cross 507 acres of the floodplain environment (see Figure 3-1, Floodplains, in Appendix A), compared with 474 acres under the Proposed Action (FEMA GIS 2023). This equates to 32 more acres of potential disturbance to known floodplain environments compared with the Proposed Action. There would not be changes in the type of water quality effects on floodplains compared with what was analyzed above for the Proposed Action.

The construction and O&M impacts on wetlands and riparian areas would be the same as those discussed above for the Proposed Action. However, there would be a slight difference in the number of acres of crossed wetlands and riparian areas. Under the Other Resource Consideration Alternative, the GLNP would cross 731 acres of wetland and riparian environments, compared with 712 acres under the Proposed Action (BLM, FS, and NVE GIS 2024). This equates to 19 more acres of disturbance to known wetland and riparian environments compared with the Proposed Action. There would not be changes in the type of water quality effects on wetlands and riparian areas compared with what was analyzed above for the Proposed Action.

All activities associated with the geotechnical investigations and decommissioning and reclamation of the infrastructure and roads involved with the Other Resource Consideration Alternative would be the same as those discussed under the Proposed Action.

Surface Water Hydrology

All activities associated with the geotechnical investigations, construction, O&M, and decommissioning and reclamation of the infrastructure and roads involved with the Other Resource Consideration Alternative would cause the same surface water impacts as discussed above for the Proposed Action. Compared with the Proposed Action, there would be approximately 2.3 more miles of perennial drainages affected; the differences in miles of intermittent and ephemeral drainages would be negligible (USGS NHD GIS 2020).

The applicable EMMs that would apply to water resources for the Other Resource Consideration Alternative would be the same as those discussed above for the Proposed Action (see EMMs WATER-1 to WATER-20 in Appendix D). These include the Proponent's commitment to span the Reese River, if needed, or use existing access roads to avoid work within the Reese River.

Direct and Indirect Impacts from the BLM Preferred Alternative

Water Rights and Water Supply

Under the BLM Preferred Alternative, all water rights activities and water use allocations associated with the geotechnical investigations, construction, O&M, and decommissioning and reclamation phases would be the same as discussed under the Proposed Action. No new water rights would be needed for this alternative. If it is determined that new water rights would be needed for this alternative, the Proponent would need to obtain the appropriate permits from the Nevada State Engineer's Office.

All activities associated with the geotechnical investigations, construction, O&M, and decommissioning phases of the infrastructure and roads involved with the BLM Preferred Alternative would use the same amount of water as discussed above in the Proposed Action section. Water use allocations and flow dynamics would be the same or similar to the allocations discussed for the Proposed Action.

Water Quality

Under the BLM Preferred Alternative, the proposed disturbance would have the potential to affect approximately 29,082 acres of HUC 12 sub-watersheds in the analysis area. Similar to the

Proposed Action, if most of the surface-disturbing activities take place in the utility corridor, this could reduce impacts on water resources outside the utility corridor and concentrate impacts inside the established area if future ROWs are collocated within the utility corridor. This alternative would result in the same acres of potential disturbance within known watersheds, having a similar potential to impact water quality from sedimentation, when compared with the Proposed Action.

The construction and O&M impacts on floodplains would be the same as those discussed above for the Proposed Action. However, there would be a slight difference in the acres of mapped floodplains crossed under the BLM Preferred Alternative. Under the BLM Preferred Alternative, the GLNP would cross approximately 470 acres of floodplain environments (see Figure 3-1, Floodplains, in Appendix A), compared with 474 acres under the Proposed Action (FEMA GIS 2023). This equates to 4 less acres of disturbance to known floodplain environments compared with the Proposed Action. There would not be changes in the type of effects on water quality compared with what was analyzed above for the Proposed Action; however, there would be reduced potential impacts on floodplains. Also, there would be 4 less acres of surface disturbance that could impact water quality and floodplain dynamics.

The construction and O&M impacts on wetlands and riparian areas would be the same as those discussed above for the Proposed Action. However, according to the available data, there would be a slight difference in the number of acres of crossed wetlands and riparian areas. Under the BLM Preferred Alternative, the GLNP would cross 698 acres of wetland and riparian environments, compared with 712 acres under the Proposed Action (BLM, FS, and NVE GIS 2024). This equates to 14 less acres of disturbance to known wetland and riparian environments compared with the Proposed Action. However, although the GLNP would cross fewer acres under the BLM Preferred Alternative, there would not be changes in the type of effects on water quality compared with what was analyzed above for the Proposed Action. Fewer impacted acres would benefit wetlands and riparian areas along the proposed route under the BLM Preferred Alternative, compared with the other action alternatives. See Section 3.4, Vegetation Communities and Resources for more details.

Impacts on surface water and groundwater under the BLM Preferred Alternative would involve some changes from the disturbance analyzed under the Forest Service Northern Alternative. The segment through the Humboldt-Toiyabe National Forest is in steeper terrain and would have higher erosion potentials that could affect water quality downgradient.

For the Forest Service Northern Alternative's 9-mile segment through BLM-administered lands, the potential impacts from the construction of the roads and associated infrastructure would be similar to those discussed in the Proposed Action section, with minor changes in the total amount of surface disturbance attributed along the route for the BLM Preferred Alternative. Other than some changes in the route, the impacts on surface water and groundwater quality from this alternative would be the same as those discussed for the Proposed Action.

All activities associated with the geotechnical investigations and decommissioning and reclamation of the infrastructure and roads involved with the BLM Preferred Alternative would be the same as those discussed under the Proposed Action.

Surface Water Hydrology

Under the BLM Preferred Alternative, all activities associated with the geotechnical investigations, construction, O&M, and decommissioning and reclamation phases of the infrastructure and roads would be the same as those discussed under the Proposed Action. Compared with the Proposed Action, there would be approximately 2.8 fewer miles of ephemeral drainages and 1.0 fewer miles of intermittent drainages affected; the differences in miles of perennial drainages would be negligible (USGS NHD GIS 2020). There would not be changes in the type of effects on these drainages compared with what was analyzed for the Proposed Action.

The applicable EMMs that apply to water resources for the BLM Preferred Alternative would be the same as those discussed above for the Proposed Action (see EMMs WATER-1 to WATER-20 in Appendix D).

3.4 Vegetation Communities and Resources (including Wetlands and Riparian Areas, and Noxious Weeds and Invasive Plants)

3.4.1 Issues Identified for Analysis

- How would geotechnical investigations and construction activities affect existing vegetation?
- Which noxious weeds and invasive plant species would likely become established during geotechnical investigations and construction, operations, and maintenance activities, and how would these species be controlled?
- How would geotechnical investigations for and construction, O&M, and decommissioning of the GLNP affect wetlands and riparian areas?

3.4.2 Analysis Area

The vegetation analysis area is the same as the survey area used for the reconnaissance-level vegetation surveys conducted in 2022 (BLM 2023a). The survey area includes the permanent and temporary ROWs, as defined in Section 2.1.2. This area represents 29,082 acres under the Proposed Action, 28,942 acres under the Other Resources Consideration Alternative, and 29,121 acres under the BLM Preferred Alternative.

3.4.3 Affected Environment

The analysis area is in the Central Basin and Range ecoregion (EPA 2021), which is a cold desert characterized by a series of uplifted, north–south-trending mountain ranges and their associated dry, or terminal, basins. Elevations along the route range from a high of approximately 7,500 feet in the Diamond Mountains, east of Eureka in Eureka County, to approximately 4,000 feet in the Salt Wells Basin, southeast of Fallon in Churchill County.

General Vegetation

Results from the 2022 reconnaissance-level vegetation surveys (BLM 2023a) provided ground-truthed Southwest Regional Gap Analysis Project (SWReGAP) land cover types as well as information on invasive plants and noxious weeds. Table 3-6 summarizes the descriptions of ground-truthed SWReGAP land cover types in the analysis area.

Table 3-6. Ground-Truthed SWReGAP Land Cover Types

Published Land Cover Type and Code	Land Cover Type Description
Inter-Mountain Basins Big Sagebrush Shrubland (S054)	This land cover type occurs in broad basins between mountain ranges, plains, and foothills. Soils are deep, well drained, and nonsaline. This type is dominated by big sagebrush (*Artemisia tridentata*). Perennial herbaceous components usually contribute less than 25 percent cover. In the survey area, many stands are dominated by Wyoming big sagebrush (*A. t.* ssp. *Wyomingensis*); a few stands of big sagebrush (*A. t.* ssp. *Tridentata*) also were observed in lower-lying areas. Common associated shrubs are spiny hopsage (*Grayia spinosa*), Mormon tea (*Ephedra viridis*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), and rubber rabbitbrush (*Ericameria nauseosa*). Sandberg's bluegrass (*Poa secunda*) is a common native, perennial understory grass. Cheatgrass (*Bromus tectorum*) is common in the understory in many stands, especially those at lower elevations and valley bottoms, and other relatively dry sites or sites that have been disturbed by livestock grazing or other uses.
Inter-Mountain Basins Mixed Salt Desert Scrub (S065)	This land cover type is open-canopied shrublands of typically saline basins, alluvial slopes, and plains. Substrates are often saline and calcareous, medium- to fine-textured, alkaline soils, but also include some coarser-textured soils. The characterization varies widely based on the elevation, aspect, and other site factors. Generally, dominant shrubs include shadscale (*Atriplex confertifolia*), fourwing saltbush (*Atriplex canescens*), spiny hopsage, yellow rabbitbrush, Bailey's greasewood (*Sarcobatus baileyi*), bud sagebrush (*Picrothamnus desertorum*), winterfat (*Krascheninnikovia lanata*), and spineless horsebrush (*Tetradymia canescens*). The cover and composition of native perennial grasses and forbs vary widely by stand. Cheatgrass is common in the understory in many stands.
Great Basin Xeric Mixed Sagebrush Shrubland (S055)	This land cover type occurs on dry flats and plains, alluvial fans, rolling hills, rocky hillslopes, saddles, and ridges. Sites are dry, often exposed to desiccating winds, with typically shallow, rocky, nonsaline soils. This type is dominated by black sagebrush (*Artemisia nova* for stands at mid- and low elevations) and low sagebrush (*A. arbuscula* for stands at higher elevations). It may be co-dominated by Wyoming big sagebrush or yellow rabbitbrush. Other shrubs may be present, and the herbaceous layer is typically sparse and composed of perennial bunch grasses. In the survey area, this type is common at elevational bands between Inter-Mountain Basins Big Sagebrush Shrubland and Great Basin Pinyon-Juniper Woodland, and it intergrades with both.
Great Basin Pinyon-Juniper Woodland (S040)	This land cover type occurs in ranges of the Great Basin region, on warm, dry sites on mountain slopes and ridges. Woodlands can be dominated by pure or mixed stands of single-leaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). This is a widespread land cover type in the survey area. Common associated species include shrubs such as black sagebrush and Mountain big sagebrush (*Artemisia tridentata* ssp. *Vaseyana*).
Inter-Mountain Basins Montane Sagebrush Steppe (S071)	This land cover type includes sagebrush communities occurring at montane and subalpine elevations, where the climate is cool and semiarid to subhumid. Dominant shrubs are primarily mountain big sagebrush. Antelope bitterbrush (*Purshia tridentata*) may co-dominate or even dominate some stands. Other common shrubs include snowberries (*Symphoricarpos* spp.), Utah serviceberry (*Amelanchier utahensis*), wax currant (*Ribes cereum*), and others. Most stands have an abundant perennial herbaceous layer (over 25 percent cover). In the survey area, common understory perennial grasses include needle-and-thread grass (*Hesperostipa comata*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg's bluegrass, and others.
Inter-Mountain Basins Greasewood Flat (S096)	This land cover type occurs near drainages on stream terraces and flats and around sparsely vegetated playas. Soils are saline, with a shallow water table, and they flood intermittently; however, they remain dry for most growing seasons. These soils are open to moderately dense shrublands dominated or co-dominated by black greasewood (*Sarcobatus vermiculatus*), with fourwing saltbush or shadscale. In the survey area, these stands are in low-lying, intermittently flooded areas, including the Walker River and Reese River valleys, an elevational band around the Salt Wells Basin, the Bean Flat/Kobeh Valley in Eureka County, and other areas.

Published Land Cover Type and Code	Land Cover Type Description
Inter-Mountain Basins Semi-Desert Shrub Steppe (S079)	This land cover type occurs at lower elevations on alluvial fans and flats with moderate to deep soils. It is typically dominated by grasses with an open shrub layer. In the survey area, it occurs in several relatively small areas on north-facing slopes in the Desert and Cocoon Mountains, where deeper soils and mesic conditions support a high cover of perennial grasses, including Sandberg's bluegrass, Indian ricegrass (*Achnatherum hymenoides*), and James' galleta (*Hilaria jamesii*), and scattered shrubs typical of the surrounding Inter-Mountain Basins Mixed Salt Desert Scrub community.
Invasive Annual Grassland (D08)	This land cover type includes areas dominated by introduced annual grasses, including cheatgrass. In the survey area, these areas have typically experienced disturbance, including fire, such as the 2017 Draw Fire near Cold Springs Station and the 1985 Cocoon Mountains Fire in the Cocoon Mountains in Churchill County.
Inter-Mountain Basins Playa (S015)	This land cover type is barren and sparsely vegetated playas with less than 10 percent plant cover. Salt crusts are common with saltgrass (*Distichlis spicata*) beds in depressions and sparse shrubs around the margins. These systems are intermittently flooded. The water is prevented from percolating through the soil by an impermeable soil layer and is left to evaporate. Playas were mapped in the Mason Valley in low-lying areas west of the Walker River.
Western Great Plains Saline Depression Wetland (S108)	These are wetland systems in landscape depressions, with strongly saline soils resulting in brackish conditions. Salt crusts can occur on the surface in some examples of this system. Species that typify this system are salt-tolerant species, such as saltgrass. Communities found within this system may also occur in floodplains (that is, more open depressions). In the survey area, this system was mapped in floodplains that supported saltgrass meadows. These were in the Reese River valley and Willow Creek valley in Lander County.
Inter-Mountain Basins Active and Stabilized Dune (S012)	This land cover type occurs in intermountain basins and is composed of unvegetated to moderately vegetated active and stabilized sand dunes. In the survey area, this land cover type was observed in the Desert Mountains in eastern Lyon County, where sand from the Pleistocene-era Lake Lahontan shore presumably blew into canyons in the Desert Mountains, where it remains today, and in western Churchill County, to the southwest of Carson Lake in the Bass Flat area. Dominant shrub species include Nevada smokebush (*Psorothamnus polydenius*), dune horsebrush (*Tetradymia tetrameres*), and greasewood species (*Sarcobatus* spp.). These areas had high cover of diverse native perennial grasses and forbs.
Inter-Mountain Basins Cliff and Canyon (S009)	This land cover type includes barren and sparsely vegetated landscapes of steep cliff faces, narrow canyons, smaller rock outcrops, and scree and talus slopes that typically occur below cliff faces. This system is relatively uncommon in the survey area; relatively small areas were mapped in the Desert and Clan Alpine Mountains in Churchill County and in the Simpson Park Mountains in Lander County. However, there are many rock outcrops in surrounding matrix land cover types, which were too small to warrant mapping as this land cover type.
Inter-Mountain Basins Semi-Desert Grassland (S090)	This land cover type occurs in lowland and upland xeric swales, playas, alluvial flats, and plains. Substrates are often well-drained sandy or loamy soils. The dominant perennial bunch grasses and shrubs within this system are all drought resistant; they include Indian ricegrass, three-awn (*Aristida* spp.), blue grama (*Bouteloua gracilis*), needle-and-thread grass, and others. They also may include scattered shrubs.
Invasive Annual and Biennial Forbland (D09)	This land cover type includes areas that are dominated by introduced annual and biennial forb species, such as saltlover (*Halogeton glomeratus*), kochia (*Kochia scoparia*), Russian thistle (*Salsola* spp.), and others. In the survey area, these areas have typically experienced disturbance, including fire, such as the 2017 Draw Fire near Cold Springs Station and the 1985 Cocoon Mountains Fire in the Cocoon Mountains in Churchill County.

Published Land Cover Type and Code	Land Cover Type Description
Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland (S118)	This land cover type occurs in mountain ranges of the Great Basin within a broad elevation range, often as a mosaic of multiple communities that are tree dominated with a diverse shrub component. These are disturbance-driven systems that require flooding, scour, and deposition for germination and maintenance. In the survey area, this system was mapped in the Walker River corridor in Lyon County, in riparian drainages in the Toiyabe Range in Lander County, and other riparian areas.
Invasive Perennial Grassland (D06)	This land cover type includes areas that are dominated by introduced perennial grass species. In the survey area, these include livestock forage enhancement treatment areas in Lander County that were formerly seeded in crested wheatgrass (*Agropyron cristatum*).
North American Arid West Emergent Marsh (S100)	Marshes may occur in depressions in the landscape, as fringes around lakes, and along slow-flowing streams and rivers. These areas are frequently or continually inundated. The vegetation is characterized by herbaceous plants that are adapted to saturated soil conditions. In the survey area, this system was somewhat common in irrigation canals in Lyon and Churchill Counties, where stands of cattail (*Typha* spp.) and bulrush (*Schoenoplectus* spp.) were present; in the Reese River valley in Lander County; and at scattered springs and seeps throughout the survey area.
Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland (S050)	This ecological system occurs in hills and mountain ranges of the intermountain basins on rocky outcrops or escarpments. Most stands occur as shrublands on ridges and steep rimrock slopes. In the survey area, a stand was mapped in the Toiyabe Range in Lander County. Curl-leaf mountain mahogany (*Cercocarpus ledifolius*) is the dominant overstory, small tree in these areas. Mountain big sagebrush and other shrubs exist in the understory.
Disturbed, Non-specific (D01)	This land cover type includes areas that are barren or have relatively low vegetation cover that are associated with some form of generic human alteration or management regime. In the survey area, these areas are typically associated with heavy amounts of livestock grazing, where livestock congregate around water or supplement sources or at corrals.
Recently Mined or Quarried (D03)	This land cover type is areas where mining or quarries are visible in the imagery and are 5 acres or greater in size.
Developed, Open Space – Low Intensity (N21) and Developed, Medium – High Intensity (N22)	These are developed areas. Open space to low intensity includes lawns, vegetation in developed settings, and single-family housing developments. In the survey area, this type includes single-family homes and the associated open space areas. Medium to high intensity includes more intensely developed areas. In the survey area, highways (US Highway 95 and US Highway 50) were mapped as this type.
Barren Lands, Non-specific (N31)	These are barren areas where vegetation accounts for less than 15 percent of the total cover. In the survey area, a barren, former agricultural field near Middlegate in Churchill County was mapped as this type.
Agriculture (N80)	This land cover type includes pasture and hay production and production of cultivated crops. In the survey area, irrigated alfalfa fields both in active production and in an apparent rest cycle comprise this land cover type.

Source: BLM, FS, and NVE GIS 2024

Pinyon-Juniper Woodlands

In central Nevada, pinyon-juniper woodlands are managed for forest products including fuelwood, Christmas trees, and pinyon pine nuts. These woodlands are also managed for wildlife habitat and resilience to wildland fire, drought, insects, and disease. The Forest Service's pinyon-juniper management guidelines include using caution to prevent cheatgrass invasion and other invasive plant species invasion (Forest Service 1986, IV-37) and utilizing timber sales and pinyon/juniper management as a tool to improve wildlife habitat (Forest Service 1986, IV-50).

Wetlands and Riparian Areas

Wetlands and riparian areas typically correspond to the following SWReGAP land cover types:

- North American Arid West Emergent Marsh (S100)
- Western Great Plains Saline Depression Wetland (S108)
- Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland (S118)
- Inter-Mountain Basins Playa (S015)

Wetlands and riparian areas in the GLNP survey area are associated with the Walker River in Lyon County, the Reese River in Lander County, and springs, seeps, and streams that are mostly concentrated, but not exclusively located, in mountain ranges, including the Toiyabe Range in the Humboldt-Toiyabe National Forest in Lander County and the Diamond Mountains on the Eureka County-White Pine County line.

Noxious Weeds and Invasive Plants

Under Executive Order 13112, an invasive species is defined as a harmful, nonnative species causing or likely to cause harm to the economy, environment, animals, or human health. Projects with a federal nexus have the responsibility to:

- prevent the introduction of invasive species;
- detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner;
- monitor invasive species populations accurately and reliably; and
- provide for restoration of native species and habitat conditions in ecosystems that have been invaded (DOI 1999).

Noxious weeds are plant species that are legally designated and regulated by state and federal laws (BLM 2007). They are invasive plants and generally are nonnative (BLM 2007), detrimental or destructive, and difficult to control or eradicate (NRS 555.055). Invasive vegetation and noxious weeds degrade or reduce soil productivity, water quality and quantity, native plant communities, wildlife habitat, wilderness values, recreational opportunities, and livestock forage. Their presence is detrimental to the agriculture and commerce of the US and to public health (BLM 2007).

The greatest difference between noxious weeds and invasive plants is the state and federal laws that regulate them. Legally, a noxious weed is a plant designated by a federal, state, or county government as harmful to public health, agriculture, recreation, wildlife, or property. Although

noxious and invasive plants have similar effects on native plant communities, not all invasive plants have been put on a noxious weeds list in federal and state laws or state regulations. This occurs for a variety of reasons, including a lack of information about the distribution of the species, differing public opinion about the effects of a species, and a lack of proponents to list a species. Officially listed noxious weeds are inherently invasive. The plants' ability to establish themselves in a variety of habitats and then quickly dominate an area is the prime reason that noxious vegetation is so problematic. In addition to the federal noxious weed list, each state maintains a list of regulated and prohibited noxious and invasive weed species. Nevada's state-level and weed control district level listed noxious weeds are designated under Nevada Administrative Code 555.

The following noxious weed species exist within the GLNP survey area:

Saltcedar (*Tamarix ramosissima*): Tens of saltcedar shrubs were found in areas with past surface disturbance that now collect and hold some water. Populations are in basins associated with gravel pits on the north slope of the Desert Mountains, west of the Schurz Highway (Highway 95). Populations with tens of individuals are also in the Reese River valley around water impoundments.

Perennial pepperweed or tall whitetop (*Lepidium latifolium*): Perennial pepperweed or tall whitetop was widespread in the survey area. Populations with hundreds of individuals were found on reclaimed slopes on the north slope of the Desert Mountains, west of the Schurz Highway (Highway 95). Hundreds of individuals were in agricultural canals along the Schurz Highway just south of Fallon. Tens to hundreds of individuals were in scattered populations in wetland meadows in the Reese River valley. This species is also in Illipah Creek in White Pine County.

Musk thistle (*Carduus nutans*): Small populations of tens of plants are in wetland swale habitat in the Toiyabe Range in the Humboldt-Toiyabe National Forest.

African rue (*Peganum harmala*): One population of hundreds of plants is along an existing dirt frontage road paralleling the Schurz Highway south of Fallon, where the proposed transmission line would cross the highway.

Hoary cress (*Cardaria draba*): Several populations were observed in spring outflow habitats near Bean Flat in Eureka County and in Illipah Creek in White Pine County.

Scotch thistle (*Onopordum acanthium*): A population of tens was observed in a spring outflow area in Simpson Creek in Eureka County.

Russian knapweed (*Acroptilon repens*): A population of hundreds is in the Muchacho Spring outflow area in Eureka County.

Spotted knapweed (*Centaurea maculosa*): A population of tens is at the Illipah Reservoir outlet in Illipah Creek.

Assessment, Inventory, and Monitoring

There are two BLM Assessment, Inventory, and Monitoring strategy monitoring points in the analysis area (plot PJ-261, in White Pine County, and plot BM-WySage-327, in Lander County). Both were established in August 2017, and have been visited once, on the date of establishment. The plot in White Pine County is on the Shallow Calcareous Slope 10-12 Precipitation Zone ecological site and is heavily invaded by pinyon-juniper woodland. The plot in Lander County is on the Loamy 8-10 Precipitation Zone ecological site. Conditions on this plot when monitored were as expected for the ecological site (BLM, FS, and NVE GIS 2024).

3.4.4 Environmental Consequences

Methodology

The analysis reviews the impacts each proposed alternative would have on vegetation communities (including wetlands and riparian areas, and noxious weeds and invasive plants) in the analysis area. Comparisons are made between alternatives and the baseline based on their relative effect on the vegetation communities. Differences among the alternatives may be expressed both qualitatively and quantitatively. For each alternative, the acres of surface disturbance that change by alternative were overlaid with mapped vegetation types to present a quantitative analysis.

The analysis also reviews the impacts each proposed alternative would have on the introduction and spread of noxious weeds and invasive plant species. The evaluation of noxious weeds and invasive plants' effects on various resources is based largely on the potential for weed spread. Weed spread is often influenced by the extent of disturbed soil and the proximity of established weed infestation to areas of disturbance. Assessing weed spread is based, in part, on evaluating the difference in frequency, intensity, or type of activity that results in significant soil disturbance.

The mechanism for the transport of weed seed is termed a "vector." Vectors for weed spread include equipment, vehicles, animals, people, wind, and water. Vectors associated with, or resulting from, the geotechnical investigations, construction and O&M of the GLNP may affect various resources by aiding in the spread of weeds. Comparisons are made between alternatives based on their potential to cause ground disturbance or to increase vectors for weed spread.

Indicators

- Acres of vegetation communities open to potential vegetation and surface-disturbing activities
- Potential for ground disturbance or an increase in vectors for weed spread
- Acres of riparian or wetland vegetation open to potential vegetation and surface-disturbing activities

Assumptions

- Terrestrial ecosystems are complex and contain many known and unknown factors that interact with each other, often in unpredictable ways. Vegetation is dynamic and changing constantly; the ability to predict changes in the future is limited. The level of

uncertainty depends on how predictable such factors as disturbances, climate change, or human activities may be.

Direct and Indirect Impacts from the No Action Alternative

Under the No Action Alternative, the current vegetation uses and trends would continue to occur. There would be no impacts on vegetation attributed to the geotechnical investigations, construction, O&M, and decommissioning of the GLNP.

Impacts Common to All Action Alternatives

Geotechnical Investigations

Overland travel associated with some of the proposed borehole locations would crush existing vegetation, potentially resulting in vegetation damage or mortality during geotechnical investigations. Overland travel associated with some of the proposed borehole locations would crush existing vegetation, potentially resulting in vegetation damage or mortality during geotechnical investigations. While the borehole locations would vary slightly for each action alternative, approximately 30 acres would be disturbed regardless of alternative, spread across the entire analysis area. The Proponent would restore disturbed areas thus minimizing any long-term effects on vegetation. Geotechnical investigations would avoid any riparian or wetland vegetation thus avoiding impacts on these types of vegetation. Geotechnical investigations would not result in measurable changes to the current baseline of the risk, introduction, continued existence, or spread of noxious weeds or nonnative invasive species in or from the analysis area. Given that effects on vegetation from geotechnical investigations would be limited, localized, and restored, no further discussion on these effects is included.

Construction

Impacts on vegetation associated with the construction of the GLNP components include removal and crushing of vegetation communities and increased vectors of weed spread from the construction of transmission lines, new substations, construction yards, and new access roads. Removing protective vegetation would increase the potential for soil erosion, which could result in further loss of vegetation. Soil disturbance from construction vehicles, including vehicle movement via overland travel, and construction activities would increase the potential for the introduction and spread of new and existing invasive and noxious weeds to the analysis area. The introduction or colonization of disturbed areas by invasive plants and noxious weeds could lead to changes in vegetation communities, including the possible shift to more wildfire-prone vegetation, which favors invasive species over native species. Construction of permanent components would also increase fragmentation of connected vegetation types. Construction could result in short-term impacts on riparian and wetland communities. Impacts would include vegetation removal for project activities and use of heavy equipment in riparian areas and wetlands and pinyon-juniper woodlands. The Proponent will develop a weed management plan as part of the COM plan. Project design criteria and EMMs (BIO-20, WATER-16, WATER-20, CON-15, GRSG-14, VEG-6, and VEG-7 in Appendix D) would lessen impacts on riparian and wetland vegetation and pinyon-juniper woodlands by minimizing disturbance and weed introduction, keeping staging areas out of riparian areas and wetlands, and requiring the use of low-impact equipment during construction.

Under the action alternatives, the BLM would designate a utility corridor, which means new applications for linear ROWs would likely be proposed within the utility corridor. This could increase impacts on vegetation, including invasive and noxious weeds, within the utility corridor. However, it could also help to decrease impacts outside the utility corridor by collocating new disturbances within previously disturbed areas.

Operations and Maintenance

The Proponent is committed to implementing integrated vegetation management using industry measures in the removal of incompatible vegetation (ANSI 2018; Miller 2021), while maintaining compliance with the North American Electric Reliability Corporation reliability standard FAC-003-4. FAC-003-4 is an integrated vegetation management approach that systematically selects, implements, and monitors different types of vegetation treatment methods to manage plant communities to achieve established objectives.

Each federal ROW agency has processes and procedures for the management and prevention of invasive plant species and noxious weeds that the Proponent would follow. Any invasive plant and noxious weed populations would be managed in compliance with the applicable federal ROW agency; this management is included in the EMMs (BIO-15 through BIO-19, CON-10, VEG-1 through VEG-3, OPS-4, REC-12, REC-18, and REC-19 in Appendix D).

Additionally, the standard operating procedures from the BLM vegetation management programmatic EISs for noxious weed control are incorporated by reference and would be followed by the Proponent to minimize the spread of invasive plant species and noxious weeds on BLM-administered lands (BLM 2007, 2016; BLM Integrated Vegetation Management Handbook 1740-2). The standard operating procedures from these documents provide measures related to the prevention and early detection of weeds, herbicide application methods that minimize impacts on resources, revegetation methods, precautionary measures for protection of resources, and others. The Proponent would also follow the direction contained in Forest Service Manual 2900, Invasive Species Management, to minimize the spread of invasive plant species and noxious weeds on National Forest System lands.

Herbicides would be used, where needed, for ongoing vegetation management after approval from the federal ROW agency. When treating invasive plant species or noxious weeds, the Proponent would follow herbicide application guidelines as described by the federal ROW agency's policies and procedures (for example, the Final Vegetation Treatments Using Herbicides Programmatic EIS; BLM 2007).

Vegetation loss would occur during O&M for incompatible vegetation clearance. Incompatible vegetation is defined in this Final EIS/Proposed RMPA as plants under, above, and near power lines that could disrupt the safe, reliable, and continuous delivery of electricity. Vegetation impacts from O&M would be minimal and primarily associated with vegetation treatment along the utility corridor and access roads. Clearing woodland areas would be required for vegetation maintenance to meet electrical line minimum ground-clearance requirements.

Throughout the life of the GLNP, maintenance vehicles would travel to and from the utility corridor using both new and existing access roads. Some road maintenance is expected to ensure safe and efficient access to the transmission line, but this would be a negligible threat to

noxious and invasive species. Vehicles would also occasionally travel along the maintenance roads within the ROW. Although vehicle travel within the ROW would be low and result in minimal ground disturbance, there would still be a potential to spread and introduce noxious and invasive seeds to other areas.

Decommissioning

Vegetation loss would occur during decommissioning with the removal of GLNP components. Decommissioning is anticipated to impact areas that were previously disturbed during GLNP facilities' installation. Thus, the direct removal of native vegetation communities is not anticipated during site decommissioning. As part of decommissioning, disturbed areas would be reclaimed, except where permanent facilities would be located. Potential impacts on native vegetation communities include the introduction of fugitive dust on exposed topsoil and colonization of the GLNP area by invasive weeds during and after decommissioning.

Direct and Indirect Impacts from the Proposed Action

Surface-disturbing activities associated with the Proposed Action would occur within the temporary and permanent ROWs, which include approximately 28,652 acres of vegetation (Table 3-7). Impacts on vegetation, including noxious weeds and invasive plants, associated with construction, O&M, and decommissioning, as described under *Impacts Common to All Action Alternatives*, would occur in these areas. There would be 20,814 acres (73 percent) of temporary disturbance and 7,838 acres (27 percent) of permanent disturbance. Of the temporary ROW area, 11,616 acres (41 percent of the total disturbance acres) would occur in the Inter-Mountain Basins Big Sagebrush Shrubland and the Inter-Mountain Basins Mixed Salt Desert Scrub land cover types. Of the permanent ROW area, approximately 58 percent of the total permanent acres (16 percent of the total disturbance acres) would occur in the same sagebrush shrub and salt desert scrub land cover types as the temporary ROW area.

Table 3-7. SWReGAP Land Cover Types in Temporary and Permanent ROWs under the Proposed Action

SWReGAP Land Cover Type	Permanent Acres	Permanent Percentage of Total	Temporary Acres	Temp. Percentage of Total	Total Acres*
Inter-Mountain Basins Big Sagebrush Shrubland	2,499	29	6,020	71	8,519
Inter-Mountain Basins Mixed Salt Desert Scrub	2,067	27	5,596	73	7,663
Great Basin Xeric Mixed Sagebrush Shrubland	1,248	28	3,218	72	4,466
Great Basin Pinyon-Juniper Woodland	1,028	24	3,317	76	4,345
Inter-Mountain Basins Montane Sagebrush Steppe	212	24	657	76	868
Inter-Mountain Basins Greasewood Flat	254	33	514	67	769
Inter-Mountain Basins Active and Stabilized Dune	171	32	367	68	538
Invasive Annual Grassland	137	29	340	71	477
Inter-Mountain Basins Semi-Desert Shrub Steppe	81	31	180	69	261

SWReGAP Land Cover Type	Permanent Acres	Permanent Percentage of Total	Temporary Acres	Temp. Percentage of Total	Total Acres*
Invasive Annual and Biennial Forbland	44	33	91	67	135
Developed, Medium - High Intensity	13	9	127	91	140
Agriculture	13	11	108	89	121
Inter-Mountain Basins Semi-Desert Grassland	26	24	85	76	111
Barren Lands, Non-specific	1	2	53	98	55
Inter-Mountain Basins Cliff and Canyon	8	16	42	84	49
North American Arid West Emergent Marsh	10	25	30	75	40
Inter-Mountain Basins Playa	10	42	15	58	25
Recently Mined or Quarried	7	29	17	71	24
Western Great Plains Saline Depression Wetland	6	28	15	72	21
Developed, Open Space - Low Intensity	1	13	7	87	8
Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland	1	9	6	91	7
Invasive Perennial Grassland	1	19	6	81	7
Disturbed, Non-Specific	1	35	2	65	4
Total*	**7,838**	**27**	**20,814**	**73**	**28,652**

Source: BLM, FS, and NVE GIS 2024
* Totals may not sum due to rounding.

Based on the ground-truthed SWReGAP data, the GLNP area contains wetlands and riparian areas within the area of disturbance. Of the approximately 20,814 acres of temporary ROW area associated with the Proposed Action, 45 acres would be wetland or riparian types (approximately 0.16 percent of the total disturbance acres). Of the approximately 7,838 acres of permanent ROW area associated with the Proposed Action, 16 acres would be wetland or riparian types (approximately 0.06 percent of the total disturbance acres). Impacts on wetlands and riparian areas would be as described under *Impacts Common to All Action Alternatives*.

Additional Measures to Avoid or Minimize Impacts

The following EMMs would be recommended for implementation with the Proposed Action: BIO-13, BIO-16, BIO-17, BIO-32, BIO-41, BIO-46, BIO-48, CON-8, CON-10, OPS-4, REC-12, REC-17, REC-18, REC-19, and DECOM-9 in Appendix D. These measures, along with the additional measures that will be identified in the COM plan, would minimize the impacts on vegetation. No additional measures to avoid or minimize impacts on vegetation are recommended for the Proposed Action.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Surface-disturbing activities associated with the Other Resource Consideration Alternative would occur on approximately 28,647 acres of vegetation (Table 3-8). Impacts on vegetation, including noxious weeds and invasive plants, associated with construction, O&M, and decommissioning would be similar to those under the Proposed Action; however, they would occur on approximately 5 fewer acres than under the Proposed Action. Approximately 20,829 acres (73 percent) would be temporary disturbance, and 7,818 acres (27 percent) would be permanent disturbance. Similar to under the Proposed Action, the two vegetation types that would be subject to the most disturbance would be the Inter-Mountain Basins Big Sagebrush Shrubland and the Inter-Mountain Basins Mixed Salt Desert Scrub.

Table 3-8. SWReGAP Land Cover Types in Temporary and Permanent ROWs under the Other Resource Consideration Alternative

SWReGAP Land Cover Type	Permanent Acres	Permanent Percentage of Total	Temporary Acres	Temp. Percentage of Total	Total Acres*
Inter-Mountain Basins Big Sagebrush Shrubland	2,356	29	5,719	71	8,075
Inter-Mountain Basins Mixed Salt Desert Scrub	2,215	27	5,901	73	8,116
Great Basin Xeric Mixed Sagebrush Shrubland	1,246	28	3,202	72	4,448
Great Basin Pinyon-Juniper Woodland	924	24	2,997	77	3,921
Inter-Mountain Basins Montane Sagebrush Steppe	290	23	966	77	1,256
Inter-Mountain Basins Greasewood Flat	254	33	514	67	768
Inter-Mountain Basins Active and Stabilized Dune	171	32	367	68	538
Invasive Annual Grassland	134	28	338	72	471
Inter-Mountain Basins Semi-Desert Shrub Steppe	80	31	180	69	260
Developed, Medium - High Intensity	14	10	130	90	145
Invasive Annual and Biennial Forbland	44	32	91	68	135
Agriculture	13	11	108	89	121
Inter-Mountain Basins Semi-Desert Grassland	26	24	85	76	111
Barren Lands, Non-specific	1	2	53	98	55
Inter-Mountain Basins Cliff and Canyon	7	15	41	85	48
North American Arid West Emergent Marsh	12	24	36	76	48
Developed, Open Space - Low Intensity	4	11	32	89	35
Inter-Mountain Basins Playa	10	42	15	58	25
Recently Mined or Quarried	7	29	17	71	24

SWReGAP Land Cover Type	Permanent Acres	Permanent Percentage of Total	Temporary Acres	Temp. Percentage of Total	Total Acres*
Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland	3	13	19	87	22
Western Great Plains Saline Depression Wetland	4	38	7	62	11
Invasive Perennial Grassland	1	19	6	81	7
Rocky Mountain Aspen Forest and Woodland	0	0	4	93	5
Disturbed, Non-Specific	1	37	2	63	4
Total*	**7,818**	**27**	**28,647**	**73**	**28,647**

Source: BLM, FS, and NVE GIS 2024
*Totals may not sum due to rounding.

Of the approximately 20,829 acres of temporary ROW area associated with this alternative, 43 acres would be wetland or riparian types (approximately 0.21 percent). Of the approximately 7,818 acres of permanent ROW area associated with this alternative, 16 acres would be wetland or riparian types (approximately 0.2 percent). Under the Other Resource Consideration Alternative, approximately 2 fewer acres of wetland and riparian types would be disturbed, compared with under the Proposed Action. Impacts on wetlands and riparian areas would be as described under *Impacts Common to All Action Alternatives*.

Direct and Indirect Impacts from the BLM Preferred Alternative

Surface-disturbing activities associated with the BLM Preferred Alternative would occur on approximately 28,671 acres of vegetation (Table 3-9). Impacts on vegetation, including noxious weeds and invasive plants, associated with construction, O&M, and decommissioning would be similar to those under the Proposed Action; however, they would occur on approximately 19 more acres than under the Proposed Action. Approximately 20,959 acres (73 percent) would be within the temporary disturbance area, and 7,713 acres (27 percent) would be permanently disturbed. Similar to under the Proposed Action, the two vegetation types that would be subject to the most disturbance would be the Inter-Mountain Basins Big Sagebrush Shrubland and the Inter-Mountain Basins Mixed Salt Desert Scrub.

Table 3-9. SWReGAP Land Cover Types in Temporary and Permanent ROWs under the BLM Preferred Alternative

SWReGAP Land Cover Type	Permanent Acres	Permanent Percentage of Total	Temporary Acres	Temp. Percentage of Total	Total Acres*
Inter-Mountain Basins Big Sagebrush Shrubland	2,536	29	6,117	71	8,607
Inter-Mountain Basins Mixed Salt Desert Scrub	2,019	25	5,928	75	7,947
Great Basin Pinyon-Juniper Woodland	1,041	24	3,234	76	4,274
Great Basin Xeric Mixed Sagebrush Shrubland	1,138	28	2,979	72	4,116
Inter-Mountain Basins Montane Sagebrush Steppe	205	23	686	77	891

SWReGAP Land Cover Type	Permanent Acres	Permanent Percentage of Total	Temporary Acres	Temp. Percentage of Total	Total Acres*
Inter-Mountain Basins Greasewood Flat	253	33	523	67	776
Inter-Mountain Basins Active and Stabilized Dune	157	32	341	68	498
Invasive Annual Grassland	137	29	340	71	477
Inter-Mountain Basins Semi-Desert Shrub Steppe	80	30	183	70	263
Invasive Annual and Biennial Forbland	54	33	110	67	164
Developed, Medium - High Intensity	10	7	119	93	129
Agriculture	13	11	108	89	121
Inter-Mountain Basins Semi-Desert Grassland	27	23	88	77	115
Inter-Mountain Basins Cliff and Canyon	12	15	73	85	85
Barren Lands, Non-specific	1	2	53	98	55
North American Arid West Emergent Marsh	10	26	29	74	39
Inter-Mountain Basins Playa	10	42	14	58	24
Western Great Plains Saline Depression Wetland	5	36	8	64	13
Recently Mined or Quarried	0	0	3	100	3
Developed, Open Space - Low Intensity	1	13	7	87	8
Invasive Perennial Grassland	1	18	6	82	8
Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland	0	5	7	95	7
Inter-Mountain Basins Big Sagebrush Steppe	0	0	0	100	0
Disturbed, Non-Specific	1	35	2	65	4
Mojave Mid-Elevation Mixed Desert Scrub	1	95	0	5	1
Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland	0	0	1	100	1
Total*	**7,713**	**27**	**20,959**	**73**	**28,671**

Source: BLM, FS, and NVE GIS 2024

* Totals may not sum due to rounding.

Of the approximately 20,959 acres of temporary ROW area associated with this alternative, 38 acres would be wetland or riparian types (approximately 0.18 percent). Of the approximately 7,713 acres of permanent ROW area associated with this alternative, 15 acres would be wetland or riparian types (approximately 0.19 percent). Under this alternative, approximately 7 less acres of wetland and riparian types would be disturbed, compared with the Proposed Action. Impacts on wetlands and riparian areas would be as described under *Impacts Common to All Action Alternatives*.

3.5 Fish and Wildlife

3.5.1 Issues Identified for Analysis

- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect wildlife habitat and migratory corridors?
- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect wildlife abundance, distribution, and use of the project area and adjacent areas?
- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect migratory birds?

3.5.2 Analysis Area

The analysis area for general fish and wildlife, including migratory birds, is the temporary ROW plus a 1.19-mile buffer (approximately 496,108 acres), per the noise attenuation assumption described under Section 3.5.4, Assumptions.

3.5.3 Affected Environment

Migratory Birds

Neotropical migratory birds are bird species that migrate from breeding grounds in the temperate portions of the continent to winter in the tropics of North, Central, and South America. These also include species, such as the rough-legged hawk (*Buteo lagopus*), that breed in the arctic or boreal regions of North America and winter in temperate portions of the continental US. A number of migratory birds breed in North America, including in the Great Basin, and winter in neotropical regions. Some examples of migratory birds that breed in the Great Basin, and potentially occur in analysis area habitats, are sage thrasher (*Oreoscoptes montanus*), calliope hummingbird (*Selasphorus calliope*), and olive-sided flycatcher (*Contopus cooperi*). Several migratory bird species are considered to be special status species; these are discussed in more detail in Section 3.6, Special Status Species.

The land bird initiative known as Partners-In-Flight has developed a series of bird conservation plans for regions covering every state. Partners-In-Flight bird conservation regions are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. Bird conservation regions are a hierarchical framework of nested ecological units. The overall goal of these bird conservation regions is to accurately identify the migratory and resident bird species (beyond those already designated as federally threatened or endangered) that represent the highest conservation priorities by ecoregion. The USFWS updates the bird conservation region lists every 5 years. The Birds of Conservation Concern 2021 (USFWS 2021) is the most recent update. The USFWS recommends that the birds of conservation concern (BCCs) regional lists be consulted in accordance with Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds.

The analysis area is within the Great Basin region (Region 9). There are 34 BCCs listed in the Great Basin region (USFWS 2021). The USFWS's Information for Planning and Consultation (IPaC) database search (see Appendix G) identified 17 BCCs that may occur in or near the analysis area. Table 3-10, below, shows the 17 BCCs identified by the USFWS's IPaC database, their breeding status in the region, and their habitat requirements. These BCCs are discussed in additional detail below the table.

Table 3-10. Birds of Conservation Concern

Common Name	Scientific Name	Breeding Status[1]	Habitat Requirements	Species Occurrence in the Analysis Area
American white pelican*^	*Pelecanus erythrorhynchos*	B	Habitat includes rivers, lakes, reservoirs, estuaries, bays, and open marshes, and sometimes inshore marine habitats. Pelicans rest/roost on islands and peninsulas. Nests usually are on islands or peninsulas in brackish or freshwater lakes or on ephemeral islands in shallower wetlands.	Riparian areas and wetlands
Black tern^	*Chlidonias niger*	B	The species nests in marshes and along sloughs, rivers, lakeshores, and impoundments, or in wet meadows, typically in sites with a mixture of emergent vegetation and open water. Nests may be placed in a variety of vegetation situations, from dense stands of emergent vegetation to open water.	Riparian areas and wetlands
California gull	*Larus californicus*	B	This species nests inland on open sandy or gravelly areas on islands or along shores of lakes and ponds, generally with scattered grasses. It nests on the ground.	Riparian areas and wetlands
Cassin's finch*^	*Haemorhous cassinii*	B	This species prefers open coniferous forest. During migration and winters, it uses deciduous woodlands, second growth, scrub, brushy areas, partly open areas with scattered trees, and sometimes shrubs near mountains. It usually nests in conifer on the outer end of the tree limb. It may also nest in deciduous trees or shrubs.	Forests and woodlands
Clark's grebe	*Aechmophorus clarkii*	B	This species exists in marshes, lakes, and bays; in migration and winter, it also uses sheltered seacoasts and is less frequently along rivers. It nests among tall plants growing in water on the edge of large areas of open water.	Riparian areas and wetlands

Common Name	Scientific Name	Breeding Status[1]	Habitat Requirements	Species Occurrence in the Analysis Area
Evening grosbeak	*Coccothraustes vespertinus*	NB	This species uses coniferous (primarily spruce and fir) and mixed coniferous-deciduous woodland, second growth, and occasionally parks; in migration and winter, it exists in a variety of forest and woodland habitats, and around human habitation.	Forests and woodlands
Franklin's gull	*Leucophaeus pipixcan*	B	Nonbreeding habitat includes seacoasts, bays, estuaries, lakes, rivers, marshes, ponds, and irrigated fields and mudflats. The species nests in freshwater marshes, shores of inland lakes, and areas of prairie and steppe. Nests are made of dead marsh plants; they are often a floating structure anchored to a living plant stem.	Riparian areas and wetlands
Lesser yellowlegs	*Tringa flavipes*	NB	Nonbreeding habitat includes marshes, ponds, wet meadows, lakes, and mudflats, and coastal salinas. The species nests in muskeg country, to the edge of tundra, in marshes and bogs, and in clearings or burned-over sections of black spruce forest. Nests are a depression in the ground. They may be on a slope, far from water.	Riparian areas and wetlands
Lewis's woodpecker*^	*Melanerpes lewis*	B	This species inhabits open pine woodlands and other areas with scattered trees and snags; unlike other American woodpeckers, it enjoys sitting in the open as opposed to sitting in heavy tree cover.	Forests and woodlands
Long-eared owl*^	*Asio otus*	B	This species' habitat is deciduous and evergreen forests, orchards, wooded parks, farm woodlots, river woods, and desert oases. Wooded areas with dense vegetation are needed for roosting and nesting; open areas are used for hunting. Habitat is often associated with conifers in eastern North America and also with deciduous woods near water in the West.	Forests and woodlands; riparian areas
Marbled godwit	*Limosa fedoa*	NB	Habitat is marshes and flooded plains; in migration and when not breeding, the species also uses mudflats and beaches, and open shallow water along shorelines.	Riparian areas and wetlands

Common Name	Scientific Name	Breeding Status[1]	Habitat Requirements	Species Occurrence in the Analysis Area
Olive-sided flycatcher*^	*Contopus cooperi*	B	The species breeds in various forest and woodland habitats (taiga, subalpine coniferous forest, mixed coniferous-deciduous forest, burned-over forest, spruce or tamarack bogs, and other forested wetlands) and along the forested edges of lakes, ponds, and streams. Most nesting sites contain dead, standing trees, which are used as singing and feeding perches. During the northern winter, this species occurs in a variety of forest, woodland, and open situations with scattered trees, especially where tall dead snags are present.	Forests and woodlands
Pinyon jay*^†	*Gymnorhinus cyanocephalus*	B	This species requires pinyon-juniper woodlands or, less frequently, other pine species for nesting. Throughout the year it also occurs in sagebrush and the transition area between pinyon-juniper woodlands and sagebrush, primarily for foraging and seed caching. Nests are placed in pinyon pines, juniper, oak, or other pine species.	Pinyon-juniper woodlands
Rufous hummingbird	*Selasphorus rufus*	B	This species is associated with old-growth coniferous forest stands. Breeding habitat includes coniferous forest, second growth, thickets, and brushy hillsides, with foraging extending into adjacent scrubby areas and meadows with abundant nectar flowers.	Forests and woodlands
Sage thrasher*^	*Oreoscoptes montanus*	B	Breeding habitats include sagebrush plains, primarily in arid or semiarid situations. The species nests in the fork of shrub (almost always sagebrush); sometimes it nests on the ground. In winter, it uses arid and semiarid scrub, brush, and thickets.	Sagebrush and desert scrub
Western grebe	*Aechmophorus occidentalis*	B	This species nests on large inland bodies of water. The nests are usually anchored or built over living vegetation.	Riparian areas and wetlands
Willet	*Tringa semipalmata*	B	This species nests along marshy lake margins in western North America, on the ground in open areas, and in wet grassland by lakes or short grass or bare ground in proximity to water.	Riparian areas and wetlands

Sources: USFWS 2021; NatureServe 2023; NDOW 2023; USFWS 2023 (see Appendix G)
[1] Breeding status: B = breeds in the Great Basin region; NB= nonbreeding in the Great Basin region
* Also a BLM sensitive species
^ Also an NDOW species of greatest conservation need
† Also a Forest Service Region 4 regional forester's sensitive species

Other migratory birds that are known to exist or have the potential to exist in the analysis area include sagebrush sparrow (*Artemisiospiza nevadensis*), western bluebird (*Sialia mexicana*), Virginia's warbler (*Leiothlypis virginiae*), black-throated gray warbler (*Setophaga nigrescens*), Scott's oriole (*Icterus parisorum*), common nighthawk (*Chordeiles minor*), mountain bluebird (*Sialia currucoides*), black-throated sparrow (*Amphispiza bilineata*), lark sparrow (*Chondestes grammacus*), and western meadowlark (*Sturnella neglecta*) (GBBO 2010; NDOW 2022a).

Raptors

Raptors are classified as migratory birds; they also serve as important indicators of overall ecosystem health because they are keystone species at the top of the food web. Numerous raptor species have been directly observed in or near the analysis area, including American kestrel (*Falco sparverius*), bald eagle (*Haliaeetus leucocephalus*), black-shoulder kite (*Elanus axillaris*), burrowing owl (*Athene cunicularia*), Cooper's hawk (*Accipiter cooperii*), ferruginous hawk (*Buteo regalis*), flammulated owl (*Otus flammeolus*), golden eagle, great horned owl (*Bubo virginianus*), long-eared owl (*Asio otus*), merlin (*Falco columbarius*), American goshawk (*Astur atricapillus*), northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetus*), peregrine falcon (*Falco peregrinus*), prairie falcon (*Falco mexicanus*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus*), short-eared owl (*Asio flammeus*), Swainson's hawk (*Buteo swainsoni*), turkey vulture (*Cathartes aura*), western screech-owl (*Megascops kennicottii*), and common raven (*Corvus corax*).

Nesting habitats in or near the analysis area include cliffs, rock outcrops, trees of various age classes in pinyon-juniper woodlands, ground and shrub habitat, and riparian areas (BLM 2023).

Raptor species are protected by state and federal laws. In addition, American kestrel, bald eagle, burrowing owl, California spotted owl (*Strix occidentalis occidentalis*), ferruginous hawk, flammulated owl, golden eagle, long-eared owl, American goshawk, northern pygmy-owl (*Glaucidium californicum*), peregrine falcon, prairie falcon, short-eared owl, and Swainson's hawk are NDOW species of greatest conservation need and are target species for conservation, as outlined by the Nevada Wildlife Action Plan (NDOW 2022a). Coordination with the NDOW (BLM 2023) identified approximately 373 known or suspected raptor nest sites within 10 miles of the analysis area. These species are discussed further in Section 3.6, Special Status Species. Raptor nest surveys were conducted between 2022 and 2024.

Big Game

The primary big game species found in the analysis area include bighorn sheep, elk, mule deer, and pronghorn (Table 3-11). A historical, unoccupied range for black bear (*Ursus americanus*) also overlaps the analysis area (BLM 2023). Bighorn sheep are discussed further in Section 3.6, Special Status Species.

Table 3-11. Big Game Distribution by Alternative

Habitat Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Elk			
Potential distribution	21,813	22,185	21,887
Year-round	2,357	2,706	2,700

Habitat Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Mule Deer			
Crucial winter	2,834	2,834	2,802
Summer range	1,537	1,252	1,029
Winter range	2,783	2,892	2,024
Year-round	2,292	2,604	3,150
Migration corridor	286	434	434
Pronghorn			
Crucial summer	79	79	79
Crucial winter	460	479	479
Winter range	1,947	2,117	2,731
Year-round	17,470	17,376	17,765
Black Bear			
Historical	1,628	1,402	1,516

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 1.

These big game species are supported by the diversity of habitat and availability of essential resources throughout the analysis area. The success of big game species can be attributed to habitat conditions, the availability of resources, and the level of human-disturbance activities. There are periods during an animal's life cycle when they are particularly vulnerable to disturbances related to human activities. Degradation or unavailability of certain habitats will lead to declines in carrying capacity or numbers of wildlife species in question, or both. An example of this is winter range, where big game migrates to lower elevations and can compete for limited resources, which can limit mule deer and elk populations. Big game is also vulnerable during fawning and calving periods, as mothers tend to their young by providing food resources and protection from predators. Loss of winter range and fawning/calving habitat would prevent big game herds from achieving management objectives (NDOW 2022b).

Habitats supporting big game species throughout the analysis area are varied and include forest and shrublands, especially mountain shrub. Summer habitats tend to be more productive areas in higher elevations. Production occurs in the best habitats within summer concentration areas and in both forested areas and shrublands, with cover sometimes provided by trees or topography, or both.

Mule deer and elk use a variety of vegetation types and habitats seasonally within the analysis area in their pursuit of forage, thermal cover, and escape cover. Vegetation important for mule deer includes single-leaf pinyon pine, curl-leaf mountain mahogany, sagebrush, aspen, eastern cottonwood (*Populus deltoides*), willow, Utah juniper, Saskatoon serviceberry, snowberry, chokecherry (*Prunus virginiana*), wild rose, wild buckwheats (*Eriogonum* spp.), arrowleaf balsamroot (*Balsamorhiza sagittata*), and numerous other forbs. Riparian vegetation along streams, meadow areas, and aspen stands are important fawn-rearing areas (NDNH 2023).

Generally, Nevada's mule deer populations have continued to decline over the past decade largely due to lack of consistent precipitation, large-scale range fires, conversion of native shrubs to invasive grasses, and degraded range conditions from feral horses and burros (NDOW 2022b). Habitat for mule deer over much of the surrounding area is in decline, and proposed treatments are designed to slow or reverse this trend. Factors contributing to this

decline include pinyon-juniper encroachment into shrublands; decadent and unhealthy pinyon-juniper stands; high levels of hazardous fuels that could lead to a catastrophic wildfire and loss of deer habitat; inappropriate livestock grazing; noxious weeds and other invasive, nonnative vegetation; and human-related disturbance (NDNH 2023).

Pronghorn are common in the lowlands and foothills surrounding the analysis area. Rangelands with a mixture of grasses, forbs, and shrubs provide the best habitat for summer range (Holechek 1984). The sagebrush community is used for both thermal cover and forage. In sagebrush habitats, pronghorn diets consist of sagebrush and other shrubs during all seasons but particularly in the fall and winter (Yoakum 2004). When available, pronghorn prefers forbs (Yoakum 2004). The availability of forbs may have important implications for pronghorn because they are rich in the nutritional values required for reproduction (Pyrah 1987; Yoakum 2004). Large landscape-level fires have reduced the availability of sagebrush in parts of pronghorn's range.

Other Mammals

Cougars (*Puma concolor*) and bobcats (*Lynx rufus*) are found primarily in the mountainous portions of the analysis area, but they occupy a wide variety of habitat types throughout Nevada, primarily open areas with a high vantage point to stalk prey. Coyotes (*Canis latrans*) occupy all habitat types and have been observed in the analysis area (NDOW 2023). Red foxes (*Vulpes vulpes*) and gray foxes (*Urocyon cinereoargenteus*) may also be found in the area.

One of the most diverse groups represented in the analysis area is rodents, with species of deer mice (*Peromyscus* spp.), Merriam's shrew (*Sorex merriami*), and kangaroo rats (*Dipodomys* spp.). Members of the rabbit family, including white-tailed jackrabbit (*Lepus townsendii*), pygmy rabbit (*Brachylagus idahoensis*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), and mountain cottontail (*Sylvilagus nuttallii*), also occur in the analysis area (McAdoo et al. 2003). White-tailed jackrabbit, pygmy rabbit, and desert cottontail rabbit are also State-protected upland game species. Pygmy rabbits are discussed in detail in Section 3.6, Special Status Species.

Rodents and other small mammals use structural features, such as rocks and snags, to hide from predators and to avoid extreme temperatures. Species' distributions are influenced by vegetation, cover, elevation, soil, and other factors; many small mammals use features of sagebrush, grasslands, and pinyon-juniper vegetation. Sagebrush range in good condition supports an abundant understory of protein-rich bunchgrasses and forbs. The presence of this understory is crucial to the needs of small mammal species. The various rodent species that live in sagebrush depend on the productivity of the herbaceous component for the abundant production of their prey items, as well as for cover. Many of these species use sagebrush seasonally or occasionally, while others, such as the sagebrush vole (*Lemmiscus curtatus*), are sagebrush obligates and require sagebrush for at least part of their life cycle (McAdoo et al. 2003).

Small mammal species associated with pinyon-juniper woodlands include the pinyon deer mouse (*Peromyscus truei*), Merriam's shrew (*Sorex merriami*), and Panamint kangaroo rat (*Dipodomys panamintinus*). These species rely on the structural complexity of pinyon-juniper ecosystems for thermal regulation, predator avoidance, and access to forage resources. The

microhabitats provided by understory vegetation, rocky substrates, and tree canopy features play an important role in supporting the ecological requirements of these small mammals (Gottfried et al. 1995).

Many bat species may be found in sagebrush, grassland, pinyon-juniper, and riparian habitats in the analysis area region. In Nevada, most bat species are protected by the Nevada Administrative Code and are considered special status species; these are discussed in detail in Section 3.6, Special Status Species.

Reptiles and Amphibians

A variety of snakes and lizards are known either to exist or have the potential to exist in the analysis area, in every habitat type. Likely species include the Great Basin collared lizard (*Crotaphytus bicinctores*), long-nosed leopard lizard (*Gambelia wislizenii*), western fence lizard (*Sceloporus occidentalis*), common sagebrush lizard (*Sceloporus graciosus*), horned lizard (*Phrynosoma* sp.), gopher snake (*Pituophis cateniferer*), and western rattlesnake (*Crotalus viridis*) (NDOW 2022a).

According to the USFWS's IPaC database (Appendix G), common sagebrush lizard, desert horned lizard (*Phrynosoma platyrhinos*), desert striped whipsnake (*Masticophis taeniatus*), Great Basin fence lizard (*Sceloporus occidentalis longipes*), Great Basin gopher snake (*Pituophis catenifer deserticola*), greater short-horned lizard (*Phrynosoma hernandesi*), and long-nosed snake (*Rhinocheilus lecontei*) have been documented in the analysis area vicinity. Several of the lizard species are considered special status species and are discussed in more detail in Section 3.6, Special Status Species.

Potential habitats for amphibians within the analysis area include springs and seeps, wetlands and riparian zones, streams, and surrounding upland areas. Many toad species, such as the Great Basin spadefoot (*Spea intermontanae*), use terrestrial habitats throughout most of the year, but they move to aquatic habitats for breeding in the spring or early summer.

Surveys that have been carried out in the analysis area vicinity (BLM 2023) have documented Great Basin spadefoot toad, western toad (*Anaxyrus boreas*), northern leopard frog (*Lithobates pipiens*), and Columbia spotted frog (*Rana luteiventris*). Special status amphibians are discussed in more detail in Section 3.6, Special Status Species.

Fish

The condition of fisheries and aquatic habitats is related to hydrologic conditions of the upland and riparian areas associated with, or contributing to, a specific stream or waterbody, and to stream channel characteristics. Riparian vegetation, described in greater detail in Section 3.4, Vegetation Communities and Resources, reduces solar radiation by providing shade; it thereby moderates water temperatures, adds structure to the banks to reduce erosion, provides overhead cover for fish, and provides organic material, which is a food source for macroinvertebrates. Intact vegetated floodplains dissipate stream energy, store water for later release, and provide rearing areas for juvenile fish. Water quality (especially factors such as temperature, sediment, and dissolved oxygen) also greatly affects fisheries and aquatic habitats. Water quality is discussed in greater detail in Section 3.3, Water Resources.

Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*), a federally listed threatened species, is analyzed in Section 3.6, Special Status Species. Other fish species are also likely to occur in analysis area streams. Speckled dace (*Rhinichthys osculus*), Lahontan redside (*Richardsonius egregius*), largemouth bass (*Micropterus salmoides*), mountain sucker (*Catostomus platyrhynchus*), and cutbow trout (*Oncorhynchus clarkii* × *mykiss*) have been observed in or near the analysis area (NDOW 2023).

Invertebrates

Insects provide important food sources for many species of wildlife, including adult and juvenile greater sage-grouse. Although there are thousands of species of insects in sagebrush, riparian, and wetland habitats, species in the Scarabaeidae and Tenebrionidae (beetle) families, Formicidae (thatch ants) family, and Orthoptera (grasshopper) family are a high protein food source for many wildlife species, including greater sage-grouse (Johnson and Boyce 1990; Peterson 1970; Pyle 1993; Drut et al. 1994; Fischer 1994). Invertebrates are the primary pollinators of forbs, thus helping to proliferate important components of the sage-grouse diet. Sage-grouse brood rearing and chick survival are highly dependent on diverse and abundant forbs and insects necessary for early sage-grouse development. Insect diversity can be attributed to large, diverse, and undisturbed areas of sagebrush habitat (NAPPC 2023).

Permanent and temporary waterbodies provide habitat for aquatic invertebrates. These aquatic organisms are indicators of water quality conditions, and they serve important roles in the dynamics of the aquatic food web. The most abundant invertebrate groups within the analysis area include mayflies (Ephemeroptera), caddisflies (Trichoptera), stoneflies (Plecoptera), flies (Diptera), beetles (Coleoptera), and leeches (Hirudinea) (EPA 2011). These same groups, as well as snails (Gastropoda) and true bugs (Hemiptera), may be observed in aquatic habitats within the analysis area. Special status aquatic invertebrates, including springsnails and freshwater mollusks, are discussed in Section 3.6, Special Status Species.

3.5.4 Environmental Consequences

Methodology

The general fish and wildlife considered for review for potential impacts from the GLNP include species that are managed by the NDOW (NRS 501.331), such as big and small game species as well as non-game species, such as reptiles, amphibians, mammals, insects, and fish, which exist within the fish and wildlife analysis area. The fish and wildlife analysis includes an assessment of impacts based on the affected habitats identified by the SWReGAP Analysis Project landcover types (refer to Section 3.4, Vegetation Communities and Resources) that occur within the fish and wildlife analysis area. Riparian, playa, and aquatic habitats are biodiversity hotspots for various general wildlife species among resource-scarce areas (for example, desert scrub and shrublands), and are utilized as travel corridors between habitats; therefore, these habitats are highlighted in the fish and wildlife impact assessments. In addition, areas of high-quality habitat that are provided conservation management (that is, management areas) were also included for assessment of impacts on fish and wildlife based on their role as refuges for various wildlife species.

BLM Instruction Memorandum (IM) 2023-005, Habitat Connectivity on Public Lands, instructs BLM state offices to work with state and tribal wildlife managers and other stakeholders to

assess data regarding connectivity, permeability, and resilience and, based on that assessment, identify where to focus management that best supports priority species. BLM IM 2023-005 calls for the BLM to manage existing fish and wildlife habitat with the goal of maintaining, improving, and/or conserving habitat connectivity and restoring degraded fish and wildlife habitat to provide for increased habitat connectivity. Secretarial Order 3362, Improving Habitat Quality in Western Big Game Winter Range and Migration Corridors, directs the federal agencies under the DOI to engage western states collaboratively and cooperatively to manage, conserve, and improve important winter habitat and migration corridors for elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*) (DOI 2018). Under Secretarial Order 3362, the BLM released IM 2018-062, Addressing Hunting, Fishing, Shooting Sports, and Big Game Habitats, and Incorporating Fish and Wildlife Conservation Plans and Information from Tribes, State Fish and Wildlife Agencies, and Other Federal Agencies In Bureau of Land Management. This IM outlines the BLM's objectives to develop an action plan with Nevada to establish state habitat management goals for big game winter range and migration corridors (BLM 2018).

Following collaboration with the NDOW, the BLM, and other federal agencies on the conservation and identification of big game migration corridors and wintering ranges, the State of Nevada issued Executive Order 2021-18, which directs the NDOW to collaboratively establish a Nevada habitat conservation framework. As a key supporting strategy of the habitat conservation framework, the NDOW will develop a statewide Nevada wildlife connectivity plan that will delineate and conserve migratory corridors of wild ungulates and other key species that the NDOW determines as relevant (Nevada Executive Department 2023). The habitat conservation framework connectivity plan is currently in development and is unavailable for use in the general wildlife analysis until the publication of the document (Nevada Executive Department 2023).

Also associated with Secretarial Order 3362 is BLM IM NV-IM-2021-022, Considering State of Nevada Big-Game Migration Corridors on BLM-Administered Lands in Nevada, which sets forth guidance on how the BLM will evaluate and consider Nevada's big game migration corridors on BLM-administered land. To address impacts on habitat corridors and wintering ranges for general wildlife, including, but not limited to, big game, project-related impacts were assessed for the NDOW big game movement corridors and winter ranges that intersect the general wildlife analysis area (that is, ranges and movement corridors for bighorn sheep [*Ovis canadensis*], pronghorn, elk, and mule deer).

Indicators

- The potential for actions to result in a loss of individuals or populations, or loss, degradation, or modification of habitats
- The potential for actions to disturb individuals or disrupt natural history processes like breeding, foraging, or migration

Assumptions

- The condition of wildlife habitat in the analysis area is directly related to the condition of the vegetation communities therein, including general vegetation communities, riparian areas and wetlands, and the presence of noxious weeds and nonnative, invasive

plant species. Vegetation in the analysis area is described in detail in Section 3.6, Vegetation Communities and Resources.

- Direct effects would occur in the analysis area during geotechnical investigations, construction, operation, and maintenance of the proposed facilities. Indirect effects could occur farther away from the analysis area. The effect intensity would depend on the distance from the analysis area, on receptor sensitivity, and on the duration and magnitude of the effect.
- The primary noise generator associated with the Proposed Action and the alternatives would be construction, including use of typical construction heavy equipment and potentially, depending on results of geotechnical investigations, blasting. Table 3-12, below, lists example noise levels from typical construction equipment. Of the example equipment listed, blasting, impact and vibratory pile drivers, and impact hammers would be expected to be the loudest pieces of equipment, if they are used during construction. The use of certain equipment during geotechnical investigations, project O&M, and decommissioning would also generate noise; however, in most cases, noise would not reach levels associated with the construction phase.

  As described in detail in the GLNP final biological assessment, the BLM assumed a generalized background sound level of 50 A-weighted decibels (dBA). Noise from stationary sources lessens at a rate of approximately 6 dBA per doubling of distance. The loudest potential project-related noise would attenuate to 3 dBA over background levels (53 dBA) at 1.19 miles (6,259 feet) from a 95 dBA noise source. As such, the analysis area for noise effects is the temporary ROW plus a 1.19-mile buffer (approximately 496,108 acres). Effect intensity would depend on the duration and magnitude of noise, the receptor's sensitivity, and the receptor's distance from the analysis area.

Table 3-12. Example Construction Equipment Noise Levels

Example Equipment	Impact Device?	Typical Noise Level (A-weighted Decibels) at 50 Feet from Source
Auger drill rig	No	85
Backhoe	No	80
Blasting	Yes	94
Compactor (ground)	No	80
Compressor (air)	No	80
Concrete mixer truck	No	85
Concrete pump truck	No	82
Crane	No	85
Dozer	No	85
Drill rig truck	No	84
Dump truck	No	84
Excavator	No	85
Flatbed truck	No	84
Front-end loader	No	80
Generator	No	82
Grader	No	85
Impact pile driver	Yes	95
Jackhammer	Yes	85

Example Equipment	Impact Device?	Typical Noise Level (A-weighted Decibels) at 50 Feet from Source
Mounted impact hammer (hoe ram)	Yes	90
Pickup truck	No	55
Vibratory pile driver	No	95

Source: Federal Highway Administration 2006

Direct and Indirect Impacts from the No Action Alternative

It is anticipated that under the No Action Alternative, the current uses and trends for the resources would continue to occur. Under the No Action Alternative, there would be no impacts on general wildlife attributed to the geotechnical investigations, construction, O&M, and decommissioning of the GLNP; this is because the project would not be built, maintained, or decommissioned.

Impacts Common to All Action Alternatives

The action alternatives would result in short- and long-term impacts on general fish and wildlife; these impacts are anticipated to be at the individual level rather than population-wide and would have varying effects. These impacts would be due to localized habitat loss and degradation, general disturbance from increased human and vehicular activity, potential increased predation, reduced availability of movement corridors, and localized loss of habitat connectivity.

Table 3-13, below, presents a summary of the types of potential impacts on general wildlife resulting from the action alternatives.

Table 3-13. Potential Impacts on Wildlife and Habitat under the Proposed Action and Alternatives

Direct or Indirect Impact/ Impact Indicator	Potential Impact	GLNP Phase
Loss of birds	Mortalities resulting from electrocutions with energized components	Operation
Loss of birds	Mortalities resulting from collisions with the GLNP infrastructure, including transmission towers, conductors, lines, guy wires, or fences	Construction, operation, and decommissioning
Loss of birds, big game, small mammals, and reptiles	Mortalities resulting from collisions with construction equipment and vehicles	Construction, operation, and decommissioning
Loss of birds, small mammals, and reptiles	Mortalities resulting from destruction of nests and loss of burrows and dens	Construction, operation, and decommissioning
Loss of birds, small mammals, and reptiles	Mortalities resulting from nest abandonment and abandonment of burrows and dens due to disturbance	Construction, operation, and decommissioning
Loss, modification, or curtailment of habitat or range	Loss of habitat resulting from construction of tower sites, access roads, terminal locations, and other ancillary facilities	Construction and operation

Direct or Indirect Impact/ Impact Indicator	Potential Impact	GLNP Phase
Loss, modification, or curtailment of habitat or range	Fragmentation of habitat or the loss of movement corridors between areas of habitat due to the construction of new access roads, removal of vegetation at tower sites, increased electromagnetic fields, or introduction of tall structures	Construction and operation
Loss, modification, or curtailment of habitat or range	Degradation of habitat and function, including riparian and aquatic habitat	Construction and operation
Loss, modification, or curtailment of habitat or range	General disturbance to wildlife and disruption of breeding activities due to human presence and noise	Geotechnical investigations, construction, operation, and decommissioning
Loss, modification, or curtailment of habitat or range	Decreased reproduction rates, nest initiation, nest success, and recruitment resulting from disruption of foraging, seasonal migration, breeding, calving, nesting, brood-rearing, and wintering activities	Operation
Loss, modification, or curtailment of habitat or range	Disruption to seasonal migrations and movements	Operation
Loss, modification, or curtailment of habitat or range	Reduction of habitat suitability resulting from the introduction and establishment of noxious weeds	Operation
Unauthorized harvest	Increased unauthorized harvest resulting from increased access to habitat via construction of new access roads	Operation
Predation	Potential for increased avian predation due to increased perching opportunities for raptors and corvids	Operation
Terrestrial predation	Potential for increased mammalian predation pressure resulting from habitat fragmentation and new predator movement corridors	Operation

Geotechnical Investigations

Overland travel associated with some of the proposed borehole locations would crush existing vegetation, potentially resulting in habitat damage or degradation during geotechnical investigations. While the borehole locations would vary slightly for each action alternative, approximately 30 acres would be disturbed regardless of alternative, spread across the analysis area. As such, while geotechnical investigations could damage or degrade small areas of wildlife habitats over the short-term, ample habitat would remain in surrounding areas. The Proponent would restore disturbed areas thus minimizing any long-term effects on wildlife habitats. Geotechnical investigations would avoid any aquatic habitats thus avoiding impacts on fish or other aquatic species.

Noise associated with geotechnical investigations could cause wildlife to avoid localized areas during these activities, though the effects would last only for the duration of the geotechnical investigations, likely no more than several hours at each site. Given that effects on fish and wildlife from geotechnical investigations would be limited, localized, and habitats would be restored, no further discussion on these effects is included.

Construction

Impacts on general fish and wildlife associated with the construction of the GLNP components would include habitat loss and fragmentation and direct mortality. These impacts would extend across an area larger than the actual construction footprint, and wildlife species more sensitive to fragmentation and disturbance could shift habitat use to other areas. The impacts of habitat loss and fragmentation would be greatest when the affected habitats are in short supply (that is, riparian areas and wetlands) and the species' range is limited.

Areas of temporary disturbance would be available for use by wildlife following completion of GLNP construction and restoration. Incorporating the EMMs (see EMMs BIO-10 through BIO-12, BIO-23, BIO-24, and BIO-26 in Appendix D) would minimize impacts on wildlife habitat. Specifically, the construction footprint would be minimized to the greatest extent practical, minimizing removal and fragmentation of habitat. Construction and vehicle travel would be prohibited or minimized to the greatest extent practical within 300 feet from riparian areas and wetlands, including springs and seeps; this would avoid impacts in these important habitat areas and maintain their function as habitat connectivity corridors. Ground-disturbing construction activities and vehicle use on access routes could increase the potential for weed establishment and spread, reducing habitat quality for wildlife. This effect would be minimized by incorporating EMMs to reduce the potential for weed introduction and spread (EMMs BIO-15 through BIO-19 in Appendix D).

Construction-related activities could result in direct mortality to general wildlife via vehicle mortality along access roads and within construction sites (including overland travel), especially within known ungulate movement corridors and wintering ranges for elk, mule deer, and pronghorn. Mobile wildlife species are anticipated to move away from active construction sites, but less mobile species could be crushed during ground-disturbing activities.

Impacts on fish and wildlife, including big game species, would be minimized through implementation of EMMs (see EMMs BIO-13, BIO-14, and BIO-31 in Appendix D) that would reduce vehicle speed limits on access roads and construction areas, provide an on-site biological monitor to supervise construction activity, implement seasonal restrictions within big game crucial summer habitats and wintering ranges and migration corridors, and promote habitat regeneration. Additionally, the raven management plan (refer to Appendix H) would reduce avian and terrestrial predator occupancy, especially targeted toward ravens.

Construction of the GLNP would impact fish and wildlife by increasing the noise, human presence, vibrations, and nighttime lighting within construction sites and access roads. These construction-related activities would result in increases in local human-caused disturbance, which could result in physiological and behavioral changes, including avoidance of affected areas, throughout the construction phase. General wildlife could disperse from their home ranges due to localized disturbance from construction. These localized disturbances could impact riparian resource corridors, winter ranges, and movement corridors, resulting in temporary avoidance of use within these areas along the proposed transmission line. Avoidance of these habitat areas and movement corridors could reduce access to food and water resources as well as reproductive opportunities between populations. Therefore, the construction-related impacts on general wildlife from use of these habitat areas and corridors could result in short-term

increases in mortality from the loss of food and water resources and short-term decreases in population recruitment and genetic diversity.

The EMMs would minimize impacts on general wildlife by minimizing nighttime lighting, minimizing predator occupancy near construction areas by reducing wildlife access to anthropogenic resources (that is, waste management and restricting wildlife access and use of transported water), and establishing seasonal restrictions on construction-related activities specific to big game crucial summer habitats and wintering ranges associated with the movement corridors (see EMMs VIS-10, BIO-14, and BIO-31 in Appendix D).

Increases in anthropogenic resources (that is, waste, food items, and transported water resources for construction activities) within the construction areas and ancillary facilities would promote localized increases in predator occupancy (for example, by kit foxes, coyotes, ravens, and raptors). These increases in predator occupancy would result in increased localized predation specifically to general wildlife prey species such as small mammals, insects, amphibians, and reptiles. The raven management plan (Appendix H) outlines requirements to properly dispose of food and waste items to discourage predator attraction to the project.

The action alternatives also include incorporation of the bird and bat conservation strategy (Appendix I). The bird and bat conservation strategy outlines measures to reduce impacts on migratory birds, raptors, and bat species from all phases of the project. The bird and bat conservation strategy includes measures for conducting preconstruction surveys and monitoring bird and bat effects, reporting incidents to the regulating agencies, and adaptive management measures to ensure negative effects on these wildlife populations are minimized during construction and longer term during O&M of the GLNP.

Adding deflectors, line markers, and other measures suggested by the Avian Power Line Interaction Committee (APLIC) on transmission lines and guy wires within 1,000 feet on either side of the Walker River, Mason Valley WMA, Reese River, and other important riparian habitat areas (see EMM BIO-28 in Appendix D) would reduce bird collisions with these structures, in these important bird habitat areas.

Under all action alternatives, the Proponent would implement EMMs incorporating spill prevention practices, requirements for refueling and equipment operation near waterbodies, procedures for emergency response and incident reporting, and training requirements (see EMMs WATER-1 through WATER-20 in Appendix D). Further, the COM plan would include a spill prevention plan that would be followed during GLNP construction, O&M, and decommissioning activities. These measures would help to avoid or minimize impacts on wildlife habitat and individuals from accidental spills, such as from oil leaking from vehicles and equipment or gasoline spills in staging areas.

Under all alternatives, the BLM would designate a utility corridor, which means new applications for linear ROWs, such as ROWs for fiber optics, met towers, pipelines, and additional large and smaller transmission lines, would likely be proposed within the utility corridor. This could increase impacts on wildlife species within the utility corridor. However, it could also help to manage and contain the impacts by collocating additional infrastructure within previously disturbed areas.

Operations and Maintenance

Ongoing O&M activities associated with the GLNP would result in impacts on fish and wildlife from habitat degradation from vegetation management, the introduction and spread of invasive plant species and noxious weeds and impacts from predators perching and nesting on transmission towers and lines. The addition of transmission line structures to the landscape could increase the population of predatory birds by creating nesting and foraging opportunities for species that hunt from perches. Prey species may experience increased mortality due to avian predators nesting on or using transmission line structures to forage. During O&M, some general wildlife may continue to stay away from the GLNP permanent ROW, which could reduce connectivity between certain big game movement corridors due to human presence, vehicle traffic, and nighttime lighting, where present.

Decommissioning

Potential impacts during decommissioning would be like those described for the construction phase, though to a lesser extent. After reclamation of disturbed areas, vegetation would be restored to preconstruction conditions over the long term. Human activity in the GLNP area would decrease after decommissioning and the removal of transmission line facilities.

Additional Measures to Avoid or Minimize Impacts

With the implementation of the EMMs BIO-6 through BIO-31 in Appendix D), the raven management plan (Appendix H), and the bird and bat conservation strategy (Appendix I), no additional measures to avoid or minimize impacts are recommended.

Direct and Indirect Impacts from the Proposed Action

Under the Proposed Action, 29,082 acres of temporary disturbance and 7,834 acres of permanent disturbance of wildlife habitat would occur. Impacts on general fish and wildlife associated with construction, O&M, and decommissioning, as described under *Impacts Common to All Action Alternatives*, would occur in these areas. As discussed in the analysis assumptions, vegetation communities in the analysis area are used to represent wildlife habitat for the purposes of this analysis.

Table 3-7 in Section 3.4.4 shows the acres of each vegetation community that would be affected under the Proposed Action. As summarized in that table, Inter-Mountain Basins Big Sagebrush Shrubland and the Inter-Mountain Basins Mixed Salt Desert Scrub would be the most impacted habitat types under the Proposed Action; therefore, individuals within wildlife populations that depend on those habitat types, such as big game (elk, mule deer, and pronghorn), raptors (burrowing owl, golden eagle, and ferruginous hawk, which are also special status species discussed in Section 3.6), mammals (fox, coyote, bobcat, mountain lion, badger, deer mouse, kangaroo mouse, black-tailed jackrabbit, and desert cottontail), and a variety of snakes and lizards (Great Basin collared lizard, long-nose leopard lizard, sagebrush lizard, horned lizard, gopher snake, and western rattle snake), would be the most affected.

Under the Proposed Action, approximately 434 acres of the temporary ROW and 100 acres of the permanent ROW would be within the Ruby Mountains mule deer population migration corridors (Kauffman et al. 2020), as shown in Table 3-11, Big Game Distribution by Alternative. Impacts on seasonal mule deer movement and individuals using the corridor would be reduced

by incorporating EMM BIO-31 in Appendix D, which would implement seasonal restrictions within big game crucial summer habitats and wintering ranges and migration corridors.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Surface-disturbing activities associated with the Other Resource Consideration Alternative would occur on approximately 28,942 acres of wildlife habitat from construction, O&M, and decommissioning (see Table 3-8 in Section 3.4.4, Vegetation Communities and Resources). Impacts on wildlife associated with construction, O&M, and decommissioning would be similar to those under the Proposed Action; however, approximately 130 fewer acres would be impacted than under the Proposed Action. As shown in that table, Inter-Mountain Basins Big Sagebrush Shrubland and Inter-Mountain Basins Mixed Salt Desert Scrub would also be the most impacted habitat types under the Other Resource Consideration Alternative (BLM, FS, and NVE GIS 2024). Impacts on the Ruby Mountains mule deer migration corridors would be the same as described for the Proposed Action.

Effects on fish and wildlife resources from construction, O&M, and decommissioning under the Other Resource Consideration Alternative would generally be the same as described for the Proposed Action.

Direct and Indirect Impacts from the BLM Preferred Alternative

Surface-disturbing activities associated with the BLM Preferred Alternative would occur on approximately 29,121 acres of fish and wildlife habitat from construction, O&M, and decommissioning, which is approximately 38 more acres than the total acres disturbed under the Proposed Action (see Table 3-9 in Section 3.4.4, Vegetation Communities and Resources). Like under the Proposed Action, Inter-Mountain Basins Big Sagebrush Shrubland and Inter-Mountain Basins Mixed Salt Desert Scrub would be the most impacted habitat types (BLM, FS, and NVE GIS 2024). The surface-disturbing activities would primarily affect the same vegetation types as under the Proposed Action, indicating a consistent trend in habitat impacts across alternatives. Impacts on the Ruby Mountains mule deer migration corridors would be the same as described for the Proposed Action.

Effects on fish and wildlife resources from construction, O&M, and decommissioning under the BLM Preferred Alternative would generally be the same as those described for the Proposed Action.

3.6 Special Status Species

3.6.1 Issues Identified for Analysis

- Which listed threatened and endangered species, and associated critical habitat occur within the project areas? How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect these species?
- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect wildlife species, habitat, and migratory corridors?
- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect wildlife abundance, distribution, and use of the project areas and adjacent areas?

- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect migratory birds?
- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect abandoned mine lands (AMLs) that may or may not provide roosting sites for bats?
- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect special status plant species and their habitat? How would the associated impacts be avoided or minimized?

3.6.2 Analysis Area

The analysis area for most special status species, unless individually identified, is the same as the general fish and wildlife analysis area (that is, the temporary ROW plus a 1.19-mile buffer [approximately 496,108 acres] per the noise attenuation assumption). Individual species are described in Table 3-14, below.

The special status plant analysis area is the same as the project area for each alternative, as described under Section 3.1, Introduction. The Proposed Action's project area is 29,082 acres. The Other Resource Consideration Alternative's project area is 28,942 acres. The BLM Preferred Alternative's project area is 29,121 acres.

Table 3-14. Analysis Area for Federally Listed and Special Status Wildlife Species

Species	Analysis Area[1]	Acres
Burrowing owl	Temporary disturbance area plus a 0.25-mile buffer	169,816
Pinyon jay	Temporary disturbance area plus a 0.7-mile buffer	354,069
Pygmy rabbit	Temporary disturbance area plus a 400-foot buffer	86,778
Golden eagle	A 2-mile buffer from the project centerline	603,732/ 619,033/ 603,754
Ferruginous hawk and other raptors (besides golden eagle)	Temporary disturbance area plus a 0.5-mile buffer	274,908
Greater sage-grouse	Temporary disturbance area plus a 6-kilometer buffer[3]	1,442,034

Note:
[1] Unless otherwise noted, analysis areas for the species listed were determined in coordination between the BLM, Forest Service, NDOW, and USFWS during planning for 2024 biological surveys for the species. The analysis areas are the same as the survey area determined for each species.
[2] The Proposed Action golden eagle analysis area is 603,732 acres. The Other Resource Consideration Alternative golden eagle analysis area is 619,033 acres. The BLM Preferred Alternative golden eagle analysis area is 603,754 acres.
[3] The greater sage-grouse analysis area is based on the distance used by the Nevada Conservation Credit System for Greater Sage-Grouse Habitats when considering anthropogenic disturbance in the vicinity of habitat management areas. Transmission towers used in greater sage-grouse habitat would require larger areas to construct and maintain than those outside greater sage-grouse habitat. Given this requirement, and to avoid the need to remove vegetation in the temporary area upon each maintenance activity, the temporary area used to construct the tower would not be reclaimed.

3.6.3 Affected Environment

Results from a 2022 reconnaissance-level vegetation and habitat assessment (BLM 2023a) provided ground-truthed SWReGAP land cover types, as well as information on habitat features and quality. This information was used when assessing the potential for special status species to occur in the analysis area. Refer to Appendix J, Special Status Species Considered, for

a complete review that provides information on the special status species' habitat associations, range, and potential to occur within the special status species' analysis areas.

Federally Listed Species

The BLM queried the USFWS's IPaC database on December 18, 2023 (USFWS 2023; see Appendix G), to request information regarding special status species known to occur or having the potential to occur in the analysis area. According to the USFWS's IPaC resource list, the following two threatened, one endangered, and one candidate species potentially exist in the analysis area:

- Dixie Valley toad (*Anaxyrus williamsi*), endangered
- Lahontan cutthroat trout, threatened
- Yellow-billed cuckoo (*Coccyzus americanus*), threatened
- Monarch butterfly (*Danaus plexippus*), candidate (discussed under *Sensitive Species – Wildlife*)

The BLM submitted a biological assessment to the USFWS on October 24, 2024. The BLM requested informal consultation and concurrence from the USFWS, pursuant to Section 7 of the ESA, of the determination that the project may affect, but is not likely to adversely affect, the Lahontan cutthroat trout and western distinct population segment of the yellow-billed cuckoo (hereafter referred to as the western yellow-billed cuckoo). The BLM also determined that the project would not affect the Dixie Valley toad or its proposed critical habitat, or critical habitat for the western yellow-billed cuckoo. On December 19, 2024, the USFWS concurred that GLNP construction and O&M may affect, but is not likely to adversely affect, Lahontan cutthroat trout and western yellow-billed cuckoo (USFWS File No. 2025-0020510; USFWS 2024).

Dixie Valley Toad

The USFWS added the Dixie Valley toad to the endangered species list in December 2022 (87 *Federal Register* 73971) under the Endangered Species Act of 1973 (ESA). Approximately 930 acres of critical habitat has been proposed for this species in Churchill County, Nevada (USFWS 2024).

Dixie Valley toads are endemic to the wetlands of Dixie Valley, Nevada. The GLNP analysis area does not overlap the Dixie Valley toad's range, nor proposed critical habitat, and the GLNP would not affect this species, its habitat, or proposed critical habitat. Therefore, this species is not carried forward for further analysis.

Lahontan Cutthroat Trout

The Lahontan cutthroat trout was listed as threatened under the ESA in 1975 (USFWS 1975), and a recovery plan for the species was established in 1995 (USFWS 1995a). Critical habitat has not been proposed or designated for this species. This fish is native to the Lahontan Basin of northern Nevada, northeastern California, and southeastern Oregon. Lahontan cutthroat trout are found in freshwater lakes, rivers, and streams with cool, flowing water; well-vegetated

cover; and stable stream banks. They are also found in areas with stream velocity breaks and in silt-free, rocky riffle-run areas.

Due to climate change, habitat loss, fragmentation, and degradation, not all historically occupied habitat is currently suitable for Lahontan cutthroat trout. Currently, Lahontan cutthroat trout occupy approximately 12 percent of their historical habitat and 17.5 percent of potentially suitable habitat (USFWS 2023b). Many of the river Lahontan cutthroat trout populations occupy isolated stream segments of larger river systems with no opportunity for natural recolonization.

In 2019, the goals and objectives for Lahontan cutthroat trout recovery originally provided in the 1995 recovery plan were updated (LCTCC 2019). The 2019 update included dissolving the three geographic management units from the 1995 recovery plan and establishing 10 Lahontan cutthroat trout management units defined by river basins and differences in management needs. This was done to simplify recovery implementation planning. Achieving these updated objectives would provide Lahontan cutthroat trout with the adaptive capacity necessary to persist through time, resulting in the ability to delist this species because it would no longer be threatened with endangerment.

In 2023, the USFWS published an updated status review (USFWS 2023b), which builds on and provides updated information on the status of Lahontan cutthroat trout. The historically occupied, potentially suitable, and currently occupied habitat layers were updated for the 2023 status review (USFWS 2023a). Currently, Lahontan cutthroat trout occupy approximately 12.0 percent of their historical habitat and 17.5 percent of potentially suitable habitat.

The GLNP analysis area includes historically occupied stream habitat in the Reese River in Lander County, in the Reese Management Unit (USFWS 2023). The analysis area is between 10 and 15 miles from currently occupied habitat in the Toiyabe Range, which is also in the Reese Management Unit south of the analysis area (the management unit includes Washington Creek and Cottonwood Creek). The analysis area also includes potentially suitable, but currently unoccupied, habitat in the Walker River in Lyon County, in the Walker Management Unit.

The analysis area crosses Edwards Creek in Churchill County. Edwards Creek contains an out-of-historical range population (LCTCC 2019), located in the higher reaches of the stream in the Desatoya Range. The GLNP would cross Edwards Creek on the alluvial fan of the creek system, on the lower slopes of the range. At the crossing location, the creek is intermittent and lacks riparian vegetation. According to the USGS topographical maps, the creek continues to be intermittent continuing upstream of the crossing for about 3 miles upstream and 500 feet in elevation, where it turns to a perennial stream with riparian vegetation present. This is where the USFWS considers occupied habitat to be present, based on summer occupancy surveys.

The analysis area is also within about 10 miles from, and downstream of, two additional out-of-historical range populations in the Desatoya Range in Churchill County: Big Den Creek and Willow Creek.

Western Yellow-billed Cuckoo

The USFWS listed the western distinct population segment of the yellow-billed cuckoo as threatened under the ESA on November 3, 2014 (USFWS 2014a). The USFWS listed proposed critical habitat for the species on November 12, 2014 (USFWS 2014b). Final critical habitat was designated on April 21, 2021 (USFWS 2021). A recovery plan is not yet available for this species. Critical habitat for western yellow-billed cuckoo is designated in Arizona, California, Colorado, Idaho, New Mexico, Texas, and Utah (USFWS 2021). There is no critical habitat in Nevada.

Western yellow-billed cuckoos winter in South America and breed in western North America. Based on historical accounts, western yellow-billed cuckoos were widespread and locally common in California and Arizona, in a few river reaches in New Mexico, and in Oregon and Washington. They were generally local and uncommon in scattered drainages of the arid and semiarid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah. They also were probably uncommon and local in British Columbia (USFWS 2011).

Range-wide threats to western yellow-billed cuckoos are changes to habitat, such as alteration, modification, or curtailment of their habitat or range due to riparian habitat loss and degradation. Principal causes of riparian habitat loss, modification, and degradation are alteration of hydrology from dams, water diversions, management of river flows that differs from natural hydrologic patterns, channelization, and levees and other forms of bank stabilization that encroach onto the floodplain. These losses are further exacerbated by converting floodplains for agriculture, livestock overgrazing, conversion of native habitat to nonnative vegetation, and sedimentation of riparian habitat. In combination with the altered hydrology, these threats promote the conversion of primarily native habitats to monotypic stands of nonnative vegetation, which reduces the suitability of riparian habitat for western yellow-billed cuckoos. Other threats to riparian habitat are poor water quality, invasive species, long-term drought, and climate change (USFWS 2014a, 2021).

The western yellow-billed cuckoo is a riparian-obligate species. Northern Nevada's riparian corridors along the major rivers like the Truckee, Carson, Walker, and Humboldt Rivers provide habitat where dense, mature, deciduous forests or woodlands offer nesting sites, steady water sources for foraging and breeding, and insect populations. The presence of a well-developed understory with shrubs and bushes provides additional foraging and nesting opportunities. Due to their sensitivity to human disturbance, these birds prefer undisturbed or minimally disturbed areas.

Although western yellow-billed cuckoos are not currently known or suspected to breed in the GLNP analysis area, historically suitable breeding habitat and currently potentially suitable riparian movement and foraging habitat are likely present in the analysis area along the Walker River corridor in Lyon County. Additionally, historical documentation in Eureka County near Eureka suggests the presence of this species, likely as a migrant nonbreeder in other portions of the analysis area (GBBO 2010).

Sensitive Species – Wildlife

Refer to Appendix J, Special Status Species Considered, for a complete review that provides information on the special status species' habitat associations, range, and potential to occur within the special status species' analysis areas. There are 44 bird, 46 mammal, 12 reptile, 54 insect, 35 fish, 10 amphibian, 1 arachnid, 6 crustacean, 45 gastropod, and 3 mollusk species that are BLM sensitive species and/or Forest Service Region 4 sensitive wildlife for the Austin-Tonopah Ranger District of the Humboldt-Toiyabe National Forest, that are known to occur or could potentially occur within the special status species' analysis area. Of these, 71 species have a high potential to occur, and 23 species have a moderate potential to occur in the GLNP special status species' analysis areas. These species are carried forward for detailed analysis (refer to Table 3-15, Special Status Wildlife Species, for a brief description).

The remaining 162 special status species were identified as having a low potential to occur within the special status species' analysis areas. Impacts on special status species with a low potential to occur are considered negligible since these special status species are unlikely to be present; therefore, detailed analysis in the Final EIS/Proposed RMPA is not warranted.

Below are the special status species that required additional analysis based on available data and surveys conducted in the analysis area.

Greater Sage-Grouse

Detailed descriptions of the range and taxonomy, life history, habitat and population trends, habitat descriptions, and threats to the species are included in the 2015 ARMPA (BLM 2015a, pp. 3-3 to 3-41) along with references for this information. These are incorporated by reference here. Summary descriptions of greater sage-grouse habitat, management areas, threats, and disturbance and population trends and adaptive management trigger status within the analysis area are included below.

Habitat

Greater sage-grouse habitat is strongly correlated with the distribution of sagebrush habitats. Figure 3-2, No Action Alternative—Greater Sage-Grouse Habitat Management Areas, shows the habitat management areas in the analysis area with existing transmission lines. Greater sage-grouse depend on a variety of shrub-steppe habitats throughout their life cycle, including habitats dominated by several species of sagebrush, including Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), mountain big sagebrush (*A. t.* ssp. *vaseyana*), and basin big sagebrush (*A. t. tridentata*). Other sagebrush species such as low sagebrush (*A. arbuscula*), black sagebrush (*A. nova*), fringed sagebrush (*A. frigida*), and silver sagebrush (*A. cana*) are also used. Greater sage-grouse exhibit strong site fidelity to seasonal habitats for breeding, nesting, brood rearing, and wintering.

During the spring breeding season, male greater sage-grouse gather to perform courtship displays on areas called leks. Areas of bare soil, shortgrass steppe, windswept ridges, exposed knolls, or other relatively open sites typically serve as leks.

Table 3-15. Special Status Wildlife Species with Moderate to High Potential to Occur

Taxon	Species Name	Status[1]	Potential to Occur in the Analysis Area and Rationale
Amphibian	Western toad *Anaxyrus boreas*	BLM S	High – Suitable habitat exists at seeps, springs, and riparian areas in the analysis area.
Amphibian	Northern leopard frog *Rana Lithobates pipiens*	BLM S FSS SP	High – Suitable habitat exists in riparian areas in the Toiyabe Range in the Humboldt-Toiyabe National Forest and in streams in White Pine County.
Amphibian	Columbia spotted frog (including Toiyabe spotted frog population) *Rana luteiventris*	BLM S FSS SP	High – Suitable habitat exists in riparian areas in the Toiyabe Range in the Humboldt-Toiyabe National Forest and in streams in White Pine County.
Bird	American goshawk *Astur atricapillus*	BLM S FSS SP	High – The proposed project crosses several mountain ranges within the breeding range, including the Desatoya Range, Toiyabe Range, Diamond Mountains, and White Pine Range/Butte Mountains. Potentially suitable pinyon-juniper woodlands for breeding may be present.
Bird	Golden eagle *Aquila chrysaetos*	BLM S SP	High (Observed)* – Observed during aerial raptor nest analysis and during biological reconnaissance analysis.
Bird	Sagebrush sparrow *Artemisiospiza nevadensis*	BLM S FSS	High – Suitable habitat is widespread in the analysis area.
Bird	Short-eared owl *Asio flammeus*	BLM S SP	High – Suitable habitat is in the analysis area.
Bird	Long-eared owl *Asio otus*	BLM S	High – Suitable riparian woodland habitat is in the analysis area.
Bird	Burrowing owl (includes western burrowing owl) *Athene cunicularia* (*A. c. hypugaea*)	BLM S	High (Observed) – Suitable habitat is widespread throughout the analysis area.
Bird	Ferruginous hawk *Buteo regalis*	BLM S	High (Observed) – The NDOW raptor nest database indicates this species breeds in high densities within valleys and along foothill edges within this analysis area. Nests were observed in the eagle and other raptor analysis area during aerial raptor analysis. Individuals were incidentally observed during biological reconnaissance analysis.
Bird	Swainson's hawk *Buteo swainsoni*	BLM S	High – Suitable habitats exist in the analysis area.

Taxon	Species Name	Status[1]	Potential to Occur in the Analysis Area and Rationale
Bird	Greater sage-grouse (including the bistate distinct population segment) *Centrocercus urophasianus*	PT (bistate) critical habitat (bistate) BLM S FSS SP	High (Observed) – Incidentally observed individuals and signs during biological reconnaissance analysis. Suitable habitat is widespread throughout the analysis area. The analysis area crosses PHMAs, GHMAs, OHMAs, and breeding, nesting, early and late brood-rearing, and wintering areas. The analysis area is outside the distribution of the bistate distinct population segment.
Bird	Western snowy plover (not including the Pacific coast distinct population segment) *Charadrius alexandrines*	BLM S	High (Breeding)** – Suitable habitat is in the analysis area. Documented by the Nevada Division of Natural Heritage (NDNH) in the Salt Wells Basin in Churchill County.
Bird	Common nighthawk *Chordeiles minor*	BLM S	High (Breeding) – Suitable breeding habitat is in the analysis area.
Bird	Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT critical habitat BLM S FSS SP	Moderate (Nonbreeding) – The species does not breed in the analysis area. Suitable migration habitat is in the analysis area. Historically documented near Eureka, Nevada; a nomadic nonbreeder (GBBO 2010).
Bird	Olive-sided flycatcher *Contopus cooperi*	BLM S	Moderate (Breeding) – Breeding is less likely to occur in the analysis area due to a lack of preferred breeding habitat, but it may occur in aspen or pinyon-juniper woodlands. The species may also use habitats in the analysis area during migration (GBBO 2010).
Bird	Great Basin willow flycatcher *Empidonax traillii adastus*	BLM S	High (Breeding) – Suitable riparian breeding habitat is in the analysis area.
Bird	Peregrine falcon *Falco peregrinus*	BLM S FSS SP	High – Breeding, migration, and wintering habitat exist in the analysis area. Nesting has been documented in the Egan Range and Snake Range in White Pine County.
Bird	Pinyon jay *Gymnorhinus cyanocephalus*	BLM S FSS	High (Observed) – Suitable habitat is widespread in the analysis area. Flocks were incidentally observed during the biological reconnaissance analysis in the analysis area.
Bird	Cassin's finch *Haemorhous cassinii*	BLM S	Moderate (Nonbreeding) – Suitable breeding habitat is not present in the analysis area. Suitable wintering and migration habitat are present in the analysis area.
Bird	Bald eagle *Haliaeetus leucocephalus*	BLM S SP FSS	Moderate (Breeding and wintering) – Aerial raptor analysis did not document nesting, but winter roost habitat is present. The analysis area is within the species' range. The species may move through the analysis area during migration.
Bird	Scott's oriole *Icterus parisorum*	BLM S	Moderate (Breeding) – Generally, this species breeds farther south in the state, but suitable breeding habitat exists in the analysis area.

Taxon	Species Name	Status[1]	Potential to Occur in the Analysis Area and Rationale
Bird	Least bittern (includes Western least bittern) *Ixobrychus exilis* (*I. e. hesperus*)	BLM S	High (Breeding) – Suitable breeding habitat is in the analysis area; there is historical documentation of breeding near the analysis area.
Bird	Loggerhead shrike *Lanius ludovicianus*	BLM S SP	High (Observed) – Suitable breeding habitat is widespread throughout the analysis area. Numerous individuals were incidentally observed in the analysis area.
Bird	Virginia's warbler *Leiothlypis virginiae*	BLM S	Moderate (Breeding) – Suitable breeding habitat is present but not widespread in the analysis area.
Bird	Black rosy-finch *Leucosticte atrata*	BLM S	Moderate (Nonbreeding) – Suitable nesting habitat is not present in the analysis area. This species may be present in portions of the analysis area during winter.
Bird	Gray-crowned rosy-finch *Leucosticte tephrocotis*	BLM S	Moderate (Nonbreeding) – Suitable nesting habitat is not present in the analysis area. This species may be present in portions of the analysis area during winter.
Bird	Lewis's woodpecker *Melanerpes lewis*	BLM S	Moderate (Breeding) – Some suitable breeding habitat is present in the analysis area.
Bird	Long-billed curlew *Numenius americanus*	BLM S	High (Breeding) – Suitable breeding habitat is present in the analysis area.
Bird	Sage thrasher *Oreoscoptes montanus*	BLM S SP	High (Breeding) – Suitable breeding habitat is widespread in the analysis area.
Bird	Mountain quail *Oreortyx pictus*	BLM S SP FSS	Moderate (Breeding) – Suitable breeding habitat is present but not widespread in the analysis area.
Bird	American white pelican *Pelecanus erythrorhynchos*	AR	Moderate (Nonbreeding) – May forage or rest in waterbodies in or near the analysis area. Nesting colonies are not present in or near the analysis area.
Bird	Bank swallow *Riparia riparia*	BLM S	Moderate (Breeding) – Suitable nesting substrate is likely present but not widespread in the analysis area, especially in association with the Walker River and Reese River.
Bird	Broad-tailed hummingbird *Selasphorus platycercus*	BLM S	Moderate (Breeding) – Suitable nesting habitat is likely present in association with higher-elevation riparian areas in the analysis area.
Bird	Black-throated gray warbler *Setophaga nigrescens*	BLM S	High (Breeding) – The analysis area is in the species' range and contains suitable breeding habitat.
Bird	Black-chinned sparrow *Spizella atrogularis*	BLM S	High (Breeding) – The analysis area is in the species' range and contains widespread suitable breeding habitat.
Bird	Brewer's sparrow *Spizella breweri*	BLM S SP	High (Breeding) – The analysis area is in the species' range and contains widespread suitable breeding habitat.
Gastropod	Turban pebblesnail *Fluminicola turbiniformis*	BLM S	Moderate – The reported distribution is in springs in Lyon County in western Nevada, near the analysis area.
Gastropod	Whitepine mountainsnail *Oreohelix hemphilli*	BLM S	Moderate – The reported distribution includes the analysis area vicinity, and limited suitable habitat areas exist in the analysis area.
Gastropod	Surprise Valley pyrg *Pyrgulopsis gibba*	BLM S	Moderate – Distribution includes the analysis area vicinity, and suitable habitat areas exist in the analysis area.

Taxon	Species Name	Status[1]	Potential to Occur in the Analysis Area and Rationale
Gastropod	Toquerville springsnail *Pyrgulopsis kolobensis*	AR	High – The analysis area contains Simpson Springs in Eureka County.
Insect	Hardy's Aegialian scarab *Aegialia hardyi*	BLM S	High – Documented near the analysis area. Also, suitable habitat is in the analysis area, and the analysis area is contiguous with occupied habitat at Sand Mountain.
Insect	Apache silverspot butterfly *Argynnis Nokomis apacheana*	BLM S	High – The species' range overlaps the analysis area, and the analysis area contains suitable riparian habitat.
Insect	Western bumble bee *Bombus occidentalis*	BLM S FSS	High – The species' range overlaps the analysis area, and the analysis area contains suitable habitat.
Insect	American bumble bee *Bombus pensylvanicus*	BLM S	High – The species' range overlaps the analysis area, and the analysis area contains suitable habitat.
Insect	Pallid wood nymph *Cercyonis oetus pallescens*	BLM S	High – The species' range overlaps the analysis area, and the analysis area contains suitable habitat.
Insect	Sand Mountain pygmy scarab *Coenonycha pygmaea*	BLM S	High – Documented near the analysis area. Also, suitable habitat is in the analysis area, and the analysis area is contiguous with occupied habitat at Sand Mountain.
Insect	Monarch butterfly *Danaus plexippus*	BLM S FC FSS	High – There are numerous documentations of monarch butterflies and host plants in and near the analysis area. Milkweeds have been observed in numerous locations in the analysis area.
Insect	Humboldt Aphodius beetle *Dellacasiellus humboldti*	BLM S	Moderate – May occur associated with pocket gopher or other rodent burrows.
Insect	Darkling beetle sp. *Eleodes inornata*	BLM S	Moderate– This species is widely distributed across Nevada, and its range overlaps with the analysis area.
Insect	Reese River Railroad Valley skipper *Hesperia uncas reeseorum*	BLM S	High – The analysis area is in the species' range, and suitable habitat is in the analysis area. The host plant is common along roadsides adjacent to saltgrass flats in the Reese River valley in the analysis area.
Insect	Nevada viceroy *Limenitis archippus lahontani*	BLM S	Moderate – The analysis area is near the species' range (Fallon colonies), and suitable riparian habitat is in the analysis area.
Insect	Dune honey ant *Myrmecocystus arenarius*	BLM S	High – The species has been documented near the analysis area. Also, suitable habitat is in the analysis area, and the analysis area is contiguous with suitable sand dune habitat at Sand Mountain.
Insect	Darkling beetle sp. *Neobaphion papula*	BLM S	Moderate– This species is widely distributed across Nevada, and its range overlaps with the analysis area.
Insect	Great Basin Yuma skipper *Ochlodes yuma*	BLM S	Moderate – Suitable wetland and riparian habitat is in the analysis area, but American common reed was not observed in the analysis area.
Insect	Great Basin small blue *Philotiella speciosa septentrionalis*	BLM S	High – The species has been documented near the analysis area, and suitable habitat is in the analysis area.
Insect	Pallid skipper *Polites sabuleti basinensis*	BLM S	High – The species has been documented near the analysis area, and suitable habitat is in the analysis area.
Insect	Dark sandhill skipper *Polites sabuleti nigrescens*	BLM S	Moderate – The species has been documented in the analysis area region, and suitable spring and valley bottom habitat is in the analysis area.

Taxon	Species Name	Status[1]	Potential to Occur in the Analysis Area and Rationale
Insect	Nevada alkali skipperling *Pseudocopaeodes eunus flavus*	BLM S	High – The analysis area is in the species' range, and suitable habitat is in the analysis area.
Insect	Pallid sylvinus hairstreak *Satyrium sylvinus megapallidum* (*Satyrium dryope megapallidum*)	BLM S	High – The analysis area is in the species' range along the Walker River, and suitable habitat is in the analysis area.
Insect	Sand Mountain serican scarab *Serica psammobunus*	BLM S	High – The species has been documented near the analysis area. Also, suitable habitat is in the analysis area, and the analysis area is contiguous with occupied habitat.
Insect	Nearctic riffle beetle *Stenelmis occidentalis*	BLM S	High – Suitable riparian habitat is in the analysis area.
Insect	Sand Mountain Aphodius scarab *Stenotothorax comosus*	BLM S	High – The species has been documented near the analysis area. Also, suitable habitat is in the analysis area, and the analysis area is contiguous with occupied habitat.
Insect	Lahontan Aphodius scarab *Stenotothorax lahontanensis*	BLM S	High – The species has been documented near the analysis area, and suitable habitat is in the western portion of the analysis area around the Pleistocene Lake Lahontan.
Mammal	Pallid bat *Antrozous pallidus*	BLM S SP	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Pygmy rabbit *Brachylagus idahoensis*	BLM S FSS SP	High – Suitable habitat is widespread in the analysis area.
Mammal	Townsend's (western) big-eared bat *Corynorhinus townsendii*	BLM S FSS SP	High – A historical observation is in the analysis area northwest of Austin in Lander County. An observation from 1995 is at Eureka in Eureka County. Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Desert kangaroo rat *Dipodomys deserti*	BLM S	High – Suitable habitat is in the analysis area.
Mammal	Panamint kangaroo rat *Dipodomys panamintinus*	BLM S	Moderate – Suitable habitat is in the analysis area.
Mammal	Spotted bat *Euderma maculatum*	BLM S FSS SP	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Silver-haired bat *Lasionycteris noctivagans*	BLM S	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Hoary bat *Lasiurus cinereus*	BLM S	High – Suitable roosting and foraging habitats may exist associated with AMLs and riparian areas.
Mammal	Western red bat *Lasiurus frantzii*	BLM S SP	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Dark kangaroo mouse *Microdipodops megacephalus*	BLM S SP	High – Suitable habitat is in the analysis area. Portions of the analysis area include suitable habitat for this species, such as sandy soils, dunes, and dune-like sands, particularly on alluvial slopes and valley bottoms.

Taxon	Species Name	Status[1]	Potential to Occur in the Analysis Area and Rationale
Mammal	Pale kangaroo mouse *Microdipodops pallidus*	BLM S SP	High – Suitable habitat is in the analysis area. Portions of the analysis area include suitable habitat for this species, such as sandy soils, dunes, and dune-like sands, particularly on alluvial slopes and valley bottoms.
Mammal	California myotis *Myotis californicus*	BLM S	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Western small-footed myotis *Myotis ciliolabrum*	BLM S SP	High – Historical observations are in the analysis area northwest of Austin in Lander County and in Eureka in Eureka County. Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Long-eared myotis *Myotis evotis*	BLM S	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Little brown bat *Myotis lucifugus*	BLM S	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Fringed myotis *Myotis thysanodes*	BLM S SP	High – Suitable roosting and foraging habitats may exist associated with AMLs and riparian areas.
Mammal	Long-legged myotis *Myotis volans*	BLM S	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Yuma myotis *Myotis yumanensis*	BLM S SP	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Bighorn sheep *Ovis canadensis*	BLM S FSS SP	High – Suitable habitat is in the analysis area.
Mammal	Canyon bat *Parastrellus hesperus*	BLM S	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Merriam's shrew *Sorex merriami*	BLM S	High – Suitable habitat is in the analysis area.
Mammal	Western water shrew *Sorex navigator*	BLM S	High – Suitable habitat is in the analysis area.
Mammal	Mexican free-tailed bat *Tadarida brasiliensis*	BLM S SP	High – Suitable roosting and foraging habitats may exist associated with AMLs, cliffs and rock outcrops, and riparian areas.
Mammal	Walker River pocket gopher *Thomomys bottae cinereus*	BLM S	High – The westernmost portion of the analysis area is in the Walker River valley in Lyon County; it contains suitable soils for burrowing.
Mammal	Western jumping mouse *Zapus princeps*	BLM S SP AR	High – Suitable habitat exists in riparian areas in mountain ranges in the analysis area.
Reptile	Northern rubber boa *Charina bottae*	BLM S	High – Suitable habitat is in the analysis area.
Reptile	Ring-necked snake *Diadophis punctatus*	BLM S	High – Suitable habitat is in the analysis area.

Taxon	Species Name	Status[1]	Potential to Occur in the Analysis Area and Rationale
Reptile	Sonoran mountain kingsnake *Lampropeltis pyromelana*	BLM S SP	High – Suitable habitat is present in the White Pine and Egan Range portions of the analysis area.
Reptile	Greater short-horned lizard *Phrynosoma hernandesi*	BLM S	High – Suitable habitat is widespread in the central and eastern portions of the analysis area.

Sources: As cited in the table
Notes:
[1] Status codes:
BLM S = BLM sensitive per Instruction Memorandum IM-NV-2024-003
FT = federally listed as threatened
FC = federal candidate
FSS = Sensitive, US Forest Service Region 4
PT = proposed for federal listing as threatened
Critical Habitat = critical habitat has been designated or proposed for this species
SP = State protected
BCC = USFWS bird of conservation concern
AR = NDNH at-risk taxon; a species that the NDNH is actively maintaining inventories for, including compiling and mapping data; regularly assessing conservation status; and providing information for proactive planning efforts
[2] The Proposed Action analysis area is in the Carson City, Battle Mountain, and Ely BLM Districts. The species may be considered sensitive in other BLM districts in Nevada. N/A indicates that this species is not considered sensitive by the BLM.
*Observed—The species has been directly observed within the analysis area.
**Breeding—This conservation status refers to the breeding population in the nation or state.

Productive nesting areas are typically characterized by sagebrush with an understory of native grasses and forbs (broad-leaved, flowering plants). Horizontal and vertical structural diversity provides an insect prey base, herbaceous forage for pre-laying and nesting hens, and cover for the hen while she is incubating. Nest sites generally have greater cover of shrubs and grasses than the surrounding vegetation, which may include a mosaic of vegetation structure.

After hatching, hens rear their broods near the nest site for the first 2 to 3 weeks. Forbs and insects are essential nutritional components for chicks during this early brood-rearing period. During the late brood-rearing period, and in response to summer desiccation of herbaceous vegetation, greater sage-grouse gradually move from sagebrush uplands to moist riparian areas or wet meadows, which continue to provide an abundance of forbs and insects. In the late fall and winter, greater sage-grouse rely exclusively on sagebrush for nutrition.

Wintering habitat is based on the availability of sagebrush above snow, which provides overwinter food resources and thermal and hiding cover. Characteristics of breeding, brood-rearing, and winter habitat for greater sage-grouse, as well as seasonal use dates for each type of habitat, are summarized in Table 3-1 and Table 3-2 of the 2015 ARMPA (BLM 2015a, pp. 3-11 to 3-13).

In addition to vegetation characteristics, habitat selection by greater sage-grouse is influenced by external disturbances, including infrastructure such as power lines and roads. Research has shown that predator densities increase near power lines and other infrastructure (Dinkins 2013). Studies indicate that greater sage-grouse habitats that remain occupied tend to be located farther from electric transmission lines compared with areas where the species has been extirpated, suggesting a potential link between infrastructure proximity and habitat abandonment (Wisdom et al. 2011; Knick et al. 2013). Additionally, Dinkins et al. (2014) found that sage-grouse exhibit habitat selection patterns based on predator avoidance and food availability, often preferring areas with lower densities of infrastructure.

Table 3-16 and Table 3-17, below, summarize the greater sage-grouse seasonal habitat within the GLNP analysis area on BLM-administered and National Forest System lands, respectively. Figure 3-3, Greater Sage-Grouse Nesting, Early Brood-Rearing, and Late Brood-Rearing Habitat, and Figure 3-4, Greater Sage-Grouse Spring, Summer, and Winter Habitat, in Appendix A show these areas.

Table 3-16. Greater Sage-Grouse Seasonal Habitat, BLM-Administered Lands

Habitat Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Nesting	12,890	13,140	13,520
Early brood rearing	13,760	14,030	14,570
Late brood rearing	8,590	8,760	8,710
Spring	14,570	14,840	15,340
Summer	10,920	11,090	11,780
Winter	14,150	14,360	14,980

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-17. Greater Sage-Grouse Seasonal Habitat, National Forest System Lands

Habitat Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Nesting	700	600	450
Early brood rearing	660	570	330
Late brood rearing	700	600	510
Spring	670	580	400
Summer	610	550	310
Winter	590	520	260

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

The Proponent has completed greater sage-grouse habitat verification, in accordance with procedures in the Nevada Conservation Credit System for Greater Sage-Grouse Habitats.

Habitat Management Areas

The 2015 ARMPA categorizes greater sage-grouse habitat as a basis for proposed amendment management. Management areas are based on the 2015 ARMPA, as maintained (BLM 2015a) for BLM-administered lands, and on Forest Service's Greater Sage-Grouse Record of Decision for National Forest System lands (Forest Service 2015). Table 3-18 and Table 3-19, below, summarize the greater sage-grouse habitat management areas within the GLNP analysis area on BLM-administered and National Forest System lands, respectively. The greater sage-grouse habitat management areas are displayed in Figure 3-5 in Appendix A.

Table 3-18. Greater Sage-Grouse Habitat Management Areas, BLM-Administered Lands

Management Area Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
PHMA	5,810	5,890	5,740
GHMA	4,860	5,000	4,230
OHMA	3,760	3,960	4,040
Total	**14,430**	**14,850**	**14,010**

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-19. Greater Sage-Grouse Habitat Management Areas, National Forest System Lands

Management Area Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
PHMA	260	260	<10
GHMA	570	540	<10
OHMA	130	130	280
Total	**930**	**930**	**280**

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Leks

According to data from the NDOW, there are 59 known greater sage-grouse lek sites within 4 miles of the GLNP temporary ROW (of all alternatives; lek status as of 2024), as summarized in the table below and in Figure 3-6, Greater Sage-Grouse Leks (2024 Lek Status), Extents 1–5. The table also shows the BSU where each lek is located.

Table 3-20. Greater Sage-Grouse Leks

BSU[1]	Lek Status[2]	Number of Leks
Butte/Buck/White Pine	Active	3
	Historical	5
	Inactive	0
	Pending active	0
	Unknown	8
	Subtotal (Butte/Buck/White Pine BSU)	16
Central Great Basin	Active	13
	Historical	7
	Inactive	9
	Pending active	4
	Unknown	5
	Subtotal (Central Great Basin BSU)	38
Smith/Reese	Active	1
	Historical	0
	Inactive	1
	Pending active	3
	Unknown	0
	Subtotal (Smith/Reese BSU)	5
	Total leks	**59**

Source: NDOW GIS 2024

[1] No leks are within 4 miles of the GLNP within the Monitor BSU.

[2] Lek status definitions are found in Greater Sage-Grouse Range-wide Population Monitoring Guidelines, Part A: Standards for Collection and Reporting of Greater Sage-Grouse Lek Count Data (Cook et al. 2022, Appendix 1). Lek status is as of 2024.

The BLM and Forest Service completed greater sage-grouse lek counts at 28 leks near the GLNP in 2024, as determined in coordination with the NDOW. Surveys were done according to the NDOW's 2024 Greater Sage-Grouse Lek Monitoring Guidance (NDOW 2024).

Of the 28 leks surveyed, 9 were observed to be active in 2024. Surveyors also observed three additional active leks located approximately 500 feet, 1.5 miles, and 2 miles from known lek locations. These additional sites were not included on the list of known leks obtained from the NDOW. Two were on the margins of an existing dirt road with mown sagebrush that provided good visibility for males to display (RWC 2024). It is possible that some of these sites represent alternate locations for known leks, as sage-grouse may shift lekking[5] activity due to factors such as habitat conditions, disturbance, or other environmental influences.

[5] A synonymous term for greater sage-grouse breeding.

The BLM and Forest Service are also carrying out greater sage-grouse lek counts in 2025, according to NDOW's 2024 Sage-Grouse Lek Monitoring Guidance (NDOW 2024). Results of lek monitoring in 2025 would be added to the RODs when available.

Doherty et al. (2016) developed a method to evaluate the relative importance or value of different leks, based on regional variation in habitat selection and bird densities at regional leks. The authors found that breeding habitat containing leks is highly condensed within the current occupied range and is characterized by distinct clustering of relative abundance of sage-grouse populations within current occupied range (see Figure 2 and Figure 10 in Doherty et al. 2016).

Disturbance and Population Trends and Adaptive Management Triggers

The BLM monitors the amount and condition of greater sage-grouse habitat and greater sage-grouse populations within BSUs as part of 2015 ARMPA implementation (see Appendix D, Monitoring Framework, of the 2015 ARMPA; BLM 2015a). The Forest Service monitors the amount and condition of greater sage-grouse habitat and greater sage-grouse populations within BSUs as part of the 2015 Greater Sage-grouse ROD for Idaho and Southwest Montana, Nevada, and Utah (see Appendix A, Greater Sage-Grouse Monitoring Framework; Forest Service 2015). The GLNP would cross four BSUs: Smith/Reese, Central Great Basin, Monitor, and Butte/Buck/White Pine.

The 2021 monitoring report (Herren et al. 2021) covers the 5-year period after 2015 ARMPA implementation (2015–2020). The analysis determined that sagebrush availability in all land ownership categories declined by approximately 3 percent (approximately 1.4 million acres in the Great Basin region) between 2012 and 2018. Wildfire was the largest driver of sagebrush loss (accounting for approximately 87 percent of the sagebrush loss) in the Great Basin region. This sagebrush loss occurred primarily on BLM-administered lands (approximately 951,000 acres in the Great Basin region).

For areas not lost to wildfire and other causes, beneficial habitat characteristics (e.g., sagebrush cover, height and shape, and perennial grass and forb cover and height) remained relatively constant or displayed modest increases between 2013 and 2018, while nonbeneficial habitat attributes (e.g., nonnative/invasive species and annual grasses) displayed an increase in presence and abundance (Herren et al. 2021).

The Great Basin region experienced a loss of sagebrush in PHMAs within BSUs of 4.39 percent between 2012 and 2018. In the analysis area, loss of sagebrush between 2012 and 2018 within the four BSUs ranged from 0.64 to 3.32 percent, as summarized in Table 3-21 (Herren et al. 2021, Appendix 1).

Under the BLM's 2015 ARMPA (MD SSS 2), surface-disturbing activities in PHMAs are required to adhere to a 3 percent anthropogenic disturbance cap (see Appendix E, Greater Sage-Grouse Disturbance Cap Guidance, of the 2015 ARMPA; BLM 2015a). Disturbance cap calculations are carried out at the BSU level (see Map J-1 in Appendix J of the 2015 ARMPA; BLM 2015a) and at the project level.

Table 3-21. Greater Sage-Grouse BSU Summary Condition

Metric	Butte/Buck/ White Pine	Central Great Basin	Monitor	Smith/Reese
Percent sagebrush availability in PHMAs from 2012 to 2018 (change in percent available)	77.86–77.19 (-0.66)	71.51–77.19 (-0.86)	88.15–87.51 (-0.64)	82.47–79.15 (-3.32)
Change in disturbance estimates in PHMAs by BSU from 2015 to 2020 (Change in disturbance estimates from 2015–2020, percent)	-54 (-0.01)	1,601 (0.12)	11 (0.01)	8 (<0.01)
Total disturbance estimates in PHMA by BSU, as of 2020, acres (percent)	4,183 (0.6)	12,707 (0.95)	2,007 (0.44)	1,519 (0.5)

Source: Herren et al. 2021, Appendix 1, Appendix 3, Appendix 4

Similarly, under the Forest Service's 2015 Greater Sage-grouse ROD, surface-disturbing activities in PHMAs are required to adhere to a 3 percent anthropogenic disturbance cap, with calculations carried out at the BSU and project area scale (see Nevada Plan Amendment GRSG-GEN-ST-004-Standard; Forest Service 2015).

The BLM has calculated that existing anthropogenic disturbance levels in PHMAs are approximately 0.58 percent in the Butte/Buck/White Pine BSU, 0.73 percent in the Central Great Basin BSU, and 0.37 percent in the Smith/Reese BSU. The BLM has calculated that existing anthropogenic disturbance levels in PHMAs at the project scale is approximately 1.00 percent.

Herren et al. (2021, Table 11) found that, in PHMAs, anthropogenic disturbance (such as energy development, mining, and other infrastructure) increased by approximately 5,357 acres (0.02 percent) across all BSUs in the Great Basin region between 2015 and 2020, though this dataset may be underestimating anthropogenic disturbance.

In the analysis area, changes in disturbance estimates between 2015 and 2020 within the four BSUs ranged from 0.00 to 0.12 percent, as summarized in Table 3-21. As of 2020, the total disturbance estimate percentages within the four BSUs ranged from a low of 0.44 percent (Monitor BSU) to a high of 0.95 percent (Central Great Basin BSU). The four BSUs within the GLNP analysis area are shown on Figure 3-7, Range-wide Population Trend Analysis for Greater Sage-grouse (All Action Alternatives, 1960–2023), in Appendix A.

The BLM's 2015 ARMPA and the Forest Service's 2015 Greater Sage-grouse ROD also include an adaptive management strategy (see BLM 2015a, Appendix J; Forest Service 2015, Appendix C), which describe soft and hard trigger thresholds and adaptive management responses.[6]

[6] Soft triggers represent an intermediate threshold, indicating that management changes are needed at the implementation level to address habitat or population losses. If a soft trigger is tripped during the life of the plan, the BLM's and Forest Service's response is to apply more conservative or restrictive conservation measures to mitigate for the specific cause of the decline of populations or habitats, with consideration of local knowledge and conditions. These adjustments would be made to preclude tripping a hard trigger, which signals more severe habitat loss or population declines. Hard triggers represent a threshold indicating that immediate plan-level action is necessary to stop a severe deviation from the greater sage-grouse conservation objectives set forth in the BLM's 2015 ARMPA and Forest Service's 2015 Greater Sage-grouse ROD.

Triggers are based on the two key metrics that are being monitored during the life of the ARMPA: habitat loss and population declines. The BLM and Forest Service rely upon state governments to provide population estimates and trends (Herren et al. 2021).

As described in the BLM's 2015 ARMPA Appendix J and Forest Service's 2015 Greater Sage-grouse ROD Appendix C, triggers for changes in population growth are evaluated at three scales: individual lek (smallest scale), lek cluster or neighborhood cluster,[7] and BSU (largest scale), whereas triggers for habitat trends are evaluated at the lek and BSU scales. The USGS calculates the triggers based at a lek and neighborhood lek cluster scale, which are smaller-scale units than the BSUs described above; these scales capture trends in populations. The most recent analysis, which includes 2023 data, is from April 2024 (Prochazka et al. 2024). The analysis identifies "watches" and "warnings" for leks and neighborhood lek clusters, which are associated with the soft and hard triggers, respectively.

According to the most recent data (Prochazka et al. 2024, p. 8), the USGS has found that during the past 19, 36, and 54 years, greater sage-grouse populations for the Great Basin area have experienced declines in abundance equal to 45.3, 60.2, and 77.8 percent, respectively. Of 2,115 leks analyzed, the USGS identified 137 repeat watch leks (soft triggers tripped for multiple years) and 20 first-time watch leks (soft triggers tripped for the first time). The USGS identified 218 repeat warning leks (hard triggers tripped for multiple years) and 46 first-time warning leks (hard triggers tripped for the first time; Prochazka et al. 2024, p. 14).

Of 219 lek clusters, the USGS identified 21 repeat watch lek clusters (soft triggers tripped for multiple years) and 2 first-time watch lek clusters (soft triggers tripped for the first time). The USGS identified 31 repeat warning lek clusters (hard triggers tripped for multiple years) and 6 first-time warning lek clusters (hard triggers tripped for the first time; Prochazka et al. 2024, p. 14).

Table 3-22, below, summarizes the adaptive management status for lek clusters in the analysis area. This information is also shown on Figure 3-7, Range-wide Population Trend Analysis for Greater Sage-Grouse (All Action Alternatives, 1960–2023), in Appendix A. The acres of greater sage-grouse PHMAs and GHMAs that would be in the GLNP temporary ROW that are in triggered neighborhood clusters are disclosed for each alternative. This information is also shown on Figure 3-8, Range-wide Population Trend Analysis for Greater Sage-Grouse and Greater Sage-Grouse Habitat Management Areas (All Action Alternatives), in Appendix A.

Table 3-22. Soft and Hard Adaptive Management Triggers

BSU	Neighborhood Cluster	2023 Status	Previous Warning (Hard Trigger) Years	Previous Watch (Soft Trigger) Years
Central Great Basin, Monitor, Smith/Reese	E-025	Warning (Hard Trigger)	2022 2023	2009 2021 2022

[7] A lek cluster is a group of leks in the same vicinity, between which greater sage-grouse may interchange over time and representing a group of closely related individuals.

BSU	Neighborhood Cluster	2023 Status	Previous Warning (Hard Trigger) Years	Previous Watch (Soft Trigger) Years
Smith/Reese	E-028	None	2020 2021 2022	2019 2020 2021
Central Great Basin, Smith/Reese	E-029	Warning (Hard Trigger)	2021 2022 2023	2001 2008 2014 2021 2022
Central Great Basin, Smith/Reese	E-033	Warning (Hard Trigger)	2015 2021 2023	2015 2021
Central Great Basin, Monitor	E-040	None	2010	2010 2021
Central Great Basin, Monitor	E-041	None	None	None
Butte/Buck/White Pine, Central Great Basin	E-042	Warning (Hard Trigger)	2020 2023	2002 2018 2023
Butte/Buck/White Pine, Central Great Basin	E-060	Warning (Hard Trigger)	None	2003 2004 2016 2021 2022 2023
Butte/Buck/White Pine	E-066	None	None	2021

Sources: Prochazka et al. 2024; Coates et al. 2024

Prochazka et al. (2024, p. 10) examined the probability of future lek and lek cluster extirpation (that is, lek abandonment) within the range of greater sage-grouse. The authors examined these probabilities over three temporal ranges (18.4 years, 36.8 years, and 55.2 years). Table 3-23, Neighborhood Lek Cluster Extirpation Probability, summarizes the probability of cluster extirpation for lek clusters traversed by the GLNP. All clusters traversed by the GLNP show a steady or increasing probability of extirpation between 18.4 and 55.2 years in the future. This is shown on Figure 3-9, Probability of Extirpation for Greater Sage-Grouse Clusters, in Appendix A.

Table 3-23. Neighborhood Lek Cluster Extirpation Probability

BSU	Neighborhood Cluster	Probability of Extirpation, 18.4 Years (Percent)*	Probability of Extirpation, 36.8 Years (Percent)*	Probability of Extirpation, 55.2 Years (Percent)*
Central Great Basin, Monitor, Smith/Reese	E-025	≤ 1	≤ 1	>1 to 5
Smith/Reese	E-028	>1 to 5	>5 to 25	>25 to 50
Central Great Basin, Smith/Reese	E-029	>5 to 25	>25 to 50	>25 to 50
Central Great Basin, Smith/Reese	E-033	>50 to 75	>50 to 75	>50 to 75

BSU	Neighborhood Cluster	Probability of Extirpation, 18.4 Years (Percent)*	Probability of Extirpation, 36.8 Years (Percent)*	Probability of Extirpation, 55.2 Years (Percent)*
Central Great Basin, Monitor	E-040	≤ 1	≤ 1	≤ 1
Central Great Basin, Monitor	E-041	>75	>75	>75
Butte/Buck/White Pine, Central Great Basin	E-042	>5 to 25	>25 to 50	>25 to 50
Butte/Buck/White Pine, Central Great Basin	E-060	≤ 1	>1 to 5	>5 to 25
Butte/Buck/White Pine	E-066	>5 to 25	>25 to 50	>50 to 75

Source: Prochazka et al. 2024 (Figure 6)
* Notes:
≤ means less than or equal to
> means greater than

Data to analyze the probability of individual lek extirpation for leks within 4 miles of the GLNP were not available to the BLM at the date of publication. However, the probability of individual lek extirpation for leks in the range of greater sage-grouse is shown in Figures 6a, 6b, and 6c of the USGS's Range-wide Population Trend Analysis for Greater Sage-Grouse (*Centrocercus urophasianus*)—Updated 1960–2023 (Prochazka et al. 2024). As shown on those figures, most leks in the GLNP's vicinity have an increasing probability of extirpation between 18.4 and 55.2 years in the future. In general, the authors found that the highest probabilities of extirpation often occurred at the periphery of the species' range, while interior leks and lek clusters showed lower extirpation probabilities (Prochazka et al. 2024).

Pinyon Jay

The BLM and Forest Service have completed pinyon jay surveys to document the presence in 2024 of pinyon jays within suitable breeding habitat, which is widespread in the analysis area. Surveys are also being carried out in 2025. During survey coordination with the USFWS and NDOW, the BLM and Forest Service assessed the amount of suitable habitat for pinyon jay in the GLNP analysis area, as summarized in Table 3-24, below.

Table 3-24. Pinyon Jay Habitat

Habitat Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Suitable habitat	7,120	7,850	6,990

Source: BLM, FS, and NVE GIS 2024 and AECOM GIS 2024
Note: Acres are rounded to the nearest 10.

In summary, of the 106 grid cells surveyed within assessed suitable habitat, pinyon jay breeding activity was observed at 51 percent (54 of 106) of the grids cells, while pinyon jay individuals, without breeding activity, were observed at 32 percent (34 of 106) of the grid cells. In many cases, these grids were adjacent to grids with confirmed breeding and are likely being used for nonbreeding (that is, foraging, caching, or roosting) purposes. In the remaining 17 percent (18 of 106) of the grid cells, no individuals or breeding activity were observed (Figure 3-10, Pinyon Jay, in Appendix A). These grids had less suitable breeding habitat, including short, sparsely distributed pinyon-juniper woodland, or areas with mature climax forests of dense pinyon-

juniper woodlands characterized by closely spaced trees and limited understory growth (AECOM 2024b).

Pinyon jays are considered a pinyon-juniper woodland–obligate species. They rely heavily on pinyon-juniper woodlands, which provide both nesting sites and food resources. These woodlands feature pinyon pine trees that produce nuts, a vital food source for pinyon jays, especially during the breeding season. The structural diversity of these habitats, with interspersed open areas and dense tree cover, supports the complex social behaviors of pinyon jays, which often forage in large, cooperative flocks.

Pinyon jay surveys carried out in 2024 highlight the correlation between pinyon jay prevalence and pinyon-juniper habitat characteristics. During surveys, pinyon jays were often detected in the ecotone between pinyon-juniper woodland and sagebrush shrublands, where mature pinyon pine and Utah juniper trees were interspersed with big sagebrush shrubs. These more open woodland habitats likely offer a wider array of foraging and caching opportunities than dense woodlands with closed canopies. In contrast, mature climax forests of dense pinyon-juniper woodlands characterized by closely spaced trees and limited understory growth yielded fewer or no detections of pinyon jays (AECOM 2024b).

Pinyon jays are currently under listing petition review by the USFWS. This review underscores the species' vulnerability to habitat change, particularly within the context of ongoing human activities and environmental stressors. Pinyon-juniper woodlands, crucial for the survival of pinyon jays, face threats such as habitat loss, fragmentation, and degradation due to factors like urbanization, agricultural expansion, and resource extraction. These habitat alterations disrupt the intricate balance of ecosystem dynamics, impacting the availability of nesting sites, food resources, and overall habitat quality for pinyon jays.

While the exact cause of pinyon jay population declines remains unclear, several factors besides habitat loss and fragmentation may also contribute, including climate change, fire suppression practices, invasive species, and diseases and pests. Climate change affects pinyon pines and pinyon jays in several ways. Altered precipitation and rising temperatures stress pinyon pines, weakening them, and reducing seed production. This impacts pinyon jays, as fewer seeds are available for food. Increased temperatures and more frequent wildfires further threaten their habitats, while shifts in the timing of seed production can create food shortages. Additionally, warmer conditions favor pests like the pinyon ips beetle (*Ips confusus*), which can damage pinyon pines and further limit food sources for pinyon jays. Additionally, shifts in climate may alter the timing of key life cycle events, such as breeding and migration, disrupting the birds' reproductive success and overall survival.

Furthermore, the spread of invasive species poses a threat to pinyon jays and their habitat. Invasive plants can outcompete native vegetation, leading to changes in the structure and composition of pinyon-juniper woodlands. These changes can result in reduced availability of food resources and nesting sites for pinyon jays, further exacerbating their vulnerability.

Other human-induced disturbances, such as recreation, habitat modification, and pollution, can also negatively impact pinyon jays. Increased human presence in their habitat may lead to disturbances that disrupt nesting, foraging, and social behaviors. Pollution from various sources,

including agricultural runoff and industrial activities, can contaminate water sources and food supplies, posing additional threats to the health and survival of pinyon jays and other wildlife species.

Finally, the interactions between pinyon jays and other wildlife species play a significant role in shaping their population dynamics. For example, corvids, such as ravens and crows, can target pinyon jay nests and nestlings, impacting their reproductive success. Other wildlife interactions, such as competition for food and nesting sites with species like woodpeckers or squirrels, also affect pinyon jay populations. Understanding and addressing these multifaceted threats are crucial for implementing effective conservation strategies to ensure the long-term survival of pinyon jays and conservation of their habitat.

Pygmy Rabbit

AECOM, under the direction of the BLM, has completed pygmy rabbit surveys to document the presence of this species within the analysis area. Surveys were carried out in areas of relatively tall and dense sagebrush scrub with loamy soils, as delineated by core and corridor areas in the University of Nevada, Reno habitat model (Dilts et al. 2023) and as refined during survey coordination with the USFWS and NDOW. Surveys were done within the extent of the temporary ROW and within 400 feet of the edge of the temporary ROW, where it overlaps habitat areas.

Table 3-25. Pygmy Rabbit Habitat

Habitat Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Suitable habitat	5,570	5,630	5,770

Source: BLM, FS, and NVE GIS 2024 and AECOM GIS 2024
Note: Acres are rounded to the nearest 10.

Because pygmy rabbits exhibit elusive behavior, the focus of the survey effort was not necessarily to detect individuals but rather to detect a definitive sign, such as current, recent, and formerly active pygmy rabbits and pellets. Suitable habitat for pygmy rabbits is present in the central and eastern portions of the analysis area; no suitable habitat was located west of Middlegate, which corresponds with findings of previous habitat studies (Dilts et al. 2023). Pygmy rabbit detections, and sign detections, occurred frequently throughout the analysis area in areas containing large, flat valleys; drainages; alluvial fans; and other areas containing loamy, friable soils. Specifically, 43 pygmy rabbit individuals, 781 burrows (of which 63 were active burrow complexes, and 191 were active single burrows), and 374 pellet distributions were detected throughout the analysis area (AECOM 2024c). See Figure 3-11, Pygmy Rabbit, in Appendix A.

Pygmy rabbit burrows were typically found at or near the base of sagebrush and occasionally recorded at the base of rabbitbrush in areas where rabbitbrush and sagebrush were codominant. The height of vegetation within which a pygmy rabbit sign was detected varied, though the sign was often concentrated in the tallest and densest patches of sagebrush shrubland on the immediate landscape. Pellet distributions were most concentrated near active burrows (AECOM 2024c).

Detections of a pygmy rabbit sign occurred infrequently in areas containing rocky, gravelly, or compact soils or sparse sagebrush shrubland cover. Detections also occurred infrequently in areas where sagebrush shrubland intersected with pinyon-juniper woodland. No sign was observed in areas dominated by nonnative vegetation, though a pygmy rabbit sign was often detected in patches of sagebrush shrubland adjacent to these nonnative vegetation communities (AECOM 2024c).

Golden Eagles and Other Raptors

Golden eagles are year-round residents of Nevada. While some eagles migrate when they are not in their breeding territories, they generally display fidelity to nest sites, nesting territories, and wintering areas. Golden eagles are variable in their nesting habitat preferences. Typically, they prefer cliffs and canyon habitats, but nests have also been documented in large trees, in pinyon-juniper woodlands, on transmission structures, and even on the ground in prairie habitats (Katzner et al. 2020). The breeding season, which includes courtship, nesting, egg laying, and chick rearing, occurs from December through July (Katzner et al. 2020).

Golden eagles are present within the analysis area (see Figure 3-12, Golden Eagle Nest Surveys, in Appendix A). Surveys to document raptor nest use in the analysis area were conducted in 2022, 2023, and 2024 using aerial survey methods. Detailed methods for the nesting surveys are provided in the Greenlink North Transmission Project 2022 Golden Eagle and Raptor Nesting Survey (WRC 2022). Surveys in 2022 covered the extent of the GLNP at that time. Surveys in 2023 and 2024 covered the addition of new project alternatives (the Forest Service Southern Alternative in 2023 and the Proposed Churchill County Alternative Segment and other areas in 2024), using the same methods as described in the Greenlink North Transmission Project 2022 Golden Eagle and Raptor Nesting Survey (WRC 2022).

Table 3-26 summarizes the eagle and other raptor nest observations in 2022 and 2023. Surveys in 2022 documented 77 golden eagle nests, while 2023 surveys documented an additional 3 golden eagle nests. Results of the 2024 survey are summarized in Table 3-27. In 2024, 21 golden eagle nests were observed.

Table 3-26. Nests Observed in 2022 and 2023

Nest Type	Total Nests 2022	Occupied Nests	Confirmed Breeding Attempts	Total Nests 2023	Occupied Nests	Confirmed Breeding Attempts
Golden eagle	77	24 (23 by golden eagles and 1 by red-tailed hawks)	7 (6 by golden eagles and 1 by red-tailed hawks)	3	3 (by golden eagles)	1 (by golden eagles)
Ferruginous hawk	N/A	N/A	N/A	3	1 (by ferruginous hawks)	0
Large raptor	31	7 (3 by ferruginous hawks, 1 by prairie falcons, and 3 by red-tailed hawks)	7 (3 by ferruginous hawks, 1 by prairie falcons, and 3 by red-tailed hawks)	9	5 (1 by red-tailed hawks and 4 by unknown species)	2 (1 by red-tailed hawks and 1by unknown species [white egg])

Nest Type	Total Nests 2022	Occupied Nests	Confirmed Breeding Attempts	Total Nests 2023	Occupied Nests	Confirmed Breeding Attempts
Small raptor	23	5 (1 by prairie falcons and 4 by common ravens)	5 (1 by prairie falcons and 4 by common ravens)	3	1 (by unknown species)	0
Common raven	51	28 (28 by common ravens)	28 (28 by common ravens)	8	5 (by common ravens)	4 (by common ravens)
Total	**182**	**64**	**47**	**26**	**15**	**7**

Sources: WRC 2022, 2023

Table 3-27. Nests Observed in 2024

Nest Type	Total Nests 2024	Occupied Nests	Confirmed Breeding Attempts
Golden eagle	21	7 (6 by golden eagles and 1 by prairie falcons)	6 (5 by golden eagles and 1 by prairie falcons)
Ferruginous hawk	4	2 (2 by ferruginous hawks)	2 (2 by ferruginous hawks)
Large raptor	15	7 (1 by Canada geese, 1 by great horned owls, 1 by prairie falcons, and 4 by red-tailed hawks)	6 (1 by great horned owls, 1 by prairie falcons, and 4 by red-tailed hawks)
Small raptor	6	1 (1 by prairie falcons)	1 (1 by prairie falcons)
Common raven	10	9 (9 by common ravens)	9 (9 by common ravens)
Total	**56**	**26**	**24**

Source: WRC 2024a

Additionally, in spring 2024, an aerial nest inventory focusing on the pinyon-juniper/sagebrush interface was carried out to locate primarily ferruginous hawk nests. This survey was carried out because this habitat was not a focus of previous golden eagle and other raptor surveys. This habitat is characterized by a mix of scattered pinyon and juniper trees, or stringers of pinyon and juniper trees interspersed with open areas dominated by sagebrush. The pinyon-juniper woodlands provide crucial nesting sites due to their tall, sturdy trees, which offer elevated perches and protection from predators. The adjacent sagebrush areas supply abundant prey, such as small mammals and birds, making the interface an ideal hunting ground for raptors. This combination of nesting and foraging resources is essential for the breeding success of ferruginous hawks.

Survey methodology was determined through coordination between the BLM, the Forest Service, the USFWS, and the NDOW. The survey focused solely on pinyon-juniper woodland habitat and cottonwood groves along the Walker River. Trees on private property, such as cottonwood trees at ranches, were not surveyed. Landscape features flown during previous golden eagle surveys in 2022–2024, including rock outcrops, cliffs, transmission line towers, and mine pits, were not resurveyed.

A total of 25 stick nests were observed in the survey area. Twenty-one nests were observed in trees. Results of the survey are summarized in Table 3-28.

Table 3-28. Ferruginous Hawk and Woodland Raptor Survey Results

Nest Type	Total Nests	Occupied Nests	Confirmed Breeding Attempts
Golden eagle	1	1 (1 by golden eagles)	1 (1 by golden eagles)
Ferruginous hawk	14	4 (4 by ferruginous hawks)	3 (3 by ferruginous hawks)
Large raptor	9	5 (1 by American goshawks and 4 by red-tailed hawks)	3 (3 by red-tailed hawks)
Small raptor	1	None	None
Total	**25**	**10**	**7**

Source: WRC 2024b

Burrowing Owl

The BLM and Forest Service have completed burrowing owl surveys to document the presence of burrowing owls and to identify nest burrows within suitable habitat, which is widespread in the GLNP analysis area and was assessed during survey coordination with the USFWS and NDOW (AECOM 2024d). Table 3-29, below, summarizes the amount of suitable habitat for burrowing owls in the GLNP analysis area. A total of nine adults, four fledglings, and three individuals of unknown age were detected during surveys, representing a maximum of 12 unique burrowing owl individuals. All detections either occurred visually, when biologists observed individuals while scanning the area around each survey station, or auditorily, when biologists heard individuals vocally responding to the call broadcast. Six of the seven burrowing owl observations occurred along the western portion of the analysis area, within Churchill County east of Salt Wells, Nevada. The remaining detection was in the Newark Valley in White Pine County (Figure 3-13, Western Burrowing Owl Surveys, in Appendix A).

Table 3-29. Burrowing Owl Habitat

Habitat Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Suitable habitat	7,190	7,290	7,840

Source: BLM, FS, and NVE GIS 2024 and AECOM GIS 2024
Note: Acres are rounded to the nearest 10.

Burrowing owls prefer open landscapes such as sagebrush steppe, grasslands, and desert scrub. These habitats provide the necessary ground cover and prey abundance, including insects and small mammals, which are essential for the owls' survival and breeding success. Burrowing owls often use burrows made by other animals, such as ground squirrels and badgers, which are common in these regions. The presence of suitable nesting burrows in these open areas is necessary for burrowing owls, as they rely on these burrows for protection and raising their young.

Monarch Butterfly

The monarch butterfly is currently a candidate for federal listing under the ESA; it is not yet listed or proposed for listing under the ESA. During breeding and migration, adult monarch butterflies require a diversity of blooming nectar resources, which they feed on throughout their migration routes. Monarch butterflies also need milkweed (for both egg laying and larval feeding) embedded within nectaring habitat. In western North America, nectar and milkweed resources are often associated with riparian corridors, and milkweed may function as the

principal nectar source for monarch butterflies in more arid regions. In the GLNP analysis area, there have been numerous documentations of monarch butterflies and milkweed host plants (BLM 2023a).

Kangaroo Mice

The analysis area crosses the known range of both the dark kangaroo mouse and pale kangaroo mouse, and both species have been documented near the analysis area. Table 3-30 summarizes the acres of potential habitat for each species in the analysis area. Potential habitat was generated by analyzing the suitable ground-truthed landcover types (BLM 2023a), and recent wildfires (since 1980), within each species' published range (Hafner et al. 2008; Hafner and Upham 2011).

Table 3-30. Kangaroo Mouse Habitat

Species	Potential Habitat	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Dark Kangaroo Mouse	High	13,920	13,930	15,120
	Medium	320	320	310
	Low	3,820	3,820	3,950
	Total	**18,060**	**18,070**	**19,380**
Pale Kangaroo Mouse	High	700	710	710
	Medium	0	0	0
	Low	6,620	6,600	6,600
	Total	**7,320**	**7,310**	**7,310**

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Bighorn Sheep

Bighorn sheep are typically found in rough and rocky terrain in alpine and tundra, cliffs and canyons, and desert wash habitats. They rely on escape terrain in the form of cliffs, rock outcrops, and steep slopes, as well as nearby water sources. The most important forage plants are forbs and perennial grasses. Annual grasses are consumed but do not meet bighorn sheep's nutritional needs across the entire summer months. Some herds browse shrubs where forbs and grasses are less prevalent. Bighorn sheep also consume pine nuts in the fall in dense pinyon pine stands. They use moderate escape terrain as lambing habitat and extreme escape terrain features for lamb-rearing habitat. Invasive species, disease, and drought are some of the largest threats to bighorn sheep in the analysis area (NDOW 2022b).

The analysis area intersects bighorn sheep year-round range, lambing areas, and movement corridors, as summarized in Table 3-31.

Table 3-31. Bighorn Sheep Habitat by Alternative

Habitat Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Lambing	10	120	110
Year-round	1,860	1,860	1,840
Movement corridors	950	950	940

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Special Status Plants

Reconnaissance-level surveys (BLM 2023a) documented potential suitable habitat for special status plant species in the GLNP ROWs, to assess the potential that special status plant species could occur in the analysis area. The list of assessed species was based on the 2017 BLM sensitive plant list for the Battle Mountain, Carson City, and Ely Districts (BLM 2017). This list was updated in 2023 (BLM 2023b). Special status plant species also include Forest Service Region 4 sensitive plants for the Austin-Tonopah Ranger District of the Humboldt-Toiyabe National Forest, the list of State of Nevada fully protected species (Nevada Administrative Code 527.270), and the NDNH tracked and watched species. There are no federally listed, proposed, or candidate plant species with a potential to occur in the analysis area.

Appendix J, Special Status Species Considered, provides rationale from the assessments. The appendix provides information on the special status plants' habitat associations, range, and potential to occur within the analysis areas. For each species, suitable habitat determinations were based on a combination of an assessment of the species' known range and the ground-truthed land cover type (see Table 3-6, Ground-Truthed SWReGAP Land Cover Types), elevation, slope and aspect, substrate type, disturbance history (for example, fire history, grazing pressure, and development), or other relevant habitat features.

The assessments drew on resources including the NDNH species explorer (NDNH 2023). The NDNH species explorer draws on information from the Nevada Rare Plant Atlas (Morefield 2001); plant collections and observations cataloged in the Intermountain Region Herbarium Network (IRHN 2023); published relevant primary literature; and publicly available information provided by iNaturalist (2023), the Flora of North America (FNA 2023), and NatureServe Explorer (2023). The assessment rationale for all plant species is documented in Appendix J, Special Status Species Considered, and below in Table 3-32, for plant species with a moderate or high potential to occur in the analysis area.

The Proponent did not conduct inventory surveys to document the presence or absence or to characterize populations of most of the special status plant species in this analysis. Typically, such surveys would require one or more searches of potentially suitable habitat throughout the growing season, or over multiple seasons, to account for varying environmental conditions, like drought and plant phenology, which can affect when plants will be evident and identifiable. Special status plants are typically identifiable to a taxonomic level to determine rarity when they are either flowering, in fruit, or both. Any special status plant species incidentally observed during reconnaissance surveys were documented. Table 3-32 summarizes these species.

Overall, the potential to occur in the survey area was assessed for 148 special status plant species. Of these species, 19 were assessed as having a high potential to occur in the analysis area, while 5 were assessed as having a moderate potential to occur.

Table 3-32. Special Status Plants with Moderate to High Potential to Occur

Species	Status[1,2]	Potential to Occur and Rationale
Eastwood milkweed *Asclepias eastwoodiana*	BLM S FSS	High – The analysis area is within the species' range and contains suitable habitat. An NDNH observation exists in the Reese River valley in Lander County, just north of the analysis area. The Intermountain Region Herbarium Network (2023) shows two additional observations in the Reese River valley, both on the Toiyabe Range's western foothills.
One-leaflet Torrey's milkvetch *Astragalus calycosus* var. *monophyllidius*	BLM S	High – The analysis area is within the species' range and contains suitable habitat. There are collections from the Monitor Valley and from the eastern foothills of the Fish Creek Range in Eureka County, near the analysis area (IRHN 2023).
Meadow milkvetch *Astragalus diversifolius*	BLM S	High – The analysis area is within the species' range and contains suitable habitat. There are collections from the Reese River valley in Lander County, near the analysis area, and several others from White Pine and Nye Counties, near the eastern end of the analysis area (IRHN 2023).
Broad-pod freckled milkvetch *Astragalus lentiginosus* var. *latus*	BLM S	High – The analysis area is within the species' range and contains suitable habitat. There are collections from the White Pine Range and Egan Range in White Pine County, near the analysis area (IRHN 2023).
Tonopah milkvetch *Astragalus pseudiodanthus*	BLM S	Moderate – The western end of the analysis area is near the species' range and contains suitable habitat. Nearby occurrences are in Lyon County in the Singatse Range, and Mineral County from the Rawhide Flats area of the Walker River Indian Reservation (IRHN 2023).
Toquima milkvetch *Astragalus toquimanus*	FSS	Moderate – The analysis area is outside the known range; however, the Humboldt-Toiyabe National Forest, Austin-Tonopah Ranger District portion of the analysis area contains suitable habitat within the reported elevational range. Further, a historical (2004) collection was made relatively near the analysis area in the Antelope Range (IRHN 2024).
Currant milkvetch *Astragalus uncialis*	BLM S	Moderate – The eastern end of the analysis area is near the species' range and contains suitable habitat.
Monte Neva paintbrush *Castilleja salsuginosa*	BLM S SP	High – Known from the analysis area vicinity. The Eureka County population is at Hot Spring Hill immediately north of the analysis area. Surveys to determine the extent and distribution of this population have been completed (AECOM 2024e).
Toiyabe springparsley *Cymopterus goodrichii*	FSS	Moderate – The highest-elevation portions of the analysis area, within the Humboldt-Toiyabe National Forest, Austin-Tonopah Ranger District, are within this species' reported elevation range, and suitable habitat is likely present in limited portions of the analysis area. Further, several collections have been made relatively near the analysis area in the Toiyabe Range.
Desert whitlowgrass *Draba arida*	FSS	Moderate – The highest-elevation portions of the analysis area, within the Humboldt-Toiyabe National Forest, Austin-Tonopah Ranger District, are within this species' reported elevation range, and suitable habitat is likely present in limited portions of the analysis area. Further, several collections have been made relatively near the analysis area in the Toiyabe Range.
Giant helleborine *Epipactis gigantea*	FSS	High – Suitable perennial wetland habitats exist in numerous locations in the Humboldt-Toiyabe National Forest, Austin-Tonopah Ranger District portion of the analysis area. While there are no reported occurrences in the analysis area, occurrences are reported from wetland habitats in the foothills of the Stillwater Mountains near Dixie Valley (Churchill County) and the north end of Duckwater Valley in Nye County (IRHN 2024), to the east and west of the analysis area, respectively. Occurrences also are reported in other locations in Nevada and adjacent states.

Species	Status[1,2]	Potential to Occur and Rationale
Nevada suncup *Eremothera nevadensis*	BLM S	High – This species has been documented in the analysis area's immediate vicinity, in the Desert Mountains in Lyon County, on foothills covered with a dark, volcanic, gravel surface at Township 16N, Range 26E, Section 21 (IRHN 2023). Similar habitat is in the analysis area throughout the Desert Mountains, and these areas may support this species.
Beatley's buckwheat *Eriogonum beatleyae*	BLM S	High – Suitable habitat exists on volcanic tuffaceous soils in the analysis area, particularly in the Desatoya Mountains west of New Pass in Churchill County. There are several documentations of this species from this area, outside the analysis area.
Toiyabe buckwheat *Eriogonum esmeraldense* var. *toiyabense*	FSS	Moderate – The species has been widely documented in the Toiyabe Range, particularly from the higher-elevation portions of the range to the south of the analysis area (IRHN 2023). In the analysis area, potentially suitable light-colored clay substrates in mountain sagebrush and pinyon-juniper land cover types are present, but they are limited in extent to hillsides at Township 19N, Range 44E, Sections 4 and 9 near the crest of the range. This area is generally lower in elevation than other observations in the range.
Lemmon buckwheat *Eriogonum lemmonii*	BLM S	High – This species has been documented in the analysis area's immediate vicinity, in the Desert Mountains in Lyon County, on light-colored, clay hills in Township 16N, Range 26E, Sections 28, 29, 32, and 33 (IRHN 2023). Apparently similar habitat also occurs farther east in the same range (for example, at Township 16, Range 26, Section 24).
Dune sunflower *Helianthus deserticola*	BLM S AR	High – This species has been documented to occur in and near the analysis area, on sandy soils in Churchill County. The NDNH lists observations on the north side of the Blow Sand Mountains, in the Salt Wells Basin, and in northern Fairview Valley. It has been observed in the analysis area on the north side of the Blow Sand Mountains and in the Salt Wells Basin. Additional suitable habitat likely exists on pockets of sandy soils in the Desert Mountains.
Nye County smelowskia *Nevada holmgrenii*	BLM S	Moderate – The analysis area crosses the Toiyabe Range and may contain limited areas of suitable habitat in this range; however, elevations in this portion of the range are generally lower than where this species typically grows, in the more southerly, higher portions of the range.
Sagebrush cholla *Opuntia [Grusonia] pulchella*	BLM S	High – This species was incidentally observed in numerous places in the analysis area. It has also been documented to occur near the analysis area, in the Carson Sink around Fallon in Churchill County, and in the northern Big Smoky Valley in Lander County (IRHN 2023).
Spjut bristlemoss *Orthotrichum spjutii*	BLM S FSS	High – Suitable habitat occurs in the analysis area, particularly in the Toiyabe Range.
Nevada oryctes *Oryctes nevadensis*	BLM S	High – This species has been documented to occur near the analysis area at Sand Mountain in Churchill County (IRHN 2023). Suitable habitat exists in the analysis area vicinity.
Watson spinecup *Oxytheca watsonii*	BLM S	High – This species has been documented in two locations in Lander County near the analysis area (IRHN 2023): a historical (1937) collection near Austin and a more recent, but still historical (1983), collection in the northern Big Smoky Valley, just south of US Highway 50. These collection records do not provide habitat descriptions. Potentially suitable habitat, as described by the NDNH (2023), is widespread in the Lander and Eureka County portions of the survey area.
Low feverfew *Parthenium ligulatum*	BLM S	High – This species has been documented on clay badland hills in the eastern foothills of the Fish Creek Range in Eureka County, south of Eureka (IRHN 2023). The soils in the vicinity of this record are the Lien-Hayeston association (Web Soil Survey 2023). This soil association is also mapped nearby in the analysis area in Eureka County in several spots (along the southern apron of Lone Mountain and on slopes between Lone Mountain and Eureka). Portions of the analysis area with this soil association have the potential to support this species.

Species	Status[1,2]	Potential to Occur and Rationale
Nevada dune beardtongue *Penstemon arenarius*	BLM S FSS	High – This species has been documented to occur near the analysis area, on sandy soils in the Desert Mountains in Churchill County (IRHN 2023). Suitable habitat exists in the analysis area on pockets of sandy soils in the Desert Mountains in Lyon County (for example, near Township 16N, Range 26E, Sections 23 and 24). Suitable habitat also exists on sandy soils on the north side of the Blow Sand Mountains (on and around Township 16N, Range 30E, Section 30) and in the Salt Wells Basin (on and around Township 16N, Range 32E, Section 18).
Lahontan beardtongue *Penstemon palmeri* var. *macranthus*	BLM S FSS	High – This species has been documented widely in the analysis area's western portion in Churchill County. The analysis area crosses numerous washes and canyon floors in the Desert Mountains, Cocoon Mountains, Sand Springs Range, and Clan Alpine Mountains in Churchill County. Suitable habitat for this species exists in many washes originating in the ranges. These include, but are not limited to, Sam Spring Wash and an unnamed wash at Township 16N, Range 27E, Section 20 in the Desert Mountains; an unnamed wash between the Blow Sand and White Throne Mountains at Township 16N, Range 29E, Sections 22 and 27; the Diamond Jack Field Wash in the Blow Sand Mountains at Township 16N, Range 30E, Section 27; and unnamed washes flowing off the western side of the Sand Springs Range and through the analysis area. Also, a historical (1981) collection was made in the wash in Hogpen Canyon in Eureka County, just north of where the analysis area crosses the wash (Township 20N, Range 53E, Section 34).
Reese River phacelia *Phacelia glaberrima*	BLM S	High – This species has been documented to occur near the analysis area, including to the north of New Pass at the Churchill/Lander County line, on volcanic tuff-derived soils. The same substrates are present in the analysis area.
Snake Range bladderpod *Physaria pendula*	BLM S	High – The analysis area is within the species' range, and suitable habitat exists in the analysis area. There are contemporary collections from the northern part of the Egan Range, south of US Highway 50, less than 3 miles from the analysis area (IRHN 2023).
Lahontan indigobush *Psorothamnus kingii*	BLM S	High – The analysis area is within the species' range, and suitable habitat exists in the analysis area. There are collections made from the Blow Sand Mountains in Churchill County, just south of the analysis area.
Currant Summit clover *Trifolium andinum* var. *podocephalum*	BLM S	Moderate – This species is known from the White Pine Range in northeastern Nye County, and from two extant and one historical site in Lincoln County. While the analysis area is somewhat removed from the known range of this species (the nearest known occurrence is about 40 miles south of the analysis area in the White Pine Range), comprehensive field surveys have not been completed, and it is possible that its range may be greater than what is currently known (NatureServe 2023). Further, the portion of the analysis area that traverses the White Pine Range is within the reported elevation range and has suitable substrates and vegetation communities.
Rollins clover *Trifolium rollinsii*	FSS	Moderate – The Humboldt-Toiyabe National Forest, Austin-Tonopah Ranger District portion of the analysis area approaches elevations of 8,000 feet, which is slightly below this species' reported elevation range. However, the analysis area contains suitable habitat features, particularly concave, leeward, or otherwise moisture-accumulating and/or snow-accumulating areas on steep to moderate slopes of all aspects in the mountain sagebrush zone.

Source: BLM 2023a; additional sources in the table

Notes:

[1] Status codes:

BLM S = BLM sensitive

FSS = Sensitive, US Forest Service Region 4, Humboldt-Toiyabe National Forest

SP = State protected per NRS 527.050, 527.300—These are species determined as critically endangered species of native flora by the Nevada Division of Forestry; these species may not be removed or destroyed unless the Nevada State Forester issues a permit.

[2] The Proposed Action analysis area is in the Carson City, Battle Mountain, and Ely BLM Districts. The species may be considered sensitive in other BLM districts in Nevada.

AECOM, under the direction of the BLM, has completed surveys to document the presence of Monte Neva paintbrush (*Castilleja salsuginosa*) within suitable habitat, which is limited to portions of Eureka County in the GLNP analysis area on BLM-administered land. The Eureka County population is at Hot Spring Hill, immediately north of the analysis area. Botanists observed 36 individuals comprising two distinct polygons and one isolated individual, on both sides of an existing dirt access road servicing a 230 kV transmission line. When compared with historical data for this population provided by the NDNH, the 36 plants were located within 10 feet of the known population location (AECOM 2024e).

As a species with limited distribution and specific habitat requirements, Monte Neva paintbrush is vulnerable to habitat loss, degradation, and fragmentation. Human activities, such as recreation and grazing, and invasive species encroachment pose threats.

Table 3-33. Monte Neva Paintbrush Habitat

Habitat Type	BLM Preferred Alternative (Acres)	Proposed Action (Acres)	Other Resource Consideration Alternative (Acres)
Occupied habitat	0.1	0.1	0.1

Source: BLM, FS, and NVE GIS 2024 and AECOM GIS 2024
Note: Acres are rounded to the nearest 0.1.

3.6.4 Environmental Consequences

The types of effects on special status species from the geotechnical investigations, construction, O&M, and decommissioning of the GLNP would be similar to those described for general fish and wildlife species, in Section 3.5, and for general vegetation, as described in Section 3.4. Because special status species are often more limited in distribution and sensitive to disturbance than general species, effect intensity would be greater.

As part of the project—and similar to Section 3.4 and Section 3.5—the BLM would implement EMMs to reduce potential impacts on special status species, which would include educating and training project workers on species and their habitats and implementing protocols to minimize disturbances.

Methodology

A list of threatened, endangered, candidate, and proposed species and designated and proposed critical habitats that may occur within the GLNP was obtained from the USFWS on December 18, 2023, using the IPaC review tool. The USFWS IPaC database search identified one federally listed endangered, two federally listed threatened, and one candidate species that the proposed project could affect. These are the Dixie Valley toad (endangered), western yellow-billed cuckoo (threatened), Lahontan cutthroat trout (threatened), and monarch butterfly (candidate). While critical habitat has been designated for the western yellow-billed cuckoo (79 *Federal Register* 48548), it does not overlap the analysis area. Critical habitat has not been designated for the other considered species.

The potential occurrence of federally listed and special status species in the GLNP vicinity was discussed in coordination with the BLM, Forest Service, USFWS, and NDOW. Additionally, information was gathered for each species by reviewing scientific reports and literature,

analyzing GIS-based natural resource data and species-specific GIS data, and reviewing reports for targeted biological surveys that have been carried out in portions of the GLNP analysis area.

The potential for each species to occur within the special status species analysis areas was evaluated using range and life history information provided by the NDOW (2023), the NDNH (2023), and publicly available information provided by NatureServe Explorer (NatureServe 2023).

In addition, coordination between the BLM, Forest Service, USFWS, and NDOW occurred to identify the need to carry out surveys for special status species in the GLNP analysis area. AECOM, under the direction of the BLM, completed surveys during spring and summer 2024 to refine the distribution of several key special status species in the GLNP vicinity, including burrowing owl, pinyon jay, pygmy rabbit, golden eagle, ferruginous hawk and other raptors (besides golden eagle), and greater sage-grouse. The Proponent also completed surveys during summer 2024 to refine the distribution of Monte Neva paintbrush in the GLNP vicinity. As discussed above, the special status plant analysis area is the same as the project areas identified per alternative.

Special status species detected during surveys that have been carried out for the GLNP, or carried out for other projects in portions of the GLNP analysis area and vicinity, were also taken into account; such information includes incidental locations of burrowing owl, golden eagle, ferruginous hawk, pale kangaroo mouse, and dark kangaroo mouse collected during pre-project surveys (West 2023a, 2023b; Williams and Brown 2023; Phoenix Biological Consulting 2023; Wildlife Resource Consultants LLC 2022). Each species was then assigned a potential to occur, which was evaluated based on the tiered system described in Table 3-34.

Species assessed to have a low potential to occur within the analysis area are not analyzed in the Final EIS/Proposed RMPA; this is because these species would not be affected by the GLNP.

Table 3-34. Special Status Species Potential to Occur Categories

Potential to Occur Category	Description
Low	The species has not been documented in the analysis area because the analysis area is outside the species known geographic or elevation range, no suitable habitat is present to support the species, or existing habitat conditions or disturbance history would preclude species' establishment or persistence.
Moderate	The species has not been recently documented in the analysis area, but potentially suitable habitat is present and there is a reasonable likelihood for the species to occur, or the species' ranges are wide, and individuals could incidentally occur in the analysis area.
High	The species has been recently documented in or near the analysis area, or there is a high likelihood of occurrence based on the species' known range and/or the presence of suitable habitat in the analysis area, or the species has been incidentally observed in the analysis area.

Source: BLM, FS, and NVE GIS 2024

Indicators

- The potential for actions to result in a loss of individuals or populations, or loss, degradation, or modification of habitats
- The potential for actions to disturb individuals or disrupt natural history processes like breeding, foraging, or migration
- The potential for actions to contribute to local population declines of BLM sensitive species
- The potential for actions to result in a need to list BLM sensitive species under the ESA
- The potential for disturbance in or near locations of known populations or areas identified as occupied habitat by the USFWS, NDOW, and NDNH
- Acres of special status species habitat as defined by vegetation communities affected by the various stages of the project (construction, O&M, and decommissioning) and the relative extent of surrounding areas subjected to disturbance (for example, increased noise and light)
- The potential for disturbance to high-value habitats for special status species. High-value habitats are those that either support large number of species, as compared with other habitats, or that support species with limited geographic ranges (for example, areas occupied by species endemic to a single mountain range or spring).

Assumptions

- There is no suitable or known occupied habitat for federally listed plant species in the analysis area, nor is there critical habitat in this area for federally listed plant species. As such, the GLNP would have no effect on federally listed plant species and critical habitat for federally listed plant species.
- Direct effects would occur in each analysis area during geotechnical investigations, construction, operation, and maintenance of the proposed facilities. Indirect effects could occur farther away from each analysis area. The effect intensity would depend on the distance from the analysis areas, on the duration and magnitude of the effect, and on receptor sensitivity.
- The primary noise generator associated with the Proposed Action and alternatives would be construction, including use of typical construction heavy equipment and potentially, depending on results of geotechnical investigations, blasting. Table 3-12 in Section 3.5, Fish and Wildlife, above, lists example noise levels from typical construction equipment. Of the example equipment listed, blasting, impact and vibratory pile drivers, and impact hammers would be expected to be the loudest pieces of equipment, if they are used during construction. The use of certain equipment during geotechnical investigations and project O&M would also generate noise; however, in most cases, noise would not reach levels associated with the construction phase.

  As described in detail in the GLNP final biological assessment, the BLM assumed a generalized background sound level of 50 A-weighted decibels (dBA). Noise from stationary sources lessens at a rate of approximately 6 dBA per doubling of distance. The loudest potential project-related noise would attenuate to 3 dBA over background levels (53 dBA) at 1.19 miles (6,259 feet) from a 95 dBA noise source. As such, the

analysis area for noise effects is the temporary ROW plus a 1.19-mile buffer (approximately 496,108 acres). Effect intensity would depend on the duration and magnitude of noise, the receptor's sensitivity, and the receptor's distance from the analysis area.

Direct and Indirect Impacts from the No Action Alternative

Under the No Action Alternative, the current uses and trends for the resources would continue to occur. There would be no impacts on federally listed or special status resources attributed to the geotechnical investigations, construction, O&M, and decommissioning of the GLNP. The proposed utility corridor would not be designated.

Direct and Indirect Impacts Common to All Action Alternatives

Overland travel associated with some of the proposed borehole locations would crush existing vegetation, potentially resulting in habitat damage or degradation during geotechnical investigations. While the borehole locations would vary slightly for each action alternative, approximately 30 acres would be disturbed regardless of alternative, spread across the analysis area. As such, while geotechnical investigations could damage or degrade small areas of special status wildlife habitats over the short-term, effects would not be so great as to contribute to the need for special status species listing. The Proponent would restore disturbed areas thus minimizing any long-term effects on special status plant and wildlife habitats. Geotechnical investigations would avoid any potential habitat for federally listed species. Additionally, the Proponent would avoid all aquatic habitats thus avoiding impacts on special status fish or other aquatic species.

Noise associated with geotechnical investigations could cause special status wildlife to avoid localized areas during these activities, though the effects would last only for the duration of the geotechnical investigations, likely no more than several hours at each site. In summary, effects on special status species from geotechnical investigations would be limited and localized, habitats would be restored, and the activities would not contribute to the need to list special status species. As such, no further discussion on these effects is included except for effects on greater sage-grouse habitat, which are described further below.

Construction of the GLNP would have the potential to impact special status species resources through habitat loss and fragmentation and direct disturbance, injury, or mortality. These impacts would extend across an area larger than the actual construction footprint, and special status species more sensitive to habitat fragmentation and disturbance may shift habitat use to other areas. The impacts of habitat loss and fragmentation would be greatest when the affected habitats are limited in distribution (that is, riparian areas and wetlands) and the species' range is limited. Additionally, fragmentation of habitat for special status plant species often leads to isolated populations, reducing genetic diversity and increasing vulnerability to extinction (González et al. 2020).

In addition to the impacts identified in Section 3.5, Fish and Wildlife, the potential types of impacts that would be specific to special status species are highlighted below in Table 3-35.

Table 3-35. Potential Direct and Indirect Impacts on Special Status Species and Habitat

Potential Impact	GLNP Phase
Loss of habitat resulting from construction of tower sites, access roads, terminal locations, and other ancillary facilities	Construction and O&M
Fragmentation of habitat due to the construction of new access roads, removal of vegetation at tower sites, increased electromagnetic fields, or introduction of tall structures	Construction and O&M
Degradation of habitat and function	Construction and O&M
General disturbance to special status species and disruption of breeding activities due to human presence and noise	Geotechnical investigations, construction, O&M, and decommissioning
Decreased nest initiation, nest success, and recruitment resulting from disruption of foraging, seasonal migration, breeding, nesting, brood-rearing, and wintering activities	O&M
Interruption or adjustments to seasonal migrations and movements	O&M
Reduction of habitat suitability resulting from the introduction and establishment of noxious weeds	O&M
Increased unauthorized harvest resulting from increased access to special status species habitat via construction of new access roads	O&M

Under all action alternatives, the GLNP would include preconstruction surveys for most special status wildlife, as well as all special status plant species with a high potential to occur, as listed in Table 3-15 and Table 3-32, respectively. It also would include appropriate spatial avoidance measures for occupied habitat and a suitable buffer around occupied habitat, as determined by the relevant agency authorized officer. Preconstruction surveys and mitigation actions would follow the guidelines detailed in EMM BIO-1 in Appendix D, ensuring consideration of special status species and adherence to relevant management policies to avoid or minimize adverse impacts on these species and their habitats.

Ongoing impacts on special status species and habitat would occur in areas where the proposed transmission line would be collocated with existing transmission lines. Collocating would be an additive action and would incrementally contribute to existing disturbances and impacts. The benefit of collocating is that the impacts would be contained within an already disturbed utility corridor. However, the addition of a transmission line, even when collocated, would cause additional impacts on species using the area. The collocated line would not be in the footprint of the existing line. Therefore, the impacts of the new line would extend farther than the impacts from the existing line. In areas where the proposed transmission line would not be collocated with the existing transmission line, new and additional impacts from construction and operation of the transmission line would be distributed to less disturbed habitat areas farther from existing facilities.

Potential impacts on special status species during decommissioning would be similar to those during construction; these impacts typically include noise and disturbance. After decommissioning, previously disturbed areas would become available following reclamation. Due to the slow growth and regeneration rates of sagebrush communities, regeneration of pre-disturbance vegetation conditions is anticipated to require decades. Due to permanent shifts in nutrient cycles, topsoil conditions (including cryptobiotic soil crusts), and site hydrology, not all

areas previously composed of sagebrush-dominant communities may be restored to the pre-project condition (Knick et al. 2003).

In addition to the general types of effects described above, anticipated effects on several key special status species are described in further detail below.

Lahontan Cutthroat Trout

The GLNP is not expected to result in impacts on Lahontan cutthroat trout for several reasons. First, there is no occupied stream or lake habitat within or downstream of the analysis area. As discussed in the affected environment section, the analysis area includes historically occupied stream habitat in the Reese River in Lander County and potentially suitable, but currently unoccupied, habitat in the Walker River in Lyon County. Downstream of both areas is considered to be historical habitat (USFWS 2023). The nearest occupied habitat is over 2 miles away from, and upstream of, the analysis area in Edwards Creek in the Desatoya Range in Churchill County.

Further, construction, O&M, and decommissioning activities would avoid riparian areas and wetlands, including in the Walker River and Reese River corridors, with a 300-foot riparian buffer (EMMs BIO-27 and BIO-29 in Appendix D). If construction activities resulting in ground disturbance within the 300-foot buffer from the riparian vegetation cannot be avoided at these locations, coordination with the BLM, USFWS, and NDOW would be required before ground disturbance could commence. Impacts on riparian vegetation would be avoided or minimized to the greatest extent practical. Vehicles and equipment would remain on existing access roads and project roads (EMM BIO-12 in Appendix D). Transmission towers and structures would be constructed in uplands with power line wires spanning aquatic and riparian habitats (EMM CON-15 in Appendix D).

Construction of the GLNP could result in impacts on potentially suitable, but currently unoccupied, and historical Lahontan cutthroat trout habitat due to the potential for water quality effects, including in the Reese River and Walker River. Vegetation removal within the temporary and permanent ROWs and where existing access roads require improvement along the potentially suitable, but currently unoccupied, streams may slightly reduce shade and cover and reduce forage and cover for terrestrial invertebrate food sources. Riparian vegetation removal within 300 feet of these watercourses is not anticipated. The Proponent would implement numerous water quality and vegetation EMMs that would reduce the potential for these effects (for example, EMMs BIO-20, BIO-27, and BIO-29 in Appendix D).

Construction of the towers, grading of access roads and work areas, and vehicle use during construction would result in soil disturbance and overland movement, which could result in sediment entering streams during stormwater runoff events and high winds. The potential for soil erosion would be minimized through implementation of GLNP EMMs that require construction activities to cease during high wind conditions exceeding 50 miles per hour (EMM BIO-44 in Appendix D); also, staging and construction would occur at least 300 feet from riparian areas and wetlands (EMMs BIO-27 and BIO-29 in Appendix D), and stormwater management measures would be implemented (EMM WATER-1 in Appendix D). Impacts on wetland and riparian vegetation would be avoided or minimized to the greatest extent practical.

Direct effects on Lahontan cutthroat trout from O&M and decommissioning activities are not anticipated; this is because, similar to construction, there would be no O&M or decommissioning activities occurring directly within the trout's occupied habitat. The potential for effects on potentially suitable, but currently unoccupied, and historical habitat would be similar to those described above but reduced in intensity given the reduced amount of surface disturbance required for O&M and decommissioning versus construction. Further, the same EMMs would apply during O&M and decommissioning activities that would reduce the potential for effects on water quality.

With inclusion of the proposed EMMs, the construction, O&M, and decommissioning impacts on Lahontan cutthroat trout would be negligible. The USFWS has concurred that GLNP construction and O&M may affect, but are not likely to adversely affect, Lahontan cutthroat trout (USFWS File No. 2025-0020510; USFWS 2024).

Western Yellow-billed Cuckoo

Breeding impacts on the western yellow-billed cuckoo are not anticipated to occur. This is because the species is not known or expected to breed in riparian habitat areas within the analysis area. The species may be seasonally present in riparian areas, particularly in the Walker River corridor, and use this area for movement, foraging, or resting. To avoid impacts on individuals, a timing restriction would be in place to prevent construction, O&M, and decommissioning activities within 0.38 miles of the Walker River between May and September, when the species may be seasonally present (USFWS 2024). Instead, when proposed in proximity to the Walker River, these activities would occur between October and April, when the species would not be present in the region.

Incidental occurrence of western yellow-billed cuckoos throughout the GLNP analysis area during migration and dispersal cannot be ruled out, though any occurrence of these birds within the analysis area would be brief and infrequent. Construction noise, vehicle activity, and human presence during construction, O&M, and decommissioning may change these birds' behavior, including diverting flight and perching away from the construction activities. Riparian areas and wetlands in the Walker River corridor (as well as elsewhere in the analysis area) would be avoided with a 300-foot buffer year-round (EMMs BIO-27 and BIO-29 in Appendix D). This buffer would minimize the potential for incidental disturbance to western yellow-billed cuckoos, should they be present during migration or dispersal. It would also avoid impacts on riparian movement and foraging habitat. If construction activities resulting in ground disturbance within the 300-foot buffer from the riparian vegetation at the Walker River cannot be avoided, coordination with the BLM, USFWS, and NDOW would be required before ground disturbance could commence.

Adding deflectors, line markers, and other APLIC-suggested measures on transmission lines and guy wires within 1,000 feet on either side of the Walker River, Mason Valley WMA, Reese River, and other important riparian habitat areas (EMM BIO-28 in Appendix D) would reduce the potential for western yellow-billed cuckoos to collide with these structures, particularly in the Walker River and Mason Valley WMA areas, where this species would have the greatest potential to occur in the analysis area.

Aerial and ground inspections of the transmission lines could occur at any time during the year, including times during the western yellow-billed cuckoo breeding season. These inspections would be brief (minutes), infrequent, and unlikely to result in impacts; this is because western yellow-billed cuckoos are not expected to breed in the analysis area. Any removal of incompatible vegetation and other maintenance activities, which are longer in duration and create higher-than-ambient noise levels, would be conducted outside the western yellow-billed cuckoo breeding season within 0.38 miles of the Walker River (USFWS 2024).

With inclusion of the proposed EMMs, construction, O&M, and decommissioning impacts on western yellow-billed cuckoo, including its migration and dispersal habitat, would be negligible. The USFWS has concurred that GLNP construction and O&M may affect, but are not likely to adversely affect, western yellow-billed cuckoo (USFWS File No. 2025-0020510; USFWS 2024).

Greater Sage-Grouse

Similar to the impacts described under Section 3.5, Fish and Wildlife, potential impacts on the greater sage-grouse associated with the geotechnical investigations, construction, O&M, and decommissioning of the GLNP would include habitat loss, degradation, and fragmentation, as well as noise and visual disturbances. Implementing the greater sage-grouse EMMs in Appendix D, as well as other measures, would serve to avoid or minimize impacts, as described in further detail below.

Vegetation clearing associated with geotechnical investigations and construction would remove or modify greater sage-grouse habitat. In general, incorporating the greater sage-grouse EMMs in Appendix D would minimize impacts on greater sage-grouse from habitat modification. For example, applying the applicable required design features listed in Appendix C of the 2015 ARMPA (EMM GRSG-1) would mean that the construction footprint would be minimized to the greatest extent practical, including by minimizing removal and fragmentation of undisturbed habitats. Further, geotechnical investigation sites would be restored after activities are complete. Also, greater sage-grouse could be injured or killed from collisions with vehicles throughout the construction phase or from collisions with fences around transmission and distribution infrastructure. Implementing EMM GRSG-1 would include designing roads and fencing to minimize such impacts, and posting speed limits to reduce the risk of collision.

Disturbed and altered greater sage-grouse habitat are likely to exhibit reduced resilience and overall habitat value to greater sage-grouse (Knick et al. 2003; Miller et al. 2011). Walker et al. (2007) found that sage-grouse in the Powder River Basin experienced declines in lek attendance and persistence due to habitat fragmentation and infrastructure associated with coal-bed natural gas development. Similarly, transmission infrastructure could fragment important sagebrush habitat and disrupt vital behaviors, such as lekking, which could result in lower male attendance at leks and reduced breeding success. Implementing EMM GRSG-1 would include collocating the GLNP with existing infrastructure, to the extent practical, to minimize this type of impact.

Impacts that cause loss of sagebrush canopy or nest failure can occur within approximately 0.04 miles (62 meters) of leks, while some impacts, including habitat degradation and displacement, can extend up to 11.8 miles from leks (Naugle et al. 2011, as cited in Manier et al. 2014). Additionally, sage-grouse populations have been shown to decline when wells or other energy infrastructure are located within 2.5 miles of leks, and these trends worsen when high densities

of infrastructure occur within key distances of leks (Johnson et al. 2011, as cited in Manier et al. 2014).

Electrical transmission infrastructure can also affect greater sage-grouse and their habitat. Site-specific mortality can occur due to collisions, as with other avian species. Applying the greater sage-grouse EMMs in Appendix D (see GRSG-9 and GRSG-10) would include designing transmission infrastructure according to best practices to avoid avian collision with and electrocution from electrical facilities. Also, effects of elevated structures in habitat can include avoidance of habitat near lines (Doherty et al. 2016) and lower reproduction rates due to increased predation (Ellis 1984; Bui et al. 2010).

The extent to which electrical transmission infrastructure can negatively influence greater sage-grouse is contingent on local raven abundance and behavior. Gibson et al. (2018) found that effects of power lines can extend up to 7.6 miles from the structure. Greater sage-grouse eggs in nests farther from the transmission line had higher probabilities of hatching relative to eggs in nests located closer to the transmission line during years of average or above-average common raven abundance. Greater sage-grouse leks showed a similar trend relative to distance from the transmission line. The raven management plan (Appendix H) outlines numerous requirements to discourage raven attraction to the project area to lessen the intensity of this impact.

Areas of temporary ground disturbance would be restored following the completion of construction activity. Due to the slow growth and regeneration rates of sagebrush communities, regeneration of pre-disturbance vegetation conditions is anticipated to require decades. Not all areas previously composed of sagebrush-dominant communities may be restored due to permanent shifts in nutrient cycles, topsoil conditions (including cryptobiotic soil crusts), and site hydrology (Knick et al. 2003). Although these areas would become available for use by this species once restoration is complete, greater sage-grouse have been documented to avoid areas of habitat where tall structures provide perching opportunities to avian predators; therefore, areas that are successfully restored within the vicinity of the transmission line may not provide the same or similar value as pre-project conditions (Gibson et al. 2018), including for nesting and brood rearing.

Impacts on individual greater sage-grouse from disturbance associated with noise, nighttime lighting, and human activity, including waste, food items, and transported water resources for construction activities, would extend farther than the actual disturbance footprint and may extend to lands outside the GLNP temporary ROW area. EMM GRSG-3 (see Appendix D) would require that geotechnical investigations and construction, O&M, and decommissioning activities within 3 miles of active or pending active leks would be limited to noise levels less than 10 decibels above ambient levels during sensitive hours during the lekking season. This EMM would help to avoid disturbance effects from noise at these locations, including the potential for lek abandonment due to noise disturbances.

Noise generated by the electrical transmission infrastructure—for example, corona discharge—is not expected to exceed 10 decibels over ambient conditions. Corona discharge noise levels in a 400 kV transmission line were measured to range from 32 A-weighted decibels (dBA) in fine weather to 57 dBA in poor weather, approximately 50 feet from the source (Engel and Wszolek 1995). This range of corona discharge noise is comparable to what would be expected

for the GLNP. As explained in detail in the GLNP final biological assessment (BLM 2024), the BLM assumes that the project area would have a generalized background, or ambient, sound level of approximately 50 dBA. As shown in Table 2-3, the lowest height of the transmission towers proposed for the GLNP would be 100 feet, with minimum ground clearance for conductors of 35 feet. This means that greater sage-grouse on the ground surface directly under the proposed transmission line could be exposed to noise levels up to approximately 57 dBA from corona discharge, assuming relatively low conductor-to-ground height and poor weather. Where conductors were higher from the ground, the noise exposure level would be lower than 57 dBA, even in poor weather. In fine weather, the noise exposure level would generally be lower than ambient noise levels in most of the project area, even when conductors were the minimum 35 feet above ground level.

Blickley et al. (2012) found that chronic anthropogenic noise significantly reduced both male and female sage-grouse attendance at leks, disrupting reproductive behaviors and negatively impacting population dynamics. Their study also revealed that exposure to chronic industrial noise elevated stress hormones in male sage-grouse, indicating chronic stress. This stress response may further impair the health and reproductive success of sage-grouse, underscoring the multiple negative effects of noise pollution on these populations (Patricelli et al. 2013). Additionally, noise interferes with the transmission and detection of male sage-grouse mating displays, reducing females' ability to accurately assess male fitness, potentially disrupting mating success and affecting long-term reproductive dynamics (Blickley and Patricelli 2012).

In addition to the direct effects of construction-related disturbances, the presence of anthropogenic resources could also attract predators to the area, such as ravens, resulting in increased predation on greater sage-grouse (O'Neil et al. 2018). Ravens, particularly at higher densities, are known to prey on greater sage-grouse nests (Coates et al. 2008). In areas with high raven populations, this predation pressure can significantly reduce chick survival and overall reproductive success. Research indicates that, at certain raven population densities, this predation can have measurable effects on greater sage-grouse populations, especially in habitats overlapping nesting areas.

The proposed project would introduce additional impacts on greater sage-grouse populations and leks, compounding existing pressures such as habitat loss, degradation, and fragmentation. These impacts could lead to lek abandonment and eventual inactivity of leks due to increased disturbance, including noise, visual disruptions, and habitat fragmentation, from geotechnical investigations and construction, O&M, and decommissioning activities. The project's alignment could also hinder connectivity between northern and southern sage-grouse populations in Nevada, reducing genetic diversity and limiting the species' resilience to environmental changes.

Kohl et al. (2019) and Lebeau et al. (2019) demonstrated that electric power lines negatively influence sage-grouse breeding ecology, with documented reductions in lek attendance and nesting success. The presence of power lines increased predator activity and created barriers to movement, further compounding impacts on sage-grouse populations. The probability of extirpation for lek clusters and individual leks in the GLNP vicinity based on the analysis of observed trends is discussed in Section 3.6.3, Affected Environment, under *Leks*. As discussed there, most lek clusters and leks within 4 miles of the GLNP have a steady or increasing probability of extirpation between 18.4 and 55.2 years in the future (Prochazka et al. 2024).

Increased predator activity, in combination with movement barriers created by a transmission line, could contribute to the probability of lek and lek cluster extirpation within the GLNP vicinity. It is reasonable to assume that this trend would be more pronounced for leks that are closer to the GLNP than it would be for leks that are further from the GLNP. However, the BLM cannot predict with certainty which leks would be affected in this manner.

Additionally, research has shown an increase of predator densities near power lines and other infrastructure (Dinkins 2013). Greater sage-grouse habitats that are still occupied are located twice as far from electric transmission lines compared with areas where the species has been extirpated, suggesting that proximity to power lines is linked to habitat abandonment (Wisdom et al. 2011; Knick et al. 2013). Dinkins et al. (2014) found that sage-grouse select habitats based on predator avoidance and food availability, preferring areas with lower densities of infrastructure like power lines and roads. These habitat preferences could be disrupted by the introduction of new infrastructure, leading to increased predation risks and reduced reproductive success.

The raven management plan (Appendix H) outlines numerous requirements to discourage raven attraction and nesting to lessen the intensity of this impact. To minimize the potential for increased predation from increased avian predator perch opportunities on proposed transmission infrastructure, within approximately 5 miles of greater sage-grouse PHMAs, GHMAs, and OHMAs, which would include the leks analyzed in this Final EIS/Proposed RMPA, transmission lines would be constructed using H-frame towers with anti-perch designs and nesting deterrents rather than lattice tower designs. This would reduce the potential for predator perching and nesting (see EMMs BIO-25 and GRSG-5 in Appendix D). The areas where H-frame tower designs would be installed are shown on Figure 3-14, Required Areas for Anti-perch Tower Designs and Nesting Deterrents, in Appendix A. Incorporating these measures would greatly reduce, but not completely avoid, impacts from raven predation on greater sage-grouse as a result of the GLNP.

As a result, these increased predator pressures, coupled with disturbances from human activities, could lead to both physiological and behavioral changes in greater sage-grouse, including avoidance of affected areas. These impacts may persist throughout the project's construction, O&M, and decommissioning phases, further exacerbating the potential effects on greater sage-grouse populations.

The construction and operation of the transmission line would also increase the potential for the introduction and spread of cheatgrass within the GLNP vicinity. Ground disturbance from tower construction, access road development, and vegetation removal would create conditions conducive to cheatgrass establishment. This invasive annual grass thrives in disturbed soils and quickly outcompetes native vegetation, leading to a reduction in habitat quality for sage-grouse. Cheatgrass invasion alters fire regimes by increasing fuel continuity and flammability, resulting in more frequent and intense wildfires. These altered fire cycles threaten the persistence of sagebrush ecosystems, which are slow to recover following fire and are critical for sage-grouse breeding, nesting, and brood rearing.

Wildland fire was the largest driver of sagebrush habitat loss in the Great Basin region in the 5-year period following the 2015 ARMPA implementation (Herren et al. 2021), with sagebrush

loss occurring primarily on BLM-administered lands. Parts of the GLNP analysis area have experienced sagebrush habitat loss and degradation from annual invasive species, including cheatgrass and others (see Section 3.4, Vegetation Communities and Resources). Invasive plants, including cheatgrass, alter plant community structure and composition, productivity, nutrient cycling, and hydrology and may competitively exclude native plant populations. The presence of invasive annual grasses can also change wildfire cycles, creating a positive feedback loop between wildfire frequency and invasive annual grass persistence, precluding reestablishment of sagebrush and reducing or eliminating the vegetation that greater sage-grouse use for food and cover (Manier et al. 2013; Hanser et al. 2018).

Warming trends as part of climate change may further exacerbate this cycle, preventing natural recovery in those areas and requiring active management approaches (Hanser et al. 2018; Pyke 2011). While wildfire is a primary factor facilitating annual grass invasion, annual grasses are also able to invade landscapes that have not been burned for decades (Smith et al. 2023). An analysis of cheatgrass presence near anthropogenic disturbances found that such disturbances, including transmission lines, increased the chances of cheatgrass expansion nearby (Bradley and Mustard 2006).

The Proponent would implement a fire management plan (see EMM PHS-1 in Appendix D) to provide best management practices to minimize the potential for wildfire ignition from construction and operation of electrical transmission projects. More detailed analysis on the potential for fire ignition is included in Appendix E, Issues with No Significant Impacts (see Section E.4, Wildland Fire Ecology and Management). Incorporating the measures in the fire management plan would reduce the potential for fire ignition; in the case of accidental ignition, the fire management plan would include measures to limit the size of the resulting fire and subsequent effects on greater sage-grouse habitat, including from nonnative, invasive annual grass spread.

The acres of greater sage-grouse seasonal habitat areas (Coates et al. 2024) and habitat management areas (as defined by the BLM's 2015 ARMPA, as maintained, and the Forest Service's 2015 Greater Sage-grouse ROD) that would be within the permanent and temporary ROWs would differ by alternative, as discussed under the analyses for each alternative below. Exempting the BLM utility corridor from seasonal restrictions in winter habitats (November 1 to February 28 [BLM 2015a, MD SSS-3]; see Section 2.4, Plan Amendments) would mean that geotechnical investigations and construction, O&M, and decommissioning activities would likely be carried out in greater sage-grouse winter habitat areas during the winter, while greater sage-grouse are using these areas for critical shelter and food needs. As a result, greater sage-grouse individuals would be exposed to increase noise, human presence, and other disturbance factors during the winter period. This would cause displacement from such areas, inhibiting the ability of individuals to shelter and obtain sufficient food during harsh winter weather conditions. As a result, some individuals would likely experience increased stress, reduced fitness, greater exposure to predation, and increased injury or mortality as a result of one or more of these factors. The amount of winter habitat that would be affected in this manner would vary by alternative, as analyzed under each alternative below.

Under Appendix E in the BLM's 2015 ARMPA and the Forest Service's 2015 Greater Sage-grouse ROD GEN-ST-004-Standard, the agencies impose restrictions on discretionary

authorizations in greater sage-grouse PHMAs where anthropogenic disturbance levels are above certain thresholds at the BSU level and the project level. The BLM has calculated that existing anthropogenic disturbance levels in PHMAs are approximately 0.58 percent in the Butte/Buck/White Pine BSU, 0.73 percent in the Central Great Basin BSU, and 0.37 percent in the Smith/Reese BSU. With the addition of the GLNP, anthropogenic disturbance levels in PHMAs in these BSUs would be approximately 0.73 percent, 1.16 percent, and 0.48 percent, respectively; these levels are below the 3 percent cap in each BSU.

The BLM has calculated that existing anthropogenic disturbance levels in PHMAs at the project scale are approximately 1.00 percent. With the addition of the GLNP, anthropogenic disturbance levels in PHMAs at the project scale would be approximately 2.70 percent, which is below the 3 percent cap. The BLM performed anthropogenic disturbance calculations for all landownerships at the BSU and project scales, meaning these calculations would apply to both the BLM's and Forest Service's disturbance cap requirements under each agencies' greater sage-grouse plan amendment.

According to MD SSS 2.A.4 in the BLM's 2015 ARMPA (BLM 2015a) and GRSG-GEN-ST-004-Standard in the Forest Service's 2015 Greater Sage-grouse ROD (Forest Service 2015), there is also an exception to the 3 percent anthropogenic disturbance cap at the project scale for projects in designated utility corridors that fulfill the use for which the utility corridor is designated (for example, transmission lines) and that result in a net conservation gain to greater sage-grouse. As stated above, GLNP's implementation would not be expected to increase the amount of anthropogenic disturbance in PHMAs over the 3 percent cap at either the BSU or project level. Nonetheless, under all action alternatives, since the proposed GLNP amendment (Section 2.4) would designate a utility corridor in which the GLNP would be sited, the 3 percent project-scale anthropogenic disturbance cap would not apply to the GLNP on BLM-administered lands.

As outlined in Section 1.5.1, impacts that result in habitat loss and degradation that remain after avoidance and minimization measures are applied would require compensatory mitigation to provide a net conservation gain to greater sage-grouse through the Nevada Conservation Credit System (BLM 2015a). Coordination to determine the amount of compensatory mitigation that the GLNP would implement is described below in further detail in this section.

In MD SSS 2.D of the 2015 ARMPA (also see 2015 ARMPA Appendix B), the BLM established the following avoidance distances to leks: "The BLM will apply the lek buffer-distances specified as the lower end of the interpreted range in the USGS Report, Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review Open File Report 2014-1239" unless justifiable departures are determined to be appropriate (see below). The lower end of the interpreted range of the lek buffer distances is as follows:

- Linear features (roads) within 3.1 miles of leks
- Infrastructure related to energy development within 3.1 miles of leks
- Tall structures (such as communication or transmission towers and transmission lines) within 2 miles of leks
- Low structures (such as fences and rangeland structures) within 1.2 miles of leks

- Surface disturbance (continuing human activities that alter or remove the natural vegetation) within 3.1 miles of leks
- Noise and related disruptive activities, including those that do not result in habitat loss (such as motorized recreational events), at least 0.25 miles from leks

As outlined in Appendix B of the BLM's 2015 ARMPA, justifiable departures from the lek buffer distances above may be appropriate for determining activity impacts, based on local data, best available science, landscape features, and other existing protections (for example, land use allocations and state regulations). The 2014 USGS report "recognize[s] that because of variation in populations, habitats, development patterns, social context, and other factors, for a particular disturbance type, there is no single distance that is an appropriate buffer for all populations and habitats across the sage-grouse range." The USGS report also states that "various protection measures have been developed and implemented… [that have] the ability (alone or in concert with others) to protect important habitats, sustain populations, and support multiple-use demands for public lands." All variations in lek buffer distances require appropriate analysis and disclosure as part of activity authorization. Analysis and disclosure of proposed justifiable departures are included in the sections below.

In Attachment B of the Forest Service's Greater Sage-grouse ROD (Forest Service 2015), the Forest Service established lek buffers that would be applied to occupied leks, including those with NDOW active and pending active lek status. Guideline GRSG-GEN-GL-010 recommends avoiding tall structure placement within 3 miles of occupied leks, as determined by local conditions (such as vegetation or topography).

Based on a GIS review, as of 2024 there are 59 leks of various status within 4 miles of all action alternatives for the GLNP. Certain segments of the GLNP alignment on BLM-administered lands would be within the BLM's 2015 ARMPA 3.1-mile avoidance buffer for roads and surface disturbance and the 2-mile avoidance buffer for transmission lines. Further, certain segments of the GLNP alignment on National Forest System lands would not meet the Forest Service's 2015 Greater Sage-grouse ROD 3-mile recommended avoidance buffer for tall structures. The number of leks would differ by action alternative.

Of these leks, the BLM and Forest Service have identified pending active and active leks that have landscape features that would allow for projects to be placed within the avoidance buffer and pending active and active leks that do not have landscape features between the GLNP and the lek(s); these would also differ by action alternative. For all action alternatives, the BLM would be unable to satisfy the avoidance buffer objectives and planning decision in the 2015 ARMPA for pending active and active leks—the precise number of which would vary by action alternative, as disclosed in the analyses by action alternative below. Accordingly, as disclosed in Section 2.4, the BLM would exempt the proposed BLM utility corridor from the lek avoidance buffers described in Appendix B (BLM 2015a, MD SSS 3).

Further, standard GRSG-RT-ST-080 requires no road construction or maintenance within 2 miles of active leks during lekking (March 1 to May 15) between 6:00 p.m. and 9:00 a.m. Certain proposed road segments of the GLNP on National Forest System lands would be within 2 miles of leks. To comply with this standard, EMM GRSG-26 (Appendix D) would require that road

construction and maintenance within 2 miles of occupied leks during lekking season occur between the hours of 9:00 a.m. and 6:00 p.m. to avoid disturbance to lekking greater sage-grouse.

As summarized in the affected environment, the probability of future (within approximately 18 to 55 years in the future) lek and lek cluster abandonment is steady to increasing for leks and lek clusters in the GLNP analysis area (Prochazka et al. 2024; see Figure 3-9, Probability of Extirpation for Greater Sage-Grouse Lek Clusters). Additionally, Prochazka et al. (2024) found that the probability of lek and lek cluster abandonment is higher at the edge of the species' range. Because the GLNP would satisfy neither the avoidance buffer objectives and planning decision in the 2015 ARMPA nor the Forest Service 2015 Greater Sage-grouse ROD guideline for recommended avoidance buffers for tall structures for pending active and active leks (the precise number of which would vary by action alternative), the GLNP may contribute to ongoing trends in lek and lek cluster abandonment, particularly for those leks and lek clusters found to have a relatively high probability of extirpation in the absence of the GLNP. The potential for this would be reduced, but not completely avoided, by following EMMs GRSG-1 through GRSG-26 in Appendix D to reduce project-related disturbance and the measures to minimize increased predation in the raven management plan (Appendix H).

According to Table J-1 and Table J-2 in Appendix J of the BLM's 2015 ARMPA, the adaptive management response for hitting hard triggers in PHMAs and GHMAs on BLM-administered lands, respectively, would change major ROW allocations (that is, for high-voltage transmission lines greater than 100 kV) outside existing utility corridors, from avoidance to exclusion, within the affected BSU. As described in Section 1.5.1, approximately 155 miles of the 235-mile GLNP would occur within current hard trigger (exclusion) areas (Figure 1-2, Land Use Plan Conformance). Under the Adaptive Management Plan in the 2015 ARMPA (Appendix J), these areas are exclusion for high-voltage transmission lines greater than 100 kV outside of a utility corridor (BLM 2015a, MD SSS 20). As detailed in Section 2.4, designating a BLM utility corridor would exempt the GLNP from the soft and hard trigger requirements incorporated into the land use plans, as amended by the 2015 ARMPA.

The Forest Service's Greater Sage-grouse ROD (Forest Service 2015) describes the approach to implement adaptive management standards (that is, soft and hard triggers) for greater sage-grouse habitats and populations on National Forest System lands in Nevada, per GRSG-AM-ST-011-Standard and GRSG-AM-ST-012-Standard. Triggers are based on the two key metrics monitored by the Forest Service: habitat loss and population decline. Nevada population and habitat soft and hard triggers are outlined in the ROD's Appendix C (Forest Service 2015, pp. 256–258). Population triggers are calculated by rates of population change at individual lek, lek cluster, and BSU scales, while habitat triggers are calculated using habitat disturbance and sagebrush cover decline at the lek, lek cluster, and BSU scales. Soft and hard trigger responses in PHMAs and GHMAs are also summarized in the ROD's Appendix C (Forest Service 2015, pp. 262–264). If adaptive management responses have been triggered, GHMAs and PHMAs become exclusion areas for high-voltage (greater than 100 kV) transmission lines that are outside designated utility corridors and ROW avoidance areas within existing corridors (Forest Service 2015, Appendix C, Tables 1 and 2, pp. 262–264).

As described in Section 1.5, the USGS compiles a population trend analysis (the TAWS) for the greater sage-grouse in the western US (USGS 2024), which identifies watches and warnings associated with soft and hard triggers, respectively (Prochazka et al. 2024). Based on a review of the TAWS data, the greater sage-grouse GHMAs and PHMAs within the proposed GLNP alignment have hit soft and hard triggers over multiple years (Figure 1-2, Land Use Plan Conformance, and Figure 3-7, Range-wide Population Trend Analysis for Greater Sage-grouse (All Action Alternatives, 1960–2023), in Appendix A). Per Tables 1 and 2 in Appendix C (Forest Service 2015), hard triggers change GHMAs and PHMAs to exclusion areas for high-voltage transmission lines outside existing utility corridors; within existing utility corridors, the land use allocation changes to ROW avoidance.

Under all action alternatives, the GLNP would cross through GHMAs and PHMAs on National Forest System lands, though the route through this area would vary by alternative. Compliance with forest plan standards (for example, GRSG-AM-ST-011-Standard, GRSG-AM-ST-012-Standard, and GRSG-LR-SUA-014-Standard; Forest Service 2015) for greater sage-grouse non-recreation special use authorizations and adaptive management are included in the analysis for each alternative below.

The State of Nevada manages the greater sage-grouse mitigation program as directed by the NRS. The project would comply with Nevada Administrative Code 232.400–232.480, which requires coordination with the Sagebrush Ecosystem Technical Team on the application of a compensatory mitigation program, such as the Nevada Conservation Credit System, for mitigating activities that result in greater sage-grouse habitat loss and degradation in Nevada. The mitigation program would determine the number of credits needed to compensate for anticipated debits, or the residual impacts on greater sage-grouse and greater sage-grouse habitat that would not otherwise be avoided or minimized. Under the Nevada Conservation Credit System, the application of compensatory mitigation would occur on, or the credit would be applied to, disturbance on BLM-administered lands and National Forest System lands.

The Sagebrush Ecosystem Technical Team is determining the number of credits and debits that would be generated by the GLNP, and this information would be disclosed in the RODs and BLM Approved RMPA. Compensatory mitigation under the Nevada Conservation Credit System would be funded by the Proponent and could include, but would not be limited to, habitat restoration efforts, threat mitigation through wildfire fuels-reduction projects, and acquisition of conservation easements in valuable greater sage-grouse habitat areas.

While compensatory mitigation projects under the Nevada Conservation Credit System aim to offset greater sage-grouse habitat losses elsewhere, they may not fully mitigate the localized impacts on habitat quality, lek stability, or population dynamics.

While all action alternatives of the GLNP would result in impacts on the greater sage-grouse and its habitat in the ways described above, it would not result in a trend toward federal listing of greater sage-grouse under the ESA or loss of viability of greater sage-grouse populations. As a result, the project would not conflict with the purpose or objectives of BLM Manual 6840 – Special Status Species Management.

Pinyon Jay

Construction, O&M, and decommissioning activities under all action alternatives could result in impacts on pinyon jays and their habitat. This is because pinyon jay suitable habitat is relatively widespread in the analysis area for all action alternatives. Loss of pinyon-juniper woodlands could occur primarily during project construction; only minimal, if any, woodland removal would occur during O&M and decommissioning. This could result in the loss or fragmentation of nesting and foraging habitat. Pinyon jays depend heavily on pinyon pine seeds for food, and construction activities that damage or remove pinyon pines reduce the availability of this crucial food source.

In addition to habitat loss and fragmentation, disturbance caused by noise and human presence during construction, O&M, and decommissioning can disrupt pinyon jays, particularly during their breeding season. Such disturbances could lead to nest abandonment or reduced reproductive success. Additionally, the presence of construction equipment and workers can alter the foraging behavior, potentially forcing them to expend more energy to find food or causing them to forage in less optimal areas. Research indicates that pinyon jays use distinct habitat types for key activities such as nesting, foraging, and seed caching, which are concentrated within the lower-elevation band of pinyon-juniper woodlands near the woodland-shrubland ecotone. Woodland removal projects often overlap these areas, further amplifying potential impacts on pinyon jays (Boone et al. 2021).

To minimize the potential for these effects, construction, O&M, and decommissioning activities would adhere to spatial and temporal restrictions in proximity to pinyon jay nest colonies. Nest colonies would be identified during preconstruction breeding-bird surveys (this would also include O&M and decommissioning activities; see EMM BIO-47 in Appendix D and the bird and bat conservation strategy in Appendix I). Project activities would avoid nest colonies by a 0.7-mile buffer during the breeding season (February 15 to May 31) to minimize disturbances during nesting periods.

Another concern is the increased predation risk and negative effects on behavior and fitness associated with habitat edges created by habitat fragmentation. These edges can attract predators, increasing the risk of predation for pinyon jays and their nests. Furthermore, construction sites can attract human-associated predators such as ravens or coyotes, which could increase predation pressure on pinyon jays. Increased predation pressure would alter pinyon jay behavior and likely lead to decreased fitness. To minimize this potential, the Proponent would properly dispose of all trash (EMM HAZMAT-10 in Appendix D). To minimize the potential for increased predation from increased avian predator perch opportunities on proposed transmission infrastructure, within approximately 5 miles of suitable pinyon jay habitat, transmission lines would be constructed using H-frame tower designs with perching and nesting deterrents rather than lattice tower designs, which would reduce the potential for predator perching and nesting (see EMMs BIO-25 and GRSG-5 in Appendix D). Also, other measures to discourage predator attraction would be followed, as outlined in the raven management plan (Appendix H).

The acres of pinyon jay habitat areas that would be within the permanent and temporary ROWs would differ by alternative, as discussed under the analyses for each alternative below.

Under all action alternatives, the GLNP would result in impacts on pinyon jay populations; these impacts would be reduced by adhering to EMMs (Appendix D) and measures in the project raven management plan (Appendix H) and bird and bat conservation strategy (Appendix I). As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability.

Pygmy Rabbit

Under all action alternatives, construction, O&M, and decommissioning activities could result in impacts on pygmy rabbits and their habitat. Loss of suitable sagebrush habitat could occur during construction, O&M, and decommissioning. Ground disturbance could remove or damage burrows. Disturbance caused by noise and human presence could disrupt normal behaviors, such as foraging, leading to reduced fitness. Even where habitat is not directly lost, the spread of nonnative, invasive plant species by project vehicles and equipment could reduce habitat suitability.

To minimize the potential for these effects, construction, O&M, and decommissioning activities would adhere to spatial restrictions in proximity to active pygmy rabbit burrows and burrow complexes identified during surveys carried out in summer 2024. Project activities would avoid burrows by a 400-foot buffer, where feasible. A qualified biological monitor would monitor vegetation removal, surface disturbance, and equipment movement in these areas to minimize burrow damage (see EMM BIO-49). In all cases, including where avoidance of burrows by 400 feet is not feasible, project EMMs would minimize the amount of ground disturbance and vegetation removal (for example, EMM VIS-5 in Appendix D) and the potential for nonnative, invasive plant establishment and spread (for example, EMM BIO-15 in Appendix D). These EMMs would help to minimize effects on pygmy rabbits and their habitat.

To minimize the potential for increased predation from increased avian predator perch opportunities on proposed transmission infrastructure, only H-frame transmission line structures would be used within greater sage-grouse habitat and within approximately 5 miles of greater sage-grouse habitat, to minimize predation effects (see EMMs BIO-25 and GRSG-5 in Appendix D). While this measure would primarily be for the protection of greater sage-grouse, since pygmy rabbit habitat co-occurs widely with greater sage-grouse habitat in the analysis area, incidental predation protections would extend to pygmy rabbits.

Construction sites can attract human-associated predators such as ravens or coyotes, which may increase the predation pressure on pygmy rabbits. To minimize the potential for this, the raven management plan (Appendix H) and EMMs to properly dispose of trash (EMM HAZMAT-10 in Appendix D) would be implemented.

The acres of pygmy rabbit habitat areas that would be within the permanent and temporary ROWs would differ by alternative, as discussed under the analyses for each alternative below.

Under all action alternatives, the GLNP would result in impacts on pygmy rabbits; these impacts would be reduced by adhering to EMMs (Appendix D) and measures in the project raven management plan (Appendix H). As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability.

Golden Eagles and Other Raptors

Potential impacts on eagles and raptors associated with the construction and operation of the GLNP would include habitat loss, degradation, and fragmentation, as well as visual disturbances that could lead to nest abandonment, if severe enough. To minimize the potential for these impacts, the Proponent would implement several eagle-focused EMMs (see Appendix K) to minimize these effects; these are described below. Nest removal is not proposed under any alternative.

The Proponent would adhere to a project-specific eagle conservation plan (Appendix K) and bird and bat conservation strategy (Appendix I). These documents would provide protocols for minimizing electrocution and collision events and managing nests, including the protection of nests during construction, O&M, and decommissioning activities.

Clearing trees and vegetation for transmission lines can lead to habitat loss for eagles and raptors. EMMs like EAGLE-1 and EAGLE-2 (Appendix K) are designed to avoid disturbing or removing potential eagle habitats, including nesting and perching sites. By preserving these areas, the project can support the productivity and survival of these species.

Construction activities can cause disruptions during the breeding season, potentially leading to nest abandonment or reduced breeding success. Measures such as EMM EAGLE-1 and EAGLE-2 (Appendix K) minimize disturbances to roosting and perch sites, while EMMs EAGLE-4 and EAGLE-7 (Appendix K) provide guidelines for protecting active nests, including establishing buffer zones around nests during the breeding season to prevent interference with breeding behaviors and monitoring effectiveness.

Eagles and raptors rely on large areas for foraging, and construction, O&M, or decommissioning activities can disrupt these patterns. EMMs EAGLE-4 and EAGLE-7 (Appendix K) emphasize minimizing disturbance to foraging habitats within a 1-mile radius of nesting sites.

Transmission lines pose collision and electrocution risks to large raptors. EMM EAGLE-3 (Appendix K) addresses these risks by requiring the installation of power lines in ways that reduce raptor collisions and retrofitting distribution lines to minimize electrocution risks, following APLIC guidelines.

Effective monitoring and adaptive management are crucial for mitigating impacts. EMMs EAGLE-7, and EAGLE-8 (Appendix K) would require identifying in-use nests before construction and monitoring by qualified biologists to ensure in-use nests are protected from disturbance. Documenting and communicating survey results (EMM EAGLE-9 in Appendix K) with relevant agencies would ensure transparency and adherence to protocols. EMM EAGLE-10 (Appendix K) would ensure adaptive management measures would be identified as needed based on monitoring results.

Increasing construction workers' awareness of eagle and raptor protection measures is essential. EMM EAGLE-6 (Appendix K) would mandate educational programs to raise awareness of potential interactions with eagles, ensuring all personnel understand the importance of adhering to mitigation measures.

The number and type of golden eagle nests within 1 mile and 2 miles of the temporary ROWs would differ by alternative, as discussed under the analyses for each alternative below.

Under all action alternatives, the GLNP would result in impacts on golden eagles; these impacts would be reduced by adhering to EMMs (Appendix D) and measures in the project eagle conservation plan (Appendix K). As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability.

Burrowing Owl

Under all action alternatives, construction, O&M, and decommissioning activities could result in impacts on burrowing owls. Loss of burrows could occur during construction, O&M, and decommissioning where ground disturbance is proposed. Disturbance caused by noise and human presence could disrupt normal behaviors, such as breeding and foraging, leading to reduced reproductive success.

To minimize the potential for these effects, construction, O&M, and decommissioning activities would adhere to spatial and temporal restrictions in proximity to occupied burrows. As described within the bird and bat conservation strategy (Appendix I), within burrowing owl habitat, all identified owl burrows would be inspected to determine the presence or absence of burrowing owls, no more than 14 days prior to planned disturbance. During the breeding season from March 1 to August 31, project activities would avoid occupied burrows by a 0.25-mile buffer. If no burrowing owls are found using a burrow, the qualified personnel could temporarily prevent use of the burrow by blocking its entrance. If the burrow is in an area that will be permanently disturbed, qualified personnel could remove the burrow by collapsing it (see Avian Avoidance – 4, Pre-Disturbance Nest Survey for Burrowing Owls, in Table J-14 of the bird and bat conservation strategy).

The acres of burrowing owl habitat areas that would be within the permanent and temporary ROWs would differ by alternative, as discussed under the analyses for each alternative below.

Under all action alternatives, the GLNP would result in impacts on burrowing owls; these impacts would be reduced by adhering to EMMs (Appendix D) and measures in the project bird and bat conservation plan (Appendix I). As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability.

Monarch Butterfly

Under all action alternatives, construction, O&M, and decommissioning activities could result in impacts on monarch butterflies. Construction could result in removal of native vegetation, including host plants, and pollen or nectar sources. This could directly injure or kill individuals, primarily if host plants containing eggs or larvae were removed or damaged.

Following EMMs BIO-32 and BIO-33 in Appendix D would minimize impacts on monarch butterflies from construction, O&M, and decommissioning. Before ground disturbance, milkweed locations would be surveyed (following special status plant protocols) and protected in place, where feasible. Where milkweed plants must be removed in temporary disturbance areas, milkweed would be re-established during revegetation. Where milkweed would be permanently removed, new populations would be established nearby in suitable areas. A

pollinator-friendly seed mix that has been approved by the appropriate land management agency affected would be used for reclamation.

Under all action alternatives, the GLNP would result in impacts on monarch butterflies; these impacts would be reduced by adhering to EMMs (Appendix D). As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability.

Bighorn Sheep

The acres of lambing habitat, year-round habitat, and movement corridors for bighorn sheep that would be within the permanent and temporary ROWs would not substantially differ by alternative. Regardless of the alternative, implementing EMMs BIO-30 and BIO-31 (see Appendix D) would minimize effects on bighorn sheep from helicopter use, blasting, and other disturbances from construction, O&M, and decommissioning. In particular, helicopter use and blasting would be restricted during lambing periods, while other activities would be restricted in winter range and crucial summer habitat. As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability.

Sensitive Plants

All action alternatives would include preconstruction surveys by qualified botanists for special status plant species with a high potential to occur in the analysis area (Table 3-32). They also would include appropriate spatial avoidance measures for occupied habitat and a suitable buffer around occupied habitat, as determined by the relevant agency authorized officer. Special status plants detected during surveys would be protected in place, where feasible, and the GLNP would be constructed in such a way to minimize impacts from altered drainage patterns and fugitive dust. EMM BIO-34 in Appendix D would be implemented to minimize and avoid the potential for disturbance-related impacts on special status plant species.

In addition to the preconstruction surveys by qualified botanists, a qualified biological monitor would be present during all ground-disturbing and vegetation removal activities (EMMs BIO-7 and BIO-9 in Appendix D); the qualified biological monitor would also survey for special status plants immediately prior to disturbance. If individuals of species protected under Nevada state statutes cannot be protected in place, the Proponent would obtain a permit from the State prior to removal or destruction, as required by law (EMM BIO-37 in Appendix D). Topsoil would be salvaged from special status plant habitat for use during reclamation (EMM BIO-41 in Appendix D).

AECOM, under the direction of the BLM, has completed surveys to document the presence of Monte Neva paintbrush within suitable habitat, which is limited to portions of Eureka County in the GLNP analysis area on BLM-administered land (AECOM 2024e). In summary, approximately 0.07 acres of occupied habitat are present in the GLNP analysis area; 0.06 acres would be in the temporary ROW, while 0.01 acres would be in the permanent ROW under all alternatives. Occupied habitat would be avoided during construction, O&M, and decommissioning activities, as outlined in EMM BIO-50 in Appendix D. If complete avoidance is not possible, the Proponent would obtain a permit to take critically endangered species from the Nevada Division of Forestry, pursuant to Nevada Administrative Code Section 527.270.

After avoiding occupied habitats, to the extent feasible, there would still be the potential for residual effects on special status plant species. Potential effects could include direct removal of plants and seed banks during soil-disturbing activities, crushing of plants by equipment or personnel, decreased plant productivity from the loss of adjacent pollinator habitat or dust deposition from nearby soil-disturbing activities, changes in soil moisture availability for special status plants from altered hydrologic conditions, and an increased potential for nonnative, invasive plant establishment and spread within occupied habitat.

These types of effects would occur if preconstruction surveys for special status plants fail to detect and document all occupied habitat, or if environmental conditions, such as drought, preceding the survey reduce or preclude detectability. To minimize the potential for missed detection, special status plant surveys would follow best practices for maximizing detectability, including conducting surveys when environmental and phenological conditions are favorable for detectability, visiting known reference sites to confirm detectability, and if needed, conducting multiple surveys over multiple seasons.

The potential for residual effects would also be greater for special status plant species that grow in common habitats in the analysis area. For example, potentially suitable habitats for one-leaflet Torrey's milkvetch (sagebrush or pinyon-juniper communities on dry, stony valley or foothill slopes), Nevada suncup (various soils in dry, open places in western Nevada), sagebrush cholla (generally sandy soils in various vegetation communities), and Lahontan beardtongue (washes, roadsides, and canyon floors in western Nevada) are relatively common in the analysis area. In these cases, there would be a greater potential for occupied habitat to go undetected during surveys, especially if surveys were conducted during unfavorable climate conditions.

In contrast, special status plants that are restricted to unique substrates, like alkaline or saline soils of hot spring mounds, permanently or seasonally moist soils, active or semi-stabilized sand dunes, clays derived from volcanic ash or tuff, or carbonate-rock outcroppings, would be easier to detect during surveys and avoid during construction. This is because it would be easier to ensure full inventory of these relatively discrete and unique habitats.

Residual effects could include the same types of effects as described above, such as removal of plants and seed banks, crushing of plants, decreased plant productivity, and an increased potential for nonnative, invasive plant establishment and spread. Depending on the severity of effects and the species affected, these could reduce the distribution and extent of populations or seed banks.

Cacti (including sagebrush cholla) and yucca are protected in Nevada under NRS 527. EMM BIO-45 in Appendix D has been included to address the avoidance, salvage, and transplanting of cacti and yucca on lands administered by federal ROW agencies. The Proponent would salvage any yucca, cacti, or succulent plant species that cannot be avoided. Cacti and yucca in areas of permanent disturbance where vegetation is removed (for example, roads and transmission tower pads) would be salvaged and transplanted. First, the Proponent would identify the plants that require salvage and the season for salvage based on the species. The salvaged plants would then be moved to the nearest recipient site as part of restoration activities. Implementing these measures would minimize impacts on cacti and yucca during the life of the GLNP.

Under the action alternatives, the BLM would designate a utility corridor. This means any new applications for linear ROWs, such as ROWs for fiber optics, met towers, pipelines, and smaller transmission lines, would likely be proposed within the utility corridor. This could increase impacts on special status species within the utility corridor. However, it could also help to decrease impacts outside the utility corridor by collocating new disturbances within previously disturbed areas.

O&M and decommissioning activities could also affect special status plants, in a similar manner to the effects described above, though to a lesser intensity. To minimize or avoid effects during O&M and decommissioning activities, the same EMMs would be implemented (see Appendix D). These would require surveys for and protection measures for special status plants within suitable habitat in the permanent ROW prior to O&M and decommissioning activities. Effects from fugitive dust deposition on populations that would not be directly affected by O&M activities would be minor. This is because O&M activities would be conducted approximately annually; dust deposition on plant surfaces would be localized and short term, and the dust would be removed by environmental conditions (wind and rain) after a relatively short period of time. Special status plants adjacent to areas being reclaimed could be subjected to increased dust deposition for the duration of reclamation; however, this would be a minor, short-term effect, as described above.

Under all action alternatives, the GLNP could result in impacts on individual sensitive plants; these impacts would be reduced by adhering to EMMs (Appendix D). As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability for potentially impacted sensitive plant species.

Direct and Indirect Impacts from the Proposed Action

Under the Proposed Action, there would be approximately 21,029 acres of temporary disturbance and 7,847 acres of permanent disturbance (28,875 acres total of disturbance) of habitat, including for special status species. The types of impacts described under *Direct and Indirect Impacts Common to All Action Alternatives* would occur in these areas. As discussed in the analysis assumptions, vegetation communities in the analysis area are used to represent wildlife habitat for the purposes of this analysis. Table 3-7 in Section 3.4.4 shows the acres of each vegetation community that would be affected under the Proposed Action.

Impacts on key special status species under the Proposed Action would be as described under *Direct and Indirect Impacts Common to All Action Alternatives*, except where analyzed below.

The acres of greater sage-grouse seasonal habitat areas and habitat management areas on BLM-administered and National Forest System lands that would be within the permanent and temporary ROWs under the Proposed Action are summarized in Table 3-36, Table 3-37, Table 3-38, and Table 3-39.

Table 3-36. Proposed Greater Sage-Grouse Seasonal Habitat Disturbance, Proposed Action, BLM-Administered Lands

Seasonal Habitat Type	Temporary ROW (Acres)	Permanent ROW (Acres)
Nesting	13,140	3,980
Early brood rearing	14,030	4,330
Late brood rearing	8,760	2,690
Spring	14,840	4,540
Summer	11,090	3,390
Winter	14,360	4,460

Sources: BLM, FS, and NVE GIS 2024

Table 3-37. Proposed Greater Sage-Grouse Seasonal Habitat Disturbance, Proposed Action, National Forest System Lands

Seasonal Habitat Type	Temporary ROW (Acres)	Permanent ROW (Acres)
Nesting	600	200
Early brood rearing	570	190
Late brood rearing	600	190
Spring	580	200
Summer	550	180
Winter	520	170

Source: BLM, FS, and NVE GIS 2024

Table 3-38. Proposed Greater Sage-Grouse Habitat Management Area Disturbance, Proposed Action, BLM-Administered Lands

Management Area Type	Temporary ROW (Acres)	Permanent ROW (Acres)
PHMA	5,850	1,590
GHMA	5,060	1,440
OHMA	3,850	1,100
Total	**14,760**	**4,130**

Source: BLM, FS, and NVE GIS 2024 and BLM GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-39. Proposed Greater Sage-Grouse Habitat Management Area Disturbance, Proposed Action, National Forest System Lands

Management Area Type	Temporary ROW (Acres)	Permanent ROW (Acres)
PHMA	360	70
GHMA	540	130
OHMA	130	50
Total	**1,030**	**250**

Source: BLM, FS, and NVE GIS 2024 and BLM GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-40 summarizes the acres of greater sage-grouse habitat management areas on BLM-administered lands that would be within triggered neighborhood lek clusters and the temporary ROW under the Proposed Action.

Table 3-40. Proposed Greater Sage-Grouse Habitat Management Areas in Triggered Neighborhood Lek Clusters, Proposed Action, BLM-Administered Lands

Neighborhood Cluster	GHMAs in the Temporary ROW (Acres)	PHMAs in the Temporary ROW (Acres)
E-025	1,350	1,700
E-029	240	350
E-033	60	<10
E-042	70	1,960
E-060	220	850
Total	**1,940**	**4,860**

Source: BLM, FS, and NVE GIS 2024 and BLM GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-41 summarizes the acres of greater sage-grouse habitat management areas on National Forest System lands that would be within triggered neighborhood lek clusters and the temporary ROW under the Proposed Action.

Table 3-41. Proposed Greater Sage-Grouse Habitat Management Areas in Triggered Neighborhood Lek Clusters, Proposed Action, National Forest System Lands

Neighborhood Cluster	GHMAs in the Temporary ROW (Acres)	PHMAs in the Temporary ROW (Acres)
E-025	510	360
E-029	30	0
Total	**540**	**360**

Source: BLM, FS, and NVE GIS 2024 and BLM GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-42 shows the greater sage-grouse leks within 4 miles of the outer edge of the GLNP temporary ROW under the Proposed Action. The table also includes land ownership for the lek location. For leks on BLM-administered land, the table shows whether the Proposed Action would satisfy the lek distance buffers in Appendix B in the 2015 ARMPA, whether a justifiable departure is warranted for each lek, and the circumstances that justify the proposed departure from the buffer distance in Appendix B of the 2015 ARMPA (BLM 2015a). For leks on National Forest System lands, the table shows the distance from the lek to tall structures (GRSG-GEN-GL-010-Guideline) and roads (GRSG-RT-ST-080-Standard) per relevant standards and guidelines in the Forest Service's Greater Sage-grouse ROD (Forest Service 2015).

Under the Proposed Action, there would be 58 greater sage-grouse leks within 4 miles of the GLNP components. Of the 58 leks, 23 are active or pending active status as of 2024, the most recent lek status available.

Table 3-42. Greater Sage-Grouse Lek Buffer Distances, Proposed Action

Lek Name	Land Ownership	BSU	Lek Status (2024)	Miles from Proposed Action and Closest Activity Type(s)[1]	Meets Applicable Lek Buffer Distance[2]	Justifiable Departure from Buffer Distance Proposed and Rationale
Bade Flat 2	Forest Service	Smith/Reese	Pending active	1.4 miles; linear feature (road) 1.6 miles; tall structure (transmission line)	No	No
Camp Creek	BLM	Smith/Reese	Pending active	1.5 miles; tall structures (transmission line)	No	No
Cedar Creek	BLM	Smith/Reese	Inactive	2.3 miles; linear feature (road) 2.4 miles; tall structure (transmission line)	No	No
New Pass	BLM	Smith/Reese	Active	3.7 miles; tall structure (transmission line)	Yes	No
Ackerman 1	BLM	Central Great Basin	Active	3.2 miles; linear feature (road) 3.5 miles; tall structure (transmission line)	Yes	No
Ackerman 2	BLM	Central Great Basin	Active	2.2 miles; linear feature (road) 3.1 miles; tall structure (transmission line)	No	No
Angelo Beli	BLM	Central Great Basin	Active	0.3 miles; linear feature (road) 0.6 miles; tall structure (transmission line)	No	No
Angelo Beli 2	BLM	Central Great Basin	Active	0.2 miles; linear feature (road) 0.2 miles; tall structure (transmission line)	No	No
Bob Brown Canyon	BLM	Central Great Basin	Unknown	3.9 miles; tall structure (transmission line)	Yes	No
Cape Horn 1	BLM	Central Great Basin	Historical	0 miles (within temporary ROW); tall structures (transmission line)	No	No
Cape Horn 2	BLM	Central Great Basin	Active	1 mile; tall structures (transmission line) 1 mile; linear feature (road)	No	No
Cape Horn 3	BLM	Central Great Basin	Historical	0.9 miles; linear feature (road) 1 mile; tall structure (transmission line)	No	No

Lek Name	Land Ownership	BSU	Lek Status (2024)	Miles from Proposed Action and Closest Activity Type(s)[1]	Meets Applicable Lek Buffer Distance[2]	Justifiable Departure from Buffer Distance Proposed and Rationale
Cottonwood Creek	BLM	Central Great Basin	Inactive	2.6 miles; energy infrastructure (substation)	No	No
Dry Creek 1	BLM	Central Great Basin	Active	1.8 miles; linear feature (road) 2.4 miles; tall structure (transmission line)	No	No
Elkhorn 1	BLM	Central Great Basin	Inactive	3.6 miles; energy infrastructure (substation)	Yes	No
Emigrant	Forest Service	Central Great Basin	Active	0.4 miles; linear feature (road) 0.9 miles; tall structure (transmission line)	No	No
Emigrant 2	Forest Service	Central Great Basin	Active	0.2 miles; linear feature (road) 0.8 miles; tall structure (transmission line)	No	No
Four Eyed Nicks	Private	Central Great Basin	Pending active	1.8 miles; tall structure (transmission line) 1.8 miles; linear feature (road)	No	No
Givens Ranch	BLM	Central Great Basin	Active	0.5 miles; linear feature (road)	No	No
Grass Valley 4	Forest Service	Central Great Basin	Active	3.2 miles; linear feature (road) 3.4 miles; tall structure (transmission line)	Yes	No
Grimes Hills 1	BLM	Central Great Basin	Inactive	3.9 miles; linear feature (road)	Yes	No
Grimes Hills 2	BLM	Central Great Basin	Inactive	3.3 miles; linear feature (road) 3.7 miles; tall structure (transmission line)	Yes	No
Grimes Seeding	BLM	Central Great Basin	Historical	3.9 miles; tall structure (transmission line)	Yes	No
Grimes Seeding 2	BLM	Central Great Basin	Unknown	1.9 miles; linear feature (road)	No	No
Kobeh Valley 6	BLM	Central Great Basin	Inactive	3.5 miles; linear feature (road)	Yes	No
Lone Mountain 2	BLM	Central Great Basin	Historical	2.3 miles; linear feature (road)	No	No
Lone Mountain 3	BLM	Central Great Basin	Historical	1.6 miles; linear feature (road)	No	No

Lek Name	Land Ownership	BSU	Lek Status (2024)	Miles from Proposed Action and Closest Activity Type(s)[1]	Meets Applicable Lek Buffer Distance[2]	Justifiable Departure from Buffer Distance Proposed and Rationale
Lone Mountain 4	BLM	Central Great Basin	Historical	2.9 miles; linear feature (road)	No	No
Lone Mountain 1	BLM	Central Great Basin	Unknown	0.5 miles; tall structure (transmission line) 0.5 miles; linear feature (road)	No	No
Lone Mountain 2	BLM	Central Great Basin	Unknown	0.4 miles; tall structure (transmission line) 0.5 miles; linear feature (road)	No	No
Newark Strahlenberg	BLM	Central Great Basin	Pending active	0.3 miles; tall structure (transmission line) 0.5 miles; linear feature (road)	No	No
Newark Summit	BLM	Central Great Basin	Pending active	0.7 miles; tall structure (transmission line) 0.8 miles; linear feature (road)	No	No
Newark Summit 2	BLM	Central Great Basin	Pending active	0.1 miles; tall structure (transmission line) 0.2 miles; linear feature (road)	No	No
Packer Basin	BLM	Central Great Basin	Active	2.4 miles; tall structure (transmission line) 2.5 miles; linear feature (road)	No	No
Russell Ranch	BLM	Central Great Basin	Unknown	0.5 miles; linear feature (road)	No	No
Simpson Creek 3	BLM	Central Great Basin	Inactive	0.4 miles; linear feature (road) 0.6 miles; tall structure (transmission line)	No	No
Simpson Creek 4	BLM	Central Great Basin	Inactive	1.3 miles; tall structure (transmission line) 1.4 miles; linear feature (road)	No	No
Simpson Creek 5	BLM	Central Great Basin	Inactive	0.8 miles; tall structure (transmission line) 0.9 miles; linear feature (road)	No	No
South Diamond Valley	BLM	Central Great Basin	Historical	1.1 miles; tall structure (transmission line) 1.1 miles; linear feature (road)	No	No

Lek Name	Land Ownership	BSU	Lek Status (2024)	Miles from Proposed Action and Closest Activity Type(s)[1]	Meets Applicable Lek Buffer Distance[2]	Justifiable Departure from Buffer Distance Proposed and Rationale
Spanish Gulch	BLM	Central Great Basin	Inactive	0.1 miles; tall structure (transmission line) 0.2 miles; linear feature (road)	No	No
Vigus Butte	BLM	Central Great Basin	Active	3.1 miles; linear feature (road) 3.2 miles; tall structure (transmission line)	No	No
Willow Creek 2	BLM	Central Great Basin	Active	3.1 miles; linear feature (road)	No	Yes. Mountainous, intervening topography would shield the lek from proposed disturbance.
Central Jakes Valley	BLM	Butte/Buck/White Pine	Historical	2 miles; linear feature (road)	No	No
Central Jakes Valley SE	BLM	Butte/Buck/White Pine	Active	1.7 miles; linear feature (road) 3 miles; tall structure (transmission line)	No	No
Central Jakes Valley SE 1	BLM	Butte/Buck/White Pine	Unknown	2.2 miles; linear feature (road)	No	No
Cottonwood Pond N	BLM	Butte/Buck/White Pine	Historical	3.2 miles; linear feature (road)	Yes	No
Illipah Drill Pad	BLM	Butte/Buck/White Pine	Unknown	1.8 miles; low structure (material yard)	Yes	No
Illipah Reservoir	BLM	Butte/Buck/White Pine	Active	2.7 miles; low structures (material yard)	Yes	No
Moorman Ranch N	BLM	Butte/Buck/White Pine	Unknown	0.4 miles; linear feature (road)	No	No
North Jakes Valley	BLM	Butte/Buck/White Pine	Historical	1.2 miles; linear feature (road) 1.3 miles; tall structure (transmission line)	No	No
North Jakes Valley E	BLM	Butte/Buck/White Pine	Unknown	0.8 miles; linear feature (road) 0.9 miles; tall structure (transmission line)	No	No
North Jakes Valley S	BLM	Butte/Buck/White Pine	Unknown	1.1 miles; tall structures (transmission line) 1.2 miles; linear feature (road)	No	No
Old Hamilton Road	BLM	Butte/Buck/White Pine	Unknown	1.4 miles; low structures (material yard)	Yes	No

Lek Name	Land Ownership	BSU	Lek Status (2024)	Miles from Proposed Action and Closest Activity Type(s)[1]	Meets Applicable Lek Buffer Distance[2]	Justifiable Departure from Buffer Distance Proposed and Rationale
Pancake Summit	BLM	Butte/Buck/White Pine	Unknown	1.5 miles; linear feature (road)	No	No
South Long Valley	BLM	Butte/Buck/White Pine	Active	3.4 miles; linear feature (road) 3.5 miles; tall structures (transmission line)	Yes	No
Townsend Seeding	BLM	Butte/Buck/White Pine	Historical	0.2 miles; tall structures (transmission line) 0.2 miles; linear feature (road)	No	No
Townsend Well SW	BLM	Butte/Buck/White Pine	Historical	0.2 miles; linear feature (road) 0.4 miles; tall structures (transmission line)	No	No
Willow Spring S	BLM	Butte/Buck/White Pine	Unknown	0.1 miles; linear feature (road) 0.2 miles; tall structures (transmission line)	No	No

Source: BLM, FS, and NVE GIS 2024

[1] Activity type per BLM 2015 ARMPA Appendix B, Applying Lek Buffer-Distances when Approving Actions, and Forest Service 2015 Greater Sage-grouse ROD, GRSG-GEN-GL-010-Guideline (tall structures) and GRSG-RT-ST-080-Standard (roads). Distance estimates were generated using Google Earth.

[2] Applicable buffer distances per either BLM 2015 ARMPA or Forest Service 2015 Greater Sage-grouse ROD, depending on land ownership at lek location.

Of these 23 leks, 19 are on BLM-administered land (or, in the case of the Four Eyed Nicks lek, on a private inholding surrounded by BLM-administered land). The Proposed Action would satisfy the lek distance buffers in Appendix B of the 2015 ARMPA for 4 leks and would not satisfy the distance buffers for the remaining 15 leks. Of the 15 leks, justifiable departures from the published buffer distances would apply for 1 lek, as described in the table. Justifiable departures would not apply to the remaining 14 leks. Therefore, the Proposed Action would not satisfy the lek buffer distance objectives and planning decision in the 2015 ARMPA for 14 leks. These would include the following leks: Ackerman 2, Angelo Beli, Angelo Beli 2, Camp Creek, Cape Horn 2, Central Jakes Valley SE, Dry Creek 1, Four Eyed Nicks, Givens Ranch, Newark Strahlenberg, Newark Summit, Newark Summit 2, Packer Basin, and Vigus Butte.

As described in Section 2.4, the BLM would exempt the BLM utility corridor from the lek avoidance buffers described in Appendix B (BLM 2015a, MD SSS 3); this would be the case for the 14 leks described above. Resulting impacts on greater sage-grouse would be as described under *Direct and Indirect Impacts Common to All Action Alternatives*, particularly relating to the potential for increased predation and disturbance and disruption of lekking activities due to the presence of roads and tall structures (transmission lines) in proximity to leks. As described in that section, the Proponent would apply greater sage-grouse EMMs (EMMs GRSG-1 through GRSG-26 in Appendix D) and other measures to reduce the impact intensity. For example, EMM GRSG-5 and measures in the raven management plan (Appendix H) would include installing transmission towers that would minimize the potential for raven nesting and other measures to reduce raven attraction to the GLNP area, which would help lessen the amount of increased raven nesting and greater sage-grouse predation from the GLNP on the affected leks.

Of the 23 active or pending active status leks, 4 are on National Forest System lands (Bade Flat 2, Emigrant, Emigrant 2, and Grass Valley 4). The GLNP would meet the Forest Service 2015 Greater Sage-grouse ROD recommended and required seasonal buffer distances for the Grass Valley 4 lek. For the other three leks, the GLNP transmission line would be located within 3 miles of each lek. Therefore, the Proposed Action would not meet recommended buffer distances for tall structures per GRSG-GEN-GL-010-Guideline. GLNP roads would also be located within 2 miles of each lek, so the Proposed Action would not meet required seasonal buffer distances for roads, per GRSG-RT-ST-080; as a result, the GLNP roads would require seasonal restrictions for road construction or maintenance within 2 miles of these leks to avoid disturbance to lekking greater sage-grouse (see EMM GRSG-26 in Appendix D).

Under the Proposed Action, the GLNP would cross through National Forest System lands. The GLNP would not cross through National Forest System lands via the Forest Service Northern Alternative or Forest Service Southern Alternative routes described in Section 1.5.2. The Proposed Action alignment would not comply with the Forest Service plan standards GRSG-AM-ST-011-Standard and GRSG-AM-ST-012-Standard because it would cross PHMAs and GHMAs where hard triggers have been tripped, and it would be outside a designated utility corridor (see Forest Service 2015, Appendix C, Tables 1 and 2). When hard trigger responses have been tripped, PHMAs and GHMAs on National Forest System lands outside existing utility corridors would be managed as ROW exclusion for high-voltage transmission lines. Further, the Proposed Action alignment would not comply with Forest Service plan standard GRSG-LR-

SUA-014-Standard, because it would cross PHMAs and would not be collocated with existing infrastructure.

Table 3-43 summarizes the acres of pinyon jay, pygmy rabbit, and burrowing owl habitat and the counts of pygmy rabbit active burrows and burrow complexes that would be within the permanent and temporary ROWs under the Proposed Action.

Table 3-43. Key Special Status Species Habitat, Proposed Action

Species Habitat	Total (Acres[4]/Count)	Temporary ROW (Acres[4]/Count)	Permanent ROW (Acres[4]/Count)
Pinyon jay[1]	7,850	6,360	1,490
Pygmy rabbit (habitat)[2]	7,360	5,630	1,740
Pygmy rabbit (active burrows and burrow complexes)[2]	25	16	9
Burrowing owl[3]	7,250	5,520	1,720

Source: BLM, FS, and NVE GIS 2024
Notes:
[1] Within 0.7 miles of the project ROWs
[2] Within 400 feet of the project ROWs
[3] Within 0.25 miles of the project ROWs
[4] Acres are rounded to the nearest 10.

Table 3-44 summarizes the number and type of golden eagle nests within 1 mile and 2 miles of the temporary ROW under the Proposed Action.

Table 3-44. Golden Eagle Nests, Proposed Action

Nest Type	Number of Nests within 2 Miles of the Temporary ROW	Number of Nests within 1 Mile of the Temporary ROW
Golden eagle	139	55

Source: BLM, FS, and NVE GIS 2024

Table 3-45 summarizes the acres of potential dark and pale kangaroo mouse high and medium potential habitat that would be within the permanent and temporary ROWs under the Proposed Action. The Proposed Action could result in impacts on kangaroo mouse individuals and habitat; these impacts would be reduced by adhering to EMMs (Appendix D). As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability.

Table 3-45. Kangaroo Mouse Potential Habitat Disturbance, Proposed Action

Species	Potential Habitat	Total (Acres)	Temporary ROW (Acres)	Permanent ROW (Acres)
Dark Kangaroo Mouse	High	14,630	11,160	3,470
	Medium	320	270	60
Pale Kangaroo Mouse	High	710	540	170
	Medium	0	0	0

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Under the Other Resource Consideration Alternative, there would be approximately 21,225 acres of temporary disturbance and 7,902 acres of permanent disturbance (29,127 acres total of disturbance) of habitat, including for special status species. The types of impacts described under *Direct and Indirect Impacts Common to All Action Alternatives* would occur in these areas. As discussed in the analysis assumptions, vegetation communities in the analysis area are used to represent wildlife habitat for the purposes of this analysis. Table 3-7 in Section 3.4.4 shows the acres of each vegetation community that would be affected under the Other Resource Consideration Alternative.

Impacts on key special status species under the Other Resource Consideration Alternative would be as described under *Direct and Indirect Impacts Common to All Action Alternatives*, except where analyzed below.

The acres of greater sage-grouse seasonal habitat areas and habitat management areas on BLM-administered and National Forest System lands that would be within the permanent and temporary ROWs under the Other Resource Consideration Alternative are summarized in Table 3-46, Table 3-47, Table 3-48, and Table 3-49.

Table 3-46. Proposed Greater Sage-Grouse Seasonal Habitat Disturbance, Other Resource Consideration Alternative, BLM-Administered Lands

Seasonal Habitat Type	Temporary ROW (Acres)	Permanent ROW (Acres)
Nesting	13,520	4,030
Early brood rearing	14,570	4,440
Late brood rearing	8,710	2,620
Spring	15,330	4,620
Summer	11,780	3,550
Winter	14,980	4,590

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-47. Proposed Greater Sage-Grouse Seasonal Habitat Disturbance, Other Resource Consideration Alternative, National Forest System Lands

Seasonal Habitat Type	Temporary ROW (Acres)	Permanent ROW (Acres)
Nesting	450	110
Early brood rearing	330	90
Late brood rearing	510	140
Spring	400	110
Summer	310	70
Winter	260	70

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-48. Proposed Greater Sage-Grouse Habitat Management Area Disturbance, Other Resource Consideration Alternative, BLM-Administered Lands

Management Area Type	Temporary ROW (Acres)	Permanent ROW (Acres)
PHMA	5,830	1,580
GHMA	4,350	1,270
OHMA	4,050	1,170
Total	**14,230**	**4,020**

Source: BLM, FS, and NVE GIS 2024 and BLM GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-49. Proposed Greater Sage-Grouse Habitat Management Area Disturbance, Other Resource Consideration Alternative, National Forest System Lands

Management Area Type	Temporary ROW (Acres)	Permanent ROW (Acres)
PHMA	130	0
GHMA	<10	<10
OHMA	290	70
Total	**420**	**70**

Source: BLM, FS, and NVE GIS 2024 and BLM GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-50 summarizes the acres of greater sage-grouse habitat management areas on BLM-administered lands that would be within triggered neighborhood lek clusters and the temporary ROW under the Other Resource Consideration Alternative.

Table 3-50. Proposed Greater Sage-Grouse Habitat Management Areas in Triggered Neighborhood Lek Clusters, Other Resource Consideration Alternative, BLM-Administered Lands

Neighborhood Cluster	GHMAs in the Temporary ROW (Acres)	PHMAs in the Temporary ROW (Acres)
E-025	160	1,630
E-029	260	380
E-033	60	<10
E-042	70	1,960
E-060	220	840
Total	**770**	**4,810**

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-51 summarizes the acres of greater sage-grouse habitat management areas on National Forest System lands that would be within triggered neighborhood lek clusters and the temporary ROW under the Other Resource Consideration Alternative.

Table 3-51. Proposed Greater Sage-Grouse Habitat Management Areas in Triggered Neighborhood Lek Clusters, Other Resource Consideration Alternative, National Forest System Lands

Neighborhood Cluster	GHMAs in the Temporary ROW (Acres)	PHMAs in the Temporary ROW (Acres)
E-025	<10	130
Total	**<10**	**130**

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Greater sage-grouse leks within 4 miles of the outer edge of the GLNP temporary ROW under the Other Resource Consideration Alternative would be similar to the Proposed Action, with the following exceptions:

- The Willow Creek 2 lek (on BLM-administered lands, active status in 2024) would be further than 4 miles from the GLNP temporary ROW and is not analyzed further.
- The Bade Flat 4 lek (on National Forest System lands, pending active status in 2024) would be within 4 miles of the GLNP temporary ROW and is included in the analysis for this alternative.
- The GLNP temporary ROW distance to leks would vary for a subset of leks compared with what was disclosed in the Proposed Action, as summarized in Table 3-52 below.

Table 3-52 shows the greater sage-grouse leks within 4 miles of the outer edge of the GLNP temporary ROW under the Other Resource Consideration Alternative, which differs from the distance between the GLNP temporary ROW and the lek under the Proposed Action. The table also indicates whether the alternative would satisfy the lek distance buffers in Appendix B of the 2015 ARMPA for leks on BLM-administered lands, whether a justifiable departure is warranted for each lek, and the circumstances that justify the proposed departure from the buffer distance in Appendix B of the 2015 ARMPA. For leks on National Forest System lands, the table shows the distance from the lek to tall structures (GRSG-GEN-GL-010-Guideline) and roads (GRSG-RT-ST-080-Standard) per relevant standards and guidelines in the Forest Service greater sage-grouse ROD (Forest Service 2015).

Of the nine leks in Table 3-52, five are on BLM-administered land. Of these, two (Cape Horn 2 and Dry Creek 1) are active or pending active status. The Other Resource Consideration Alternative would not satisfy the lek distance buffers in Appendix B of the 2015 ARMPA for either of these leks, and justifiable departures would not apply. Therefore, the Other Resource Consideration Alternative would not satisfy the lek buffer distance objectives and planning decision in the 2015 ARMPA for the Cape Horn 2 and Dry Creek 1 leks. As described for the Proposed Action, the lek buffer distance objectives and planning decision in the 2015 ARMPA would also not be met for the following leks: Camp Creek, Ackerman 2, Angelo Beli, Angelo Beli 2, Givens Ranch, Newark Strahlenberg, Newark Summit, Newark Summit 2, Vigus Butte, and Central Jakes Valley SE. As described in Section 2.4, the BLM would exempt the BLM utility corridor from the lek avoidance buffers described in Appendix B (BLM 2015a, MD SSS 3); this would be the case for the leks described above. The resulting effects would be as described for the Proposed Action.

Table 3-52. Greater Sage-Grouse Lek Buffer Distances, Other Resource Consideration Alternative

Lek Name	Land Ownership	BSU	Lek Status (2024)	Miles from Proposed Action and Closest Activity Type(s)[1]	Meets Applicable Lek Buffer Distance[2]	Justifiable Departure from Buffer Distance Proposed and Rationale
Bade Flat 2	Forest Service	Smith/Reese	Historical	1.4 miles; linear feature (road) 1.6 miles; tall structure (transmission line)	No	No
Bade Flat 4	Forest Service	Smith/Reese	Active	3 miles; tall structure (transmission line) 3 miles; linear feature (road)	No	No
Cape Horn 1	BLM	Central Great Basin	Historical	0 miles (within temporary ROW); tall structures (transmission line)	No	No
Cape Horn 2	BLM	Central Great Basin	Active	1 mile; tall structures (transmission line) 1 mile; linear feature (road)	No	No
Cape Horn 3	BLM	Central Great Basin	Active	0.9 miles; linear feature (road) 1 mile; tall structure (transmission line)	No	No
Dry Creek 1	BLM	Central Great Basin	Active	1.8 miles; linear feature (road) 2.4 miles; tall structure (transmission line)	No	No
Emigrant	Forest Service	Central Great Basin	Inactive	0.4 miles; linear feature (road) 0.9 miles; tall structure (transmission line)	No	No
Emigrant 2	Forest Service	Central Great Basin	Historical	0.2 miles; linear feature (road) 0.8 miles; tall structure (transmission line)	No	No
Grimes Hills 2	BLM	Central Great Basin	Active	3.3 miles; linear feature (road) 3.7 miles; tall structure (transmission line)	Yes	No

Source: BLM, FS, and NVE GIS 2024

[1] Activity type per 2015 ARMPA Appendix B, Applying Lek Buffer-Distances when Approving Actions, and Forest Service 2015 Greater Sage-grouse ROD, GRSG-GEN-GL-010-Guideline (tall structures) and GRSG-RT-ST-080-Standard (roads). Distance estimates were generated using Google Earth.

[2] Applicable buffer distances per either BLM 2015 ARMPA or Forest Service 2015 Greater Sage-grouse ROD, depending on land ownership at lek location.

Of the nine leks in Table 3-52, four (Bade Flat 2, Bade Flat 4, Emigrant, and Emigrant 2) are on National Forest System lands. For each of these leks, the GLNP transmission line would be located within 3 miles of the lek, a GLNP road would be located within 2 miles of the lek, or both. Therefore, the Other Resource Consideration Alternative would not meet recommended buffer distances for tall structures per GRSG-GEN-GL-010-Guideline or meet required seasonal buffer distances for roads per GRSG-RT-ST-080, and as a result it would require seasonal restrictions for road construction or maintenance within 2 miles of these leks to avoid disturbance to lekking greater sage-grouse (see EMM GRSG-26 in Appendix D).

Under the Other Resource Consideration Alternative, the GLNP would cross through National Forest System lands via the Forest Service Southern Alternative route described in Section 1.5.2. This alignment would not comply with the Forest Service plan standards GRSG-AM-ST-011-Standard and GRSG-AM-ST-012-Standard because it would cross PHMAs and GHMAs where hard triggers have been tripped and it would be outside of a designated utility corridor (see Forest Service 2015, Appendix C, Tables 1 and 2). When hard trigger responses have been tripped, PHMAs and GHMAs on National Forest System lands outside existing utility corridors would be managed as ROW exclusion for high-voltage transmission lines.

Further, the Other Resource Consideration Alternative alignment would not comply with Forest Service plan standard GRSG-LR-SUA-014-Standard. This is because it would cross PHMAs and would not be collocated with existing infrastructure.

Table 3-53 summarizes the acres of pinyon jay, pygmy rabbit, and burrowing owl habitat and the counts of pygmy rabbit active burrows and burrow complexes that would be within the permanent and temporary ROWs under the Other Resource Consideration Alternative.

Table 3-53. Key Special Status Species Habitat, Other Resource Consideration Alternative

Species Habitat	Total (Acres[4]/Count)	Temporary ROW (Acres[4]/Count)	Permanent ROW (Acres[4]/Count)
Pinyon jay[1]	6,990	5,680	1,310
Pygmy rabbit (habitat)[2]	7,550	5,770	1,780
Pygmy rabbit (active burrows and burrow complexes)[2]	19	13	6
Burrowing owl[3]	7,800	5,930	1,870

Source: BLM, FS, and NVE GIS 2024
Notes:
[1] Within 0.7 miles of the project ROWs
[2] Within 400 feet of the project ROWs
[3] Within 0.25 miles of the project ROWs
[4] Acres are rounded to the nearest 10.

Table 3-54 summarizes the number and type of golden eagle nests within 1 mile and 2 miles of the temporary ROW under the Other Resource Consideration Alternative.

Table 3-54. Golden Eagle Nests, Other Resource Consideration Alternative

Nest Type	Number of Nests within 2 Miles of the Temporary ROW	Number of Nests within 1 Mile of the Temporary ROW
Golden eagle	104	47

Source: BLM, FS, and NVE GIS 2024

Table 3-55 summarizes the acres of potential dark and pale kangaroo mouse high and medium potential habitat that would be within the permanent and temporary ROWs under the Other Resource Consideration Alternative. The Other Resource Consideration Alternative could result in impacts on kangaroo mouse individuals and habitat; these impacts would be reduced by adhering to EMMs (Appendix D). As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability.

Table 3-55. Kangaroo Mouse Potential Habitat Disturbance, Other Resource Consideration Alternative

Species	Potential Habitat	Total (Acres)	Temporary ROW (Acres)	Permanent ROW (Acres)
Dark Kangaroo Mouse	High	15,120	11,540	3,580
	Medium	310	260	50
Pale Kangaroo Mouse	High	710	540	170
	Medium	0	0	0

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

The potential for effects on special status plants under the Other Resource Consideration Alternative would be similar to the potential described under the Proposed Action. One difference is notable; the Other Resource Consideration Alternative would take a more southerly route through the Toiyabe Range of the Humboldt-Toiyabe National Forest and BLM-administered lands east of the forest. In the Humboldt-Toiyabe National Forest portion of this alternative alignment, the GLNP would be situated in slightly higher-elevation areas than under the other action alternatives; it would also be in the vicinity of aspen vegetation communities not found within the analysis areas for the other action alternatives. A number of rare plant species are documented in the higher portions of the Toiyabe Range with a low potential to occur in the project ROW (see Appendix I, Special Status Species Considered).

Because this alternative would traverse higher elevations in the Toiyabe Range than the other action alternatives, there would be an elevated potential for these special status plant species to occur in the analysis area. However, as reported in Appendix H, the analysis area would still generally be below the reported elevational range requirements for these species. The potential that these species would occur would still be low.

Direct and Indirect Impacts from the BLM Preferred Alternative

Under the BLM Preferred Alternative, there would be approximately 20,787 acres of temporary disturbance and 7,538 acres of permanent disturbance (28,326 acres total of disturbance) of habitat, including for special status species. The types of impacts described under *Direct and Indirect Impacts Common to All Action Alternatives* would occur in these areas. As

discussed in the analysis assumptions, vegetation communities in the analysis area are used to represent wildlife habitat for the purposes of this analysis. Table 3-8 in Section 3.4.4 shows the acres of each vegetation community that would be affected under the BLM Preferred Alternative.

Impacts on key special status species under the BLM Preferred Alternative would be as described under *Direct and Indirect Impacts Common to All Action Alternatives*, except where analyzed below.

The acres of greater sage-grouse seasonal habitat areas and habitat management areas on BLM-administered and National Forest System lands that would be within the permanent and temporary ROWs under the BLM Preferred Alternative are summarized in Table 3-56, Table 3-57, Table 3-58, and Table 3-59.

Table 3-56. Proposed Greater Sage-Grouse Seasonal Habitat Disturbance, BLM Preferred Alternative, BLM-Administered Lands

Seasonal Habitat Type	Temporary ROW (Acres)	Permanent ROW (Acres)
Nesting	12,880	3,890
Early brood rearing	13,760	4,230
Late brood rearing	8,590	2,630
Spring	14,570	4,440
Summer	10,910	3,310
Winter	14,150	4,370

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-57. Proposed Greater Sage-Grouse Seasonal Habitat Disturbance, BLM Preferred Alternative, National Forest System Lands

Seasonal Habitat Type	Temporary ROW (Acres)	Permanent ROW (Acres)
Nesting	700	220
Early brood rearing	660	210
Late brood rearing	690	210
Spring	670	210
Summer	610	190
Winter	590	180

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-58. Proposed Greater Sage-Grouse Habitat Management Area Disturbance, BLM Preferred Alternative, BLM-Administered Lands

Management Area Type	Temporary ROW (Acres)	Permanent ROW (Acres)
PHMA	5,840	1,550
GHMA	4,790	1,390
OHMA	3,620	1,030
Total	**14,250**	**3,970**

Source: BLM, FS, and NVE GIS 2024 and BLM GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-59. Proposed Greater Sage-Grouse Habitat Management Area Disturbance, BLM Preferred Alternative, National Forest System Lands

Management Area Type	Temporary ROW (Acres)	Permanent ROW (Acres)
PHMA	340	70
GHMA	570	130
OHMA	130	30
Total	**1,040**	**230**

Source: BLM, FS, and NVE GIS 2024 and BLM GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-60 summarizes the acres of greater sage-grouse habitat management areas on BLM-administered lands that would be within triggered neighborhood lek clusters and the temporary ROW under the BLM Preferred Alternative.

Table 3-60. Proposed Greater Sage-Grouse Habitat Management Areas in Triggered Neighborhood Lek Clusters, BLM Preferred Alternative, BLM-Administered Lands

Neighborhood Cluster	GHMAs in the Temporary ROW (Acres)	PHMAs in the Temporary ROW (Acres)
E-025	1,410	1,740
E-029	250	390
E-033	60	<10
E-042	70	1,950
E-060	220	850
Total	**2,010**	**4,930**

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Table 3-61 summarizes the acres of greater sage-grouse habitat management areas on National Forest System lands that would be within triggered neighborhood lek clusters and the temporary ROW under the BLM Preferred Alternative.

Table 3-61. Proposed Greater Sage-Grouse Habitat Management Areas in Triggered Neighborhood Lek Clusters, BLM Preferred Alternative, National Forest System Lands

Neighborhood Cluster	GHMAs in the Temporary ROW (Acres)	PHMAs in the Temporary ROW (Acres)
E-025	530	340
E-029	40	0
Total	**570**	**340**

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

Greater sage-grouse leks within 4 miles of the outer edge of the GLNP temporary ROW under the BLM Preferred Alternative would be the same as under the Proposed Action. As analyzed under that alternative, the BLM Preferred Alternative would not satisfy the lek buffer distance objectives and planning decision in the 2015 ARMPA for the following 14 leks: Ackerman 2, Angelo Beli, Angelo Beli 2, Camp Creek, Cape Horn 2, Central Jakes Valley SE, Dry Creek 1,

Four Eyed Nicks, Givens Ranch, Newark Strahlenberg, Newark Summit, Newark Summit 2, Packer Basin, and Vigus Butte. As described in Section 2.4, the BLM would exempt the BLM utility corridor from the lek avoidance buffers described in Appendix B (BLM 2015a, MD SSS 3); this would be the case for the leks described above. The resulting effects would be as described for the Proposed Action.

The BLM Preferred Alternative would not meet recommended buffer distances for tall structures per GRSG-GEN-GL-010-Guideline for the Bade Flat 2, Emigrant, and Emigrant 2 leks. GLNP roads would also be located within 2 miles of these leks, so the Proposed Action would not meet required seasonal buffer distances for roads per GRSG-RT-ST-080 and, as a result, would require seasonal restrictions for road construction or maintenance within 2 miles of these leks to avoid disturbance to lekking greater sage-grouse (see EMM GRSG-26 in Appendix D).

Under the BLM Preferred Alternative, the GLNP would cross through National Forest System lands via the Forest Service Northern Alternative route described in Section 1.5.2. This alignment would comply with the Forest Service plan standards GRSG-AM-ST-011-Standard and GRSG-AM-ST-012-Standard; this is because, although it would cross PHMAs and GHMAs where hard triggers have been tripped, it would be located within a designated utility corridor and such areas would be managed as ROW avoidance areas (see Forest Service 2015, Appendix C, Tables 1 and 2). ROW avoidance areas would not necessarily prohibit a proposed activity; rather, they may require the activity's relocation or modification to reduce or eliminate potential impacts resulting from the proposed activity. In this case, implementing the EMMs in Appendix D that are specifically for greater sage-grouse and other measures would reduce effects on greater sage-grouse. Specifically, installing transmission towers in a manner to reduce the potential for raven nesting (EMM GRSG-5) and following the raven management plan (Appendix H) would lessen raven attraction to the area, in turn lessening, but not completely avoiding, the GLNP's contribution to raven predation effects on greater sage-grouse.

Similarly, the BLM Preferred Alternative alignment would comply with Forest Service plan standard GRSG-LR-SUA-014-Standard. This is because it would cross PHMAs and would be co-located with existing infrastructure in a designated, existing utility corridor.

Table 3-62 summarizes the acres of pinyon jay, pygmy rabbit, and burrowing owl habitat and the counts of pygmy rabbit active burrows and burrow complexes that would be within the permanent and temporary ROWs under the BLM Preferred Alternative.

Table 3-62. Key Special Status Species Habitat, BLM Preferred Alternative

Species Habitat	Total (Acres[4]/Count)	Temporary ROW (Acres[4]/Count)	Permanent ROW (Acres[4]/Count)
Pinyon jay[1]	7,120	5,780	1,340
Pygmy rabbit (habitat)[2]	7,270	5,570	1,700
Pygmy rabbit (active burrows and burrow complexes)[2]	20	14	6
Burrowing owl[3]	7,190	5,590	1,700

Source: BLM, FS, and NVE GIS 2024
Notes:
[1] Within 0.7 miles of the project ROWs
[2] Within 400 feet of the project ROWs
[3] Within 0.25 miles of the project ROWs
[4] Acres are rounded to the nearest 10.

Table 3-63 summarizes the number and type of golden eagle nests within 1 mile and 2 miles of the temporary ROW under the BLM Preferred Alternative.

Table 3-63. Golden Eagle Nests, BLM Preferred Alternative

Nest Type	Number of Nests within 2 Miles of the Temporary ROW	Number of Nests within 1 Mile of the Temporary ROW
Golden eagle	137	55

Source: BLM, FS, and NVE GIS 2024

Table 3-64 summarizes the acres of potential dark and pale kangaroo mouse high and medium potential habitat that would be within the permanent and temporary ROWs under the BLM Preferred Alternative. The BLM Preferred Alternative could result in impacts on kangaroo mouse individuals and habitat; these impacts would be reduced by adhering to EMMs (Appendix D). As a result, impacts are not anticipated to result in a trend toward federal listing or loss of population viability.

Table 3-64. Kangaroo Mouse Potential Habitat Disturbance, BLM Preferred Alternative

Species	Potential Habitat	Total (Acres)	Temporary ROW (Acres)	Permanent ROW (Acres)
Dark Kangaroo Mouse	High	13,920	10,650	3,270
	Medium	320	270	60
Pale Kangaroo Mouse	High	700	530	170
	Medium	0	0	0

Source: BLM, FS, and NVE GIS 2024
Note: Acres are rounded to the nearest 10.

3.7 Paleontological Resources

As defined in the Paleontological Resources Protection Act Section 6301 (16 USC 470aaa), paleontological resources are any fossilized remains, traces, or imprints of organisms preserved in or on the earth's crust that are of paleontological interest and that provide information about the history of life on earth. Fossils are preserved in rocks and are usually discovered when erosion reveals them on the surface or during surface-disturbing activity. Federal agencies manage paleontological resources for scientific and educational values and to protect these resources from adverse impacts. The BLM provides expertise to other federal agencies for managing paleontological resources and permitting paleontological research.

The definition of the term "paleontological resources" in the Paleontological Resources Protection Act limits paleontological resources to fossilized remains that are of paleontological interest and that inform the history of life on earth; therefore, under the Paleontological Resources Protection Act's definition, not all fossils are considered paleontological resources. All fossils contain information about past life, but not all fossils have significant scientific interest. Fossils considered scientifically significant are unique, unusual, or rare; are diagnostic; are stratigraphically important; and add to the existing body of knowledge. Conversely, fossils that lack sufficient scientific interest are redundant, lack provenience, are fragmentary, or otherwise are not useful for paleontological investigation; therefore, they do not need to be preserved in perpetuity.

To determine a fossil's significance, an assessment must be made by an individual who is experienced in the field of paleontology and possesses a sufficient mastery of the existing body of knowledge to recognize how a given fossil contributes to overall understanding. Fossils occur in most sedimentary rocks and are widespread throughout the analysis area. Generally, vertebrate fossils are considered significant, nonrenewable resources. Some specimens of invertebrates and plant fossils also have scientific value.

3.7.1 Issues Identified for Analysis

How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect paleontological resources?

3.7.2 Analysis Area

The paleontological resources analysis area consists of a geographic area or areas in which paleontological resources may be affected by the GLNP. The analysis area includes fossil-bearing formations and potentially near-surface exposures or localities that may contain specimens of regional and national importance. This area is defined as a 200-foot buffer around the alternative project areas identified in Section 3.1, Introduction, totaling approximately 63,645 acres.

3.7.3 Affected Environment

The Potential Fossil Yield Classification (PFYC) system is a tool used to assess potential occurrences of paleontological resources in mapped geological units. It provides classifications that may be used to assist in determining the need for further assessment or actions. The PFYC system is created from available geological maps and assigns a class value to each geological unit, representing the potential abundance and significance of paleontological resources that may

occur. PFYC values range from Class 1, very low, to Class 5, very high. These values indicate both the probability for the mapped geological unit to contain significant paleontological resources, if bedrock is exposed, and the degree of management concern for the resource.

A project-specific paleontological investigation for the GLNP has been conducted; it forms the basis for this description of the affected environment (Shapiro 2024). The following discussion divides the geological units of the GLNP analysis area into comparable geological events, or chapters, and provides a general PFYC ranking for each geologic chapter. The formational names follow those in the BLM PFYC database. Specific formations of interest are further refined from the results of the pedestrian survey. The section is organized by age from the geological youngest to oldest.

Table 3-65. List of Critical Nevada Geological Chapters Intersected by the GLNP Analysis Area

Geological Chapter	Description
Quaternary Deposits (PFYC 2)	The most recent chapter includes the sedimentary units deposited during the last few million years as alluvium and valley fill between the mountain ranges.
Quaternary Volcanics (PFYC 1)	This category includes extrusive volcanic rocks ranging from mafic, low viscosity basalt flows through explosive andesite.
Cenozoic Terrestrial Deposits (PFYC 3-4)	This category includes various basin deposits, often associated with fault-bound grabens or volcanic calderas; it may include lake deposits.
Cenozoic Volcanics (PFYC 1)	Extensive volcanic deposits are mostly associated with the tectonic extension of Nevada in the late Paleogene and Neogene and include basalt, andesite, rhyolite, and associated volcaniclastic deposits.
Mesozoic-Cenozoic Intrusives (PFYC 1)	This is a broad category to encompass all the exposed intrusive granitoids associated with the establishment of a subduction zone to the west of the analysis area.
Mesozoic Terrestrial Deposits (PFYC 5)	This category includes rare deposits of lakes and alluvium dating to the Early or Middle Cretaceous and similar to units found to the east in Utah.
Mesozoic Marine and Volcanic Deposits (PFYC 3)	The general category includes the often-intermixed sandstone, limestone, and volcanic flows and deposits associated with fringing island arcs or the tectonically active ocean margin in the Triassic and Jurassic.
Paleozoic Marine Deposits (PFYC 3)	This category includes largely marine limestone and sandstone deposits that formed either on the continental shelf or offshore in the deeper ocean and then later faulted onto the shallow platform.

Source: Shapiro 2024

As part of the project-specific paleontological investigation, the entire alignment was traversed by vehicle. Specific bedrock and key Quaternary outcrops were examined to confirm the published geology from the literature review. Scientifically significant fossils were only recorded in two areas; both were within Pliocene or Pleistocene tuffaceous sediments. Other areas included diverse mammalian fossils, including horse, camelid, other artiodactyl, and mammoth. While there were no additional significant fossils noted on the initial pedestrian survey or follow-up detailed surveys, there are several locations noted by the BLM as having "high significance" for paleontology resources (PFYC 4). Also, there are sections that were noted in

the field as having a stronger potential for hosting significant paleontological resources than listed in the BLM PFYC database; these were incorporated in the updated PFYC rankings for this project.

PFYC Rankings

The BLM maintains statewide PFYC classification data. Proposed refinements of the Nevada BLM statewide PFYC rankings are used here based on the current investigation of the GLNP analysis area (Shapiro 2024). Revisions to the Nevada BLM statewide PFYC rankings for the analysis area are primarily focused on the acres formerly assigned to Class U (unknown). In general, geological units in the past were assigned to the unknown class when the area or geological unit was poorly understood or had not been assessed by the BLM. Additionally, previous geological maps have often been developed at a scale that fails to capture the true potential of localized units. The current analysis and field survey provide more clarity regarding paleontological potential with a higher map resolution.

As noted, these refined PFYC rankings represent the best available data at this time. Table 3-66 displays the acres of PFYC classes for the full extent of the disturbance analysis ROW area, including a 200-foot buffer of the analysis area for the action alternatives. It should be noted that because the entire ROW and 200-foot buffer area would not be disturbed, the actual final area of disturbance would be much smaller than the acreage totals presented in Table 3-66. These acres reflect the area potentially subject to ground disturbance associated with the actual project footprint for the transmission lines and ancillary project components.

Table 3-66. Baseline Summary of the PFYC Ranking of Geological Units under the Disturbance ROW Analysis Areas in the GLNP Analysis Area

PFYC: Permanent Disturbance and Buffer	Acres
Very low potential (PFYC 1)	6,976
Very low potential (PFYC 2)	20,274
Moderate potential (PFYC 3)	13,911
High potential (PFYC 4)	725
Very high potential (PFYC 5)	0
Unknown potential (PFYC U)	54
Total Acres	**41,939**
PFYC: Temporary Disturbance and Buffer	**Acres**
Very low potential (PFYC 1)	11,899
Very low potential (PFYC 2)	30,075
Moderate potential (PFYC 3)	20,235
High potential (PFYC 4)	1,140
Very high potential (PFYC 5)	0
Unknown potential (PFYC U)	63
Total Acres	**63,413**

Sources: BLM, FS, and NVE GIS 2024; Shapiro 2024

3.7.4 Environmental Consequences

Methodology

Activities that occur in or on geological units that preserve paleontological resources can affect them. Effects include resource damage or destruction and loss of data associated with the fossils. Construction projects have the potential to disturb or destroy buried significant fossil deposits. Paleontologists use a variety of techniques to best predict the subsurface distribution. The current proposed project involves ground disturbance and excavation for the construction of major transmission lines, substations, and related facilities (such as access roads) across mostly federal lands in Nevada. Paleontological resources are considered fragile and nonrenewable. Therefore, direct impacts are considered long term. Effects can also be categorized as anything that results from GLNP activities on the resource itself or secondary effects from GLNP activities, such as increased erosion resulting in the exposure of paleontological resources. Effects may occur when paleontological resources are successfully recovered, which can initiate new scientific discoveries and engage the public through scientific education.

The assessment of effects considers that generalized GLNP activities would include ground disturbance, such as grading, using augers, or boring, and trenching for tower installation and roads. This assessment also considers the possibility of subsurface geological units having a different paleontological potential than surficial units. Paleontologists cannot know either the quality or quantity of fossils prior to natural erosion or human-caused exposure. As a result, even in the absence of fossils on the surface, it is necessary to assess the sensitivity of rock units based on their known potential to produce significant fossils elsewhere within the same geological unit (both within and outside the study area) or a similar geological unit, or based on whether the unit in question was deposited in a type of environment that is known to be favorable for fossil preservation.

In addition, younger surficial sediments (alluvium, lacustrine, eolian, etc.) usually have a low potential to preserve paleontological resources due to their young age; yet sediments increase in age with depth, so these surficial deposits often overlie older units that have higher paleontological potential. In areas with this underlying geological setting, surficial work may be of low risk for affecting paleontological resources while activities that require excavations below the depth of the surficial deposits would be at greater risk of affecting paleontological resources.

The PFYC system is a tool used to assess potential occurrences of paleontological resources in mapped geological units. It provides classifications that may be used to assist in determining the need for further assessment or actions. The PFYC system is created from available geological maps and assigns a class value to each geological unit, representing the potential abundance and significance of paleontological resources that may occur. PFYC values range from Class 1, very low, to Class 5, very high. These values indicate both the probability for the mapped geological unit to contain significant paleontological resources, if bedrock is exposed, and the degree of management concern for the resource. Class 4 (high) geological units are known to contain a high occurrence of paleontological resources. Class 5 (very high) are highly fossiliferous geological units that consistently and predictably produce significant paleontological resources.

PFYC assignments should be considered as only a first indication of the potential presence of paleontological resources. They are used to focus further inventory and ground surveys. Geological units without enough information associated with them to assign a PFYC value may be assigned Class U, unknown potential (BLM, FS, and NVE GIS 2024).

A project-specific paleontological investigation was completed for the GLNP (Shapiro 2024). The scope of that study included a desktop analysis, museum records review, literature evaluation, and fieldwork to further refine the potential for paleontological resources to be present and potentially impacted in the analysis area. Relevant information from the investigation has been incorporated into the discussion of the affected environment.

A proposed refinement of the Nevada BLM statewide PFYC rankings is used here, based on a review of the project-specific study (Shapiro 2024). Specifically, many rock units along the project route that were previously labeled as "Class U" (Unknown) and other rankings were reclassified (Shapiro 2022). The current investigation provides the best available data for the analysis area at this time.

The analysis qualitatively and quantitatively reviews existing data and current paleontological resource conditions and trends as well as the extent and depth of anticipated disturbance under each alternative. Review of PFYC units with resource allocations does not indicate a known impact or define the degree of impact; however, the review can provide additional insight into the potential for the activity to be associated with future impacts on the resource. If present, the density of known localities is an indicator of the richness of the paleontological resources for an area. A high density of localities may indicate a correspondingly high potential for more paleontological resources, suggesting that more active management of the paleontological resources in that area is warranted. A low density, however, may reflect either that fossils are rare or that the area has not received much exploration. A known locality in an area of rare occurrence, therefore, may prove to be even more significant due to its rarity.

Indicators

The primary resource indicator is the potential for loss of those characteristics that make the fossil locality or feature important or available for scientific use. Activities associated with surface and subsurface disturbance can lead to damage of near-surface resources. Impacts can also occur from the loss or removal of scientifically important fossils without formal study. In addition, natural weathering, decay, erosion, improper collection, and vandalism can remove or damage those characteristics that make the paleontological resource scientifically important.

Relevant impact indicators for paleontological resources include:

- Surface or subsurface disturbance in areas or acres where PFYC 3, 4, and 5 units are present or there are known localities or exposures from past research
- Extent and depth of ground-disturbing activities in the in paleontologically sensitive geological formations where the subsurface sensitivity of the area cannot be determined
- Extent that the activity increases the risk of damage, destruction, or loss of scientifically important fossils or localities through exposure, erosion, or weathering

- Extent that increased access to sensitive resources and localities may potentially lead to unauthorized collection, inadvertent damage, or vandalism to sensitive resources and localities

Assumptions

The analysis includes the following assumptions:

- Occurrences of paleontological resources are closely tied to the geological units (for example, formations, members, or beds) that contain them. The probability of finding paleontological resources can be broadly predicted from the geological units present at or near the surface, but predicting the exact locations of where fossils will be found is not possible.
- The analysis area includes fossil-bearing geological units and may include rare, near-surface exposures or localities that may contain specimens of scientific interest.
- When surface soils contain fossils or provide a protective matrix around fossil deposits, surface disturbance can damage or destroy fossil resources through direct impact or cause their displacement and accelerated weathering due to exposure.
- Scientifically important fossils may be discovered throughout the analysis area. Discoveries are most likely to occur in geological units classified as high-potential PFYC Class 4 or 5. Relative to the analysis area, known localities are few.
- Paleontological resources are nonrenewable; however, fieldwork, environmental compliance, and construction activities can lead to increased knowledge, additional research opportunities, and new discoveries.
- Project-specific refinement of the PFYC ranking of geological units in the project ROW and follow-up fieldwork are in progress. These will provide additional information on the presence and potential for impacts on paleontological resources.

Nature and Type of Effects

If paleontological resources are present, actions involving substantial excavation have the most potential for impacting paleontological resources, if the resource cannot be avoided. Excavations can have direct, destructive impacts on paleontological resources; the very nature of excavation is to remove in situ resources, resulting in destruction of the locality. These effects can be mitigated by removing specimens and data collected during excavation, which would be recorded in detail for future researchers to see, interpret, and further understand. Additionally, cooperation between the BLM and research or educational institutions during excavation and treatment planning would mitigate the excavation impacts. In some cases, paleontological resources are saved from destruction by excavation and collection.

Impacts can typically be minimized by implementing mitigation measures, such as monitoring during construction, excavating and recovery of materials, or avoiding surface exposures. If excavation and removal are the prescribed mitigation, this can also result in fossils being salvaged that may never have been unearthed as the result of natural processes. These newly exposed fossils would become available for scientific research, education, display, and preservation. Unmitigated surface-disturbing activities could dislodge or damage paleontological resources that were not visible before surface disturbance.

Surface and near-surface exposures can also be impacted by shallow ground-disturbing activities. Shallowly buried paleontological resources can be exposed by natural erosion, which can be exacerbated by surface-disturbing activities. Surface exposure can lead to discovery of paleontological resources, but fossils can be damaged or lost by the direct action of ground disturbance, subsequent erosion, and unauthorized collection.

Designation of utility corridors promotes areas where other linear projects could be located; this would increase the potential for impacts on paleontological resources similar to those described for this project within and near the utility corridor, while decreasing the potential for similar impacts in other areas.

Direct and Indirect Impacts from the No Action Alternative

Under the No Action Alternative, no surface disturbance from the geotechnical investigations for and construction, O&M, and decommissioning of the GLNP would occur. There would be no impacts on paleontological resources. Current protections and project compliance requirements for paleontological resources would remain in place. Inventories compiled and conducted to support the projects would add to the understanding of paleontological resources in the utility corridor.

The No Action Alternative would not involve any development of an electrical transmission system or associated facilities. Potential impacts on paleontological resources and possible mitigation are as described above in *Nature and Type of Effects*.

Direct and Indirect Impacts from All Action Alternatives

No impacts on paleontological resources have been identified under the action alternatives. Table 3-67 is a summary of the acres of the PFYC 3 and 4 geological units in the project ROW that are associated with the ground-disturbing activities under each alternative. There are no acres of PFYC 5 in the project ROW. The currently available data provide a baseline for assessing the potential for impacts.

Table 3-67. Summary of Moderate, High, and Very High PFYC Acres by Action Alternative

PFYC	ROW Acres under the Proposed Action	ROW Acres under the Other Resource Consideration Alternative	ROW Acres under the BLM Preferred Alternative
PFYC: Permanent Disturbance and Buffer			
Moderate potential (PFYC 3)	2,643	2,702	2,617
High potential (PFYC 4)	156	154	152
Total Acres	**2,799**	**2,856**	**2,769**
PFYC: Temporary Disturbance and Buffer			
Moderate potential (PFYC 3)	9,550	9,777	9,284
High potential (PFYC 4)	621	618	613
Total Acres	**10,171**	**10,395**	**9,897**

Sources: BLM PFYC 2022; Shapiro 2024

The potential impacts on paleontological resources and possible mitigation are as described above in *Nature and Type of Effects*. Common activities resulting in ground disturbance include grading, using augers, or boring, and trenching for tower and fence installation and roads. Most

disturbance would be near the surface. The presence of medium- to high-potential PFYC 3 and 4 geological units indicate the possibility of any of the alternatives to encounter scientifically important paleontological resources and the resulting avoidance, recovery, or other mitigation. Also, soil loss and access associated with geotechnical investigations, construction, operations, maintenance, and decommissioning activities would increase the risk of damage, destruction, or loss of scientifically important fossils or localities through exposure, erosion, weathering, and collecting.

As noted in Section 3.7.3, Affected Environment, because the entire ROW and 200-foot buffer area would not be disturbed, the actual area of moderate- and high-potential PFYC acreage disturbed by any of the action alternatives would be less than the acreage totals presented in Table 3-67. Exact locations of some project components and depths of disturbance are not known in most cases and vary somewhat between alternatives.

Based on current information of the paleontological resources, the potential for impacts on paleontological resources would be similar across the alternatives. Under the action alternatives, there would be project adherence to EMM CON-21 (Appendix D), which is related to worker education, and to paleontological resource-specific EMMs related to worker education and paleontological resource management services standards. The Proponent would also develop a monitoring and mitigation plan that provides for unanticipated discoveries (EMMs PALEO-1 through PALEO-4 in Appendix D). These measures would be protective against the impacts on paleontological resources described under *Direct and Indirect Impacts from All Action Alternatives* from increased access and surface-disturbing activities related to the GLNP.

3.8 Cultural Resources

3.8.1 Issues Identified for Analysis

How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect cultural resources, including national trails, historic properties, and cultural resource locations that are considered particularly sensitive or important to Native Americans?

3.8.2 Analysis Area

The NEPA analysis area for cultural resources is where there is potential for cultural resources to be impacted by the undertaking. For the GLNP, the analysis area for cultural resources under NEPA is considered the same as the area of potential effect (APE) under the NHPA. The BLM defined the APE in consultation with the Nevada SHPO, THPOs, ACHP, and other consulting parties, including Native American tribes. The APE for cultural resources includes many known cultural resources and historic properties and is broken into two areas: the direct area of potential effects (DAPE) and the visual area of potential effects (VAPE). The APE varies between the action alternatives, as do the anticipated effects on cultural resources.

The DAPE is made up of all areas that may be subject to ground-disturbing activity plus a 98-foot (30-meter) buffer. This area comprises approximately 42,015 acres for the Proposed Action, 42,174 acres for the Other Resource Consideration Alternative, and 40,892 acres for the BLM Preferred Alternative. The DAPE includes the temporary ROWs up to 600 feet wide for the action alternatives, the proposed distribution lines, substation footprints, microwave radio facilities, amplifier sites, access roads targeted for improvement or new construction,

material and construction yards, and the previously mentioned 98-foot (30-meter) buffer around all these areas, as stipulated by the BLM. Impacts related to physical disturbance and long-term noise are expected to affect only locations within the DAPE.

The VAPE, through best practices developed by the BLM and for purposes of compliance with Section 106, is a much larger area than the DAPE. The VAPE represents areas that may experience longer-term visual effects, temporary noise and dust effects, vibrations during construction, and cumulative effects. While visual effects are considered direct effects, they would not result in physical disturbance to historic properties in the VAPE. The VAPE is derived from the BLM's VRM program for assessing and managing the scenic value of the landscape (BLM 1984) and from BLM guidance on developing VAPEs for large infrastructure projects (Pay et al. 2020). The VAPE is defined as the foreground visual distance zone, or 0 to 3 miles from the transmission line alignments. The BLM Nevada's research on visual effects on historic properties found that visual effects introduced by lattice or monopole 500 kV transmission lines are greatly reduced past 3 miles, 230 kV lattice or monopole transmission lines are greatly reduced past 1.5 miles, and wooden monopole transmission lines are greatly reduced past 0.5 miles (Pay et al. 2020).

Following this research, the VAPE is defined as a 3-mile-wide buffer around the centerline of the action alternatives for a total 6-mile-wide corridor and a 0.5-mile-wide buffer around the distribution lines (for a total 1-mile-wide corridor) and substations. This area comprises approximately 917,471 acres for the Proposed Action, 945,223 acres for the Other Resource Consideration Alternative, and 914,261 acres for the BLM Preferred Alternative. Past these distances, the details, texture, and form of visual elements that would be introduced under the GLNP action alternatives would no longer be apparent. In some cases, atmospheric conditions could further reduce visibility (BLM 1984; Pay et al. 2020). Within the VAPE, archaeological sites that are eligible only for their potential to yield important information (National Register of Historic Places [NRHP] eligibility Criterion D) generally would not be affected by changes to their visual setting. Setting may also be an important element of the historical values of other types of resources, such as historic trails, roads, buildings, structures, districts, and landscapes.

3.8.3 Regulatory Environment

A cultural resource is defined in BLM Manual 8100 as a location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence (BLM 2004a). "Cultural resources" is an inclusive term that has been adopted and widely used to refer to the diverse human record found in objects and places created and/or used by people. These may comprise archaeological, historic, or architectural districts, sites, structures, objects, or places such as trails and landscapes. The term "cultural resources" also includes historic properties, as defined under the NHPA.

The National Historic Preservation Act

The passage of the NHPA by Congress in 1966 established a program for the preservation of historic properties, defined under Section 101 of the NHPA (54 USC 300308) as "any district, site, building, structure, or object included on, or eligible for inclusion on, the National Register of Historic Places" based on their importance to local, regional, or national history. The NHPA established the NRHP and the position of SHPOs and THPOs. The NHPA also defined the

Section 106 review process. Section 106 of the NHPA requires federal agencies to consider the effects of their actions on historic properties, prior to approving the expenditure of federal funds on an undertaking or prior to issuing any license. Federal agencies such as the BLM and Forest Service must afford the ACHP an opportunity to comment on any of their undertakings that could affect historic properties.

There are four main criteria for NRHP eligibility. If a property is found to be eligible under one or more of the four criteria, it must also exhibit integrity of at least one of the following qualities: location, design, setting, materials, feeling, workmanship, or association. The four main criteria for NRHP eligibility are:

- Criterion A. Event—The property must contribute to a major pattern of American history.
- Criterion B. Person—The property is associated with significant people of the American past.
- Criterion C. Design and construction—This concerns the distinctive characteristics of the building by its architecture and construction, including having great artistic value or being the work of a master.
- Criterion D. Information potential—This is satisfied if the property has yielded or may be likely to yield information important to prehistory or history.

Federal policy requires agencies to respect and equitably promote the inclusion of Indigenous knowledge (IK) in their decision-making (DOI 2023; Forest Service 2023). IK can be described as a body of observations, oral and written knowledge, innovations, technologies, practices, and beliefs developed by Indigenous peoples through interaction and experience with the environment. Indigenous peoples refers to people of Native American descent and any others whose ancestors have occupied what is now known as the United States and its territories since time immemorial, including members of tribal nations (DOI 2023). Other terms, such as Native knowledge, traditional knowledge(s), traditional ecological knowledge, or Indigenous science, are sometimes used to describe IK. This Final EIS/Proposed RMPA uses the term IK throughout.

Input, such as that from Class III Cultural Resource Survey tribal monitors and tribal representatives, detailed below in Section 3.8.5, Native American Coordination is inclusive of IK and "special expertise." The regulations at 36 CFR 800.4 state that agency officials "acknowledge that Indian tribes and Native Hawaiian organizations possess special expertise in assessing the eligibility of historic properties that may possess religious and cultural significance to them." The special expertise of tribes is inclusive of IK (ACHP 2021). Additional details about IK, particularly as it relates to the affected environment and impacts identified through ongoing consultation, can be found in Section 3.9, Native American Religious Concerns. The BLM and Forest Service are taking into consideration the special expertise of tribes in the evaluation of cultural resources for NRHP eligibility, including IK shared during coordination and consultation.

The GLNP is a federal undertaking subject to compliance with Section 106 of the NHPA as well as NEPA. The obligations of federal agencies under the NHPA and NEPA are independent, but

the obligations are similar in many ways. As described below, and consistent with the process set forth in 36 CFR 800.8(c), this Final EIS/Proposed RMPA is intended to fulfill the federal government's responsibilities under both Section 106 of the NHPA and the requirements under NEPA. The regulations for the NHPA and NEPA encourage coordination and integration of the processes to enable efficiencies, improve understanding, and lead to better decisions.

"NEPA Substitution" under 36 CFR 800.8(c)

Federal agencies are advised by the ACHP to integrate the compliance requirements of Section 106 of the NHPA and its regulations (36 CFR 800) with the requirements under NEPA. The BLM and Forest Service have chosen to fulfill their responsibilities under Section 106 of the NHPA by using the process outlined in 36 CFR 800.8(c), known as "substitution," instead of a more traditional Section 106 review process. Substitution allows federal agency officials to "use the process and documentation required for the preparation of an EA/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)). Federal agencies are responsible for notifying the SHPO, any THPOs, and the ACHP of their intent in advance of utilizing the substitution process.

Substitution is taking place in this EIS/RMPA as part of the NEPA process; it will help streamline Section 106 compliance. The substitution process incorporates the four main steps of the Section 106 process: initiation, identification of historic properties, assessment of adverse effects, and resolution of adverse effects. Substitution also requires consultation with the SHPO, THPOs, the ACHP, and Native American tribes.

Substitution also requires that specific standards set forth in 36 CFR 800.8(c)(1) are met during the process, including:

- Identification of consulting parties, including the SHPO and/or THPO, the ACHP, and Native American tribes, according to 36 CFR 800.3(f) and the NEPA scoping process (36 CFR 800.8(c)(1)(i))
- Identification of historic properties and assessment of the undertaking's effects on such properties consistent with the standards and criteria in 36 CFR 800.4 and 800.5 (36 CFR 800.8(c)(1)(ii))
- During NEPA scoping, environmental analysis, and preparation of the Draft EIS, consultation regarding the undertaking's effects on historic properties with the SHPO and/or THPO, ACHP, other consulting parties, and Native American tribes that may attach religious and cultural significance to affected properties (36 CFR 800.8(c)(1)(iii))
- Public involvement consistent with the agency's NEPA procedures (36 CFR 800.8(c)(1)(iv))
- Through consultation, development of the alternatives and proposed measures that might avoid, minimize, or mitigate any adverse effect of the undertaking on historic properties and descriptions of those measures in the Draft EIS

The consulting parties and the public had an opportunity to review and comment on the 2024 Draft EIS/RMPA. During the public comment period, the consulting parties and the ACHP did

not raise any objections that the Draft EIS/RMPA did not meet the standards set forth in 36 CFR 800.8(c)(1). The consulting parties may also object that the resolution of the effects on historic properties proposed in the Final EIS/Proposed RMPA is not adequate. If the BLM or Forest Service receives such an objection, the appropriate agency will then refer the matter to the ACHP. After publication of the Final EIS/Proposed RMPA, the BLM may approve the undertaking through a ROD, which must include binding commitment measures to avoid, minimize, or mitigate adverse effects (36 CFR 800.8(c)(4)). If the ROD makes a binding commitment to impose measures to resolve adverse effects, then neither a memorandum of agreement nor a programmatic agreement would be necessary for the undertaking.

The NHPA and NEPA use different language. Although they are similar and comparable in many ways, they are distinct. Terms relating to both the NHPA and NEPA are used throughout the cultural resources section, and comparison of these terms is provided in Table 3-68, below.

Table 3-68. NEPA Language versus NHPA Language

NEPA	NHPA
Effects/Impacts	Effects
Cumulative effects	Cumulative effects
Indirect effects	Indirect effects
Analysis area*	APE*
Significant effect or impact	Adverse effect
Public involvement	Consultation
Stakeholders	Consulting parties
Cooperating agencies	—
Mitigation	Mitigation

Sources: Council on Environmental QualityEQ and ACHP 2013
* Includes the VAPE and the DAPE as defined for the GLNP

3.8.4 NEPA Substitution Compliance with 36 CFR 800.8(c)(1) Standards

The approval of a ROW by federal agencies would qualify the GLNP as an undertaking subject to Section 106 of the NHPA. ACHP regulations (36 CFR 800) describe the process for how federal agencies comply with Section 106. Specifically, the process outlining the requirements of Section 106 is described in 36 CFR 800.3 through 800.6. The BLM and Forest Service are following the substitution approach described in 36 CFR 800.8(c); this means they will use the NEPA review process to comply with Section 106 of the NHPA as an alternative to the process set out in 36 CFR 800.3 through 800.6. This section is included to explicitly address these requirements.

This section meets the standards set forth in 36 CFR 800.8(c)(1) and is organized to present the following information required by the Section 106 process: initiation of the undertaking, identification of historic properties, assessment of effects, and resolution of adverse effects. Appendix C: Checklist for Substitution from a handbook developed by the Council on Environmental Quality and the ACHP (March 2013) is also used to guide use of the substitution process.

Initiation of the Undertaking

Notification

Regulations at 36 CFR 800.8(c) require that federal agencies notify in advance the SHPO and/or THPO and the ACHP of their intent to use the substitution process for Section 106 compliance. In its capacity as lead federal agency for both NEPA and NHPA compliance, the BLM met with the ACHP and Nevada SHPO in July 2022 to discuss the NEPA substitution process and procedural requirements for the GLNP and the related GLWP. The BLM sent initial notification of the intent to use substitution for the GLNP to the SHPO, THPOs, ACHP, and Native American tribes on February 8, 2023. The communications included notification of the decision to use the NEPA substitution process described in 36 CFR 800.8, invited recipients to participate as consulting parties and cooperating agencies in the NHPA and NEPA processes, and provided information about the initial APE. The BLM and Forest Service have and continue to actively engage in Section 106 consultation, coordination with Native American tribes, and government-to-government consultation with federally recognized Native American tribes.

Identification of Consulting Parties (Compliance with 36 CFR 800.8(c)(1)(i))

Parties entitled to participate in consultation with federal agencies include the SHPO and/or THPOs, the ACHP, Native American tribes who might attach religious and cultural significance to historic properties in the APE, certified local governments, project proponents, and individuals or organizations with a demonstrated interest in the undertaking, such as property owners and nonprofit organizations. The BLM identified and invited the following parties to consult under 36 CFR 800.3(f) and participate as cooperating agencies under NEPA in the February 8, 2023 communications: the Nevada SHPO, the ACHP, 16 Native American tribes, and the tribes' associated THPOs.

In the February 8, 2023, communications, the BLM asked potential consulting parties for assistance in identifying additional potential consulting parties. The BLM also requested assistance in identifying additional consulting parties in a June 2023 meeting with cooperating agencies.

The BLM is also consulting with federal agencies who manage land that may be affected by the undertaking as part of the EIS/RMPA process. Additional consulting parties may be identified and will be included as the NEPA process continues. Table 3-69 identifies current consulting parties under Section 106 of the NHPA. See Chapter 4, Consultation and Coordination, for more information on cooperating agencies, NHPA Section 106 consultation, and government-to-government consultation.

Table 3-69. GLNP Section 106 Consulting Parties

Federal
ACHP
National Park Service – National Trails Office
BIA
DOD
USFWS

Invited Native American Tribes and THPOs
Duckwater Shoshone Tribe
Ely Shoshone Tribe
Fallon Paiute-Shoshone Tribe
Fort McDermitt Tribal Council
Lovelock Paiute Tribe
Pyramid Lake Paiute Tribe
Reno-Sparks Indian Colony
Shoshone-Bannock Tribes
Shoshone-Paiute Tribes
Summit Lake Paiute Tribe
Te-Moak Tribe
Walker River Paiute
Washoe Tribe
Winnemucca Indian Colony
Yerington Paiute Tribe
Yomba Shoshone Tribe
State
Nevada SHPO
Nevada Division of Parks
Trail Organizations
National Pony Express Association
Oregon-California Trail Association

Identification of Historic Properties (Compliance with 36 CFR 800.8(c)(1)(ii))

Description of the APE

Pursuant to 36 CFR 800.4, the BLM established an initial APE and included the details as part of the notification and consultation letters sent to consulting parties.

The BLM and Forest Service have engaged in consultation throughout the planning process with interested Native American tribes; this consultation has been open to, but not limited to, discussions of the APE, identification of historic properties, assessment of effects, treatment of adverse effects on historic properties, public involvement, next steps in the NEPA substitution process, the status of the NEPA effort overall, and potential cooperating agency status. The APE for the GLNP is described under the *Analysis Area* section and analyzed by alternative in Section 3.8.7, Environmental Consequences.

The BLM and Forest Service's identification effort is reasonable and in good faith when the BLM and Forest Service have appropriately taken into account the factors specified in 36 CFR 800.4(b)(1); these factors are past planning, research and studies, the magnitude and nature of the undertaking, the degree of federal involvement, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the APE.

The BLM has provided the Class I and Class III inventory reports with preliminary NRHP eligibility determinations to the identified consulting parties. The BLM and Forest Service have requested consultation regarding eligibility determinations as required by 36 CFR 800.4(c)(2).

Results of the Class I Cultural Resources Inventory

The Class I inventory (a desktop survey consisting of literature and background research; Clay et al. 2022) addresses five major goals to support the development of this Final EIS/Proposed RMPA: (1) synthesizing all available previous archaeological, historical, architectural, and ethnohistoric work; (2) outlining the precontact history, ethnohistory, and history as currently understood; (3) identifying data gaps and Class III inventory needs by assessing previous data adequacy of surveys and site records; (4) developing criteria to better evaluate site significance in a focused research design; and (5) developing sensitivity maps (high, medium, low; surface and subsurface) based on the potential to find cultural resources by geographical area (this goal will be realized during the subsequent Class III inventory). The Class I inventory corridor covers 5 miles on either side of the Proposed Action transmission line for a 10-mile-wide corridor.

The Class I inventory results indicate that 753 studies, including 684 surveys, have been completed. There have been 4,082 cultural resources recorded across the large Class I inventory corridor (235 miles long and 10 miles wide). Of these, 446 are architectural structures, buildings, or districts and 3,636 are archaeological resources. Ten traditional cultural properties or areas of tribal concern have been previously identified. Two hundred twenty-nine cultural resources intersect impact areas, with 131 in the BLM Battle Mountain District, 43 in the BLM Carson City District, and 55 in the BLM Ely District. Within the proposed impact construction corridors, including the transmission line, including alternative routes, access roads, and ancillary features, existing survey coverage meets BLM data adequacy standards (inventoried 20 years ago to present) on the studies covering 2,643 acres of the project corridor. Also, 59 recorded resources meet data adequacy standards (recorded 10 years ago to present) in the same impact areas.

Results of the Class III Cultural Resources Inventory

A Class III cultural resources inventory (an on-the-ground survey) of the DAPE associated with this undertaking has been developed. Previously recorded sites and historic mapped features in the DAPE were reverified if possible, and documented as part of the Class III effort. Hundreds of previously unrecorded archaeological sites and numerous historic buildings and structures (aboveground resources) have been documented in the Class III inventory. Class III reporting was produced as four stand-alone documents, based on the administrative boundaries of the three BLM district offices and the one Forest Service ranger district within which the GLNP would be located.

The BLM Battle Mountain District Class III inventory documented 411 cultural and/or tribal resource sites and 208 isolated resources. Of the 411 sites documented, 314 are newly recorded (Clay et al. 2025a).

The Class III inventory for the BLM Carson City District Office's jurisdiction documented 249 cultural and/or tribal resource sites and 299 isolated resources. Of the 249 sites documented, 225 are newly documented (Clay et al. 2025b).

The BLM Ely District Class III inventory documented 165 cultural and/or tribal resource sites and 100 isolated resources. Of the 165 sites documented, 125 are newly documented (Clay et al. 2025c).

The Class III inventory for the Humboldt-Toiyabe National Forest, Austin Ranger District's jurisdiction documented 259 cultural and/or tribal resource sites and 127 isolated resources. Of the 259 sites documented, 234 are newly documented (Clay et al. 2025d).

Consultation on the draft Class III inventory between the BLM, Forest Service, Nevada SHPO, and interested tribes is ongoing.

Assessment of Effects on Historic Properties

Consultation Regarding the Effects of the Undertaking (Compliance with 36 CFR 800.8(c)(1)(iii))

Consulting parties have been invited to attend cooperating agency meetings throughout the development of the NEPA documents. Cooperating agency meetings for the GLNP, typically monthly, have been held since October 2022. See Section 4.2.5 for a full accounting of cooperating agency activity for the GLNP.

Cooperating agencies and consulting parties have reviewed the administrative versions of the EIS/RMPA, and all substantive comments received from consulting parties and the public will be incorporated or otherwise addressed. Although the SHPO declined to participate as a cooperating agency, the BLM notified the SHPO of the 2024 Draft EIS/RMPA's availability as well as the NEPA schedule and anticipated next steps via email.

The BLM and Forest Service continued consultation efforts in 2025, inviting the parties listed in Table 3-69 to participate in a meeting on March 12, 2025, and encouraging any additional Section 106 consultation that parties desired. Proposed topics of discussion included the results of the Class I and III inventories, preliminary NRHP eligibility determinations, the preliminary adverse effect determination, and the proposed treatment methods contained within the GLNP historic properties treatment plan (HPTP; Appendix O).

Determination of Effect

Procedures for assessing adverse effects are described at 36 CFR 800.5: "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative."

The BLM has made a preliminary determination of adverse effect based on the direct physical and visual changes the GLNP could introduce to historic properties. Potential effects include ground disturbances; visual, audible, or atmospheric disturbances; increased erosion; or changes in public access, traffic patterns, and land use. Cultural resources in the DAPE may be affected by ground-disturbing activities, while cultural resources in the VAPE may be affected by visual effects once the transmission and distribution lines are visible on the nearby landscape. Adverse

effects on cultural resources could result where the GLNP has the potential to cause a direct physical effect; adverse visual change; or restricted access by tribes to cultural resources that are listed on or eligible for the NRHP, cultural resources that have not been evaluated for NRHP eligibility, and cultural resources of significance to Native American tribes.

The BLM distributed the completed Class III inventory report to the consulting parties on January 28, 2025, for consultation, including on the preliminary NRHP eligibility determinations and determinations of effect.

Public Involvement (Compliance with 36 CFR 800.8(c)(1)(iv))

The views of the public are essential to informed decision-making by the BLM and Forest Service, including in the Section 106 process. The BLM and Forest Service are using agency procedures for public involvement under NEPA to fulfill the public involvement requirements under Section 106 of the NHPA.

Public involvement included pre-NOI virtual meetings to provide the public with early information on the GLNP, as well as two official scoping periods in 2023 and 2024 that included multiple in-person and virtual public meetings. Project materials, including those presented at public meetings, are available on the BLM's ePlanning website, enabling interested members of the public to review them. For greater detail on public involvement, including in-person and virtual meeting dates, locations, and attendance, as well as the issues identified through this process, see Section 1.8, Pre-NOI Public Involvement and Scoping, and visit the project website at https://eplanning.blm.gov/eplanning-ui/project/2017033/510.

Resolution of Adverse Effects (Compliance with 36 CFR 800.8(c)(1)(v))

Alternatives Development

As described under *Assessment of Effects on Historic Properties*, consulting parties have been invited to attend cooperating agency meetings throughout the development of the NEPA documents. Through the NEPA and NHPA Section 106 processes, the BLM has worked with cooperating agencies and consulting parties who identify concerns to develop alternatives and measures to avoid, minimize, or mitigate the GLNP's adverse effects. This work has included discussion of the strategy for identifying historic properties, assessment of effects, requests for input from the consulting parties on the treatment of adverse effects on historic properties, and potential alternatives for consideration related to the GLNP. The BLM provided information to the cooperating agencies and consulting parties on the process for commenting on the administrative versions of the EIS/RMPA.

As described under *Assessment of Effects on Historic Properties*, the BLM and Forest Service provided details about commenting on the 2024 Draft EIS/RMPA. They also recently invited the parties listed in Table 3-69 to a Section 106 consulting party meeting in 2025. The topics of discussion included the results of the Class I and III inventories, preliminary NRHP eligibility determinations, preliminary adverse effect determinations, and proposed treatment methods. The BLM and Forest Service remain committed to working with cooperating agencies and consulting parties to address as many concerns as possible.

Proposed Treatment Measures

Based on the preliminary determination of adverse effect, the federal agencies required the development of an HPTP for the GLNP that would address the potential effects anticipated under the alternatives. Treatment measures within the plan vary widely, as do the resources and anticipated effects these measures are aimed at mitigating. The proposed measures focus on avoidance through design. Measures also include tribal and archaeological monitoring; cultural sensitivity training for construction personnel; collaborative research with interested tribes; development of interpretive materials and a digital interactive map; archaeological data recovery; and highly detailed documentation methods, such as LiDAR[8] and drone photography for archaeological sites or Historic American Buildings Survey or Historic American Engineering Record documentation for buildings and structures.

As part of complying with 36 CFR 800.8, the BLM and Forest Service must consult on proposed measures that might avoid, minimize, and mitigate impacts. The BLM and Forest Service will continue consultation with consulting parties on site-specific treatment methods. In the RODs and BLM Approved RMPA, the BLM and Forest Service will make a binding commitment to implement the treatment methods in the HPTP.

3.8.5 Native American Coordination

Tribal Monitors

Some Native American tribes requested the presence of tribal monitors for archaeological fieldwork in certain areas. Tribal monitors were present for archaeological fieldwork on tribal lands and for as much of the archaeological fieldwork in areas of interest to tribes as possible. The presence of tribal monitors for fieldwork not on tribal lands depended on the monitors' availability. Tribal monitors were provided daily logs and forms on which to provide their input and notes for the GLNP. The BLM and Forest Service are taking into consideration the perspectives of tribal monitors when evaluating cultural resources for NRHP eligibility.

Site Visits[9]

The BLM has hosted three field site visits specific to the GLNP. The first was held October 21 and 22, 2022, and was attended by tribal representatives from the Duckwater Shoshone Tribe and the Yomba Shoshone Tribe. A second site visit was held November 18, 2022, and was attended by the Fallon Paiute-Shoshone Tribe. A third site visit occurred on November 21 and 22, 2024, and was attended by a representative from the Duckwater Shoshone Tribe. Additional tribal coordination efforts are detailed in Section 3.9, Native American Religious Concerns. The BLM has considered the input received, such as input on the NRHP eligibility of sites and features that were documented during the Class III cultural resources inventory or those resources identified during consultation as particularly important or sensitive.

Other Coordination

Some Native American tribes have reached out to the BLM about the GLNP by email and telephone during the planning process. The information sharing and coordination during these

[8] Light detection and ranging (LiDAR) is a remote sensing method used to map and examine the earth's surface.
[9] This section of the document will be updated with summaries of tribal input received by the BLM during these visits.

communications occurred outside formal consultation letters, meetings, and site visits. In addition to the coordination and consultation detailed above, the BLM offered presentations on the GLNP to tribes and invited tribes to public input workshops and cooperating agency meetings. More details about tribal coordination are available in Section 3.9, Native American Religious Concerns.

3.8.6 Affected Environment

The GLNP runs across the central portion of the Great Basin, where archaeological evidence indicates there has been human travel, use, and occupation for at least the last 12,000 to 15,000 years. The information presented in this section draws on a great deal of research and synthesis by others, particularly the cultural contexts developed as part of the draft Class I cultural resource inventory related to the GLNP (Clay et al. 2022).

National Historic Trails

Two NHTs—the Pony Express and California NHTs—and another trail identified as eligible for designation as an NHT—the Central Overland Emigrant Route-Simpson Route—lie within the special designations' analysis area. See Section 3.12, Special Designations, for more information on this resource.

Indigenous Archaeological Context

The prehistory of the central Great Basin can be divided into several archaeological periods. Chronologies and specifics regarding diagnostic artifacts and features vary to some degree across the GLNP APE, and some specifics are not universally agreed upon. The date ranges and definitions presented here come from a high-level review of research carried out throughout the large region that the GLNP transmission line would cross. The periods defined in the Class I context (Clay et al. 2022) are summarized here.

Paleoindian Period (14,500–8,500 years ago)

The material culture of this period is typified by a distinct toolkit that includes fluted and stemmed projectile points, as well as relatively few ground stone tools. In the central Great Basin, this culture period is also typified by adaptation to reliance on local marsh and lacustrine resources.

Pre- and Post-Mazama Archaic Periods (8,500–5,700 years ago)

The Pre-Mazama Archaic period (8,500–7,800 years ago) has a toolkit typified by Pinto type projectile points that last occurred during this period. The Pre-Mazama Archaic represents a small, temporal window of only 700 years, defined to identify clearly post-Paleoindian behavioral adaptations ahead of a volcanic eruption at Mt. Mazama, Oregon, at approximately 7,800 years ago. This eruption that spread ash over large portions of the Great Basin is identifiable in the archaeological record in many places. Typical of the Post-Mazama Archaic period (7,800–5,700 years ago) are large side-notched and northern side-notched points. The Pre- and Post-Mazama Archaic periods are associated with increasing levels of environmental stress and population shifts.

Early Archaic Period (5,700–3,800 years ago)

The Early Archaic is marked by a gradual trend toward a wetter and cooler climate, with Gatecliff and Humboldt series projectile points becoming much more common than large side-notched and northern side-notched points in the central Great Basin. The use and exploitation of upland environments intensified during this period, possibly in association with the exploitation of pinyon pine, which is postulated to have been introduced in the area around 6,000 years ago (Thomas 1982). Evidence from the Gatecliff Shelter (Thomas 1983) and Mount Jefferson indicates that the hunting of large game remained an important subsistence activity. However, more intense exploitation of a broad range of resources is evidenced by an increase in the presence of seed-processing equipment. As the population increased, seasonal base camps were regularly reoccupied, and evidence for larger, semi-sedentary villages appears. Incised stones are present in some assemblages, and the appearance of exotic obsidian and marine shell beads is evidence of regional exchange (Thomas 1983; Kelly 1997).

Middle Archaic Period (3,800–1,300 years ago)

Among other qualities, the Middle Archaic is typified by an increasing elaboration in material culture and hypothesized population growth due to a favorable climate. This period is represented by a spectacular array of material culture recovered from many cave sites dating to this period in the Great Basin. Previously excavated sites from this period, such as Lovelock Cave and Spirit Cave, have contained large numbers of artifacts, such as baskets, nets, fur and bird-skin robes, mats, cordage, atlatls, darts, bone awls, ornaments, waterfowl decoys, and projectile points.

Late Archaic Period (1,300–600 years ago)

The Late Archaic is well characterized as a time of profound change in the central Great Basin. Populations generally continued to increase while resource use intensified, and climate disruption between 1,100 and 700 years ago appears to have slowed population growth. Important technological changes during this period include the appearance of the bow and arrow. Brownware ceramics and twined and coiled basketry (Kelly 1997) are typical of this period. Evidence for the appearance of the bow and arrow includes small corner-notched and basally notched projectile points (Thomas 1981; Kelly 1997).

During this time, occupation appeared to be less intense, as marked by a decrease in the overall numbers of artifacts and the production of bifaces at Gatecliff Shelter (Thomas 1983). The discovery of more permanent habitation sites at higher altitudes indicates that groups became more sedentary and that residences became established at locations that had served as temporary hunting camps during the preceding periods. An increase in the size of structures and settlements has been noted during this period.

Late Precontact Period (600 years ago up to European Contact)

The Late Precontact period is typified by continued resource use intensification and notable changes in material culture, such as basketry, sandals, and pottery; a higher ratio of artifacts related to seed processing, compared with other periods; and the prevalence of desert-series projectile points.

Cultural Resources of Particular Interest to Native Americans

The lands that the GLNP would cross include the ancestral and contemporary lands of Western Shoshone, Northern Paiute, and Washoe communities, including a portion of the Numu Newe SMA, which was designated by Congress for management by the BLM in recognition of the historic, cultural, archaeological, natural, and educational resources located there. See Section 3.12, Special Designations, for more information on this area.

The BLM and Forest Service are actively participating in formal government-to-government consultation on the GLNP with interested tribes. See Section 3.9.6, Native American Religious Concerns, Affected Environment, for more contemporary and ethnographic context on Native American tribes in the area.

Historic Period Archaeological Context

The non-Native history of the GLNP APE follows typical themes for Nevada and the American West in general. Explorers and fur trappers were some of the first European Americans to traverse northern Nevada during the early and mid-nineteenth century. In the decades that followed, emigrants made and relied on a growing network of overland wagon roads to travel into and through the territory. The gold and silver discoveries in the middle part of the 1800s attracted prospective miners to the hills of western Nevada and led to the establishment of many mining towns. As the boom and bust of the mining industry continued throughout the twentieth century, ranching and other agricultural pursuits emerged as important endeavors. The desert climate favored cattle and sheep ranching, but the advent of large-scale irrigation systems in western Nevada and the utilization of small rivers, creeks, springs, and wells across central and eastern Nevada helped farmers grow a variety of crops.

Nevada's geographic proximity to the West Coast and its growing urban centers meant it was prime real estate for transcontinental transportation and utility lines, including the Transcontinental Railroad; long-distance telegraph and telephone lines; and later the Lincoln and Victory automobile highways. Through the 1900s, agriculture, mining, and the presence of important transportation and utility corridors helped influence the settlement patterns through the study corridor. Broad regional historical patterns, trends, and themes evident in the APE include early expeditions and wagon roads, mining, ranching and agriculture, railroads, public roads and highways, and utility infrastructure.

3.8.7 Environmental Consequences

Methodology

To compare environmental effects under the alternatives, it is necessary to assess whether cultural resources like historic properties would be adversely affected. To fulfill the federal agencies' obligations under Section 106 of the NHPA, Class I and III cultural resources inventory reports and the HPTP (Appendix O) were developed. This work was done in compliance with the Secretary of the Interior's Guidelines for Archaeology and Historic Preservation (48 *Federal Register* 44716), standards found within BLM Manual 8110 (BLM 2004b), and the standards in the sixth edition of the BLM Nevada State Office's Guidelines and Standards for Archaeological Inventory (BLM 2019).

Class I Cultural Resources Inventory

The Class I cultural resources inventory, drafted prior to the Class III cultural resource inventory, gathered background research on archaeological and historic sites within 5 miles on either side of the GLNP transmission line. All ancillary features and access roads outside this 10-mile-wide corridor were also included in the Class I study. Roads have a 1,000-foot-wide Class I study area if outside the 10-mile-wide Class I study area corridor. Resources accessed for this research included the following:

- The Nevada Cultural Resource Information System
- Cultural resources files at the BLM district and state offices
- BLM Land Status Records Systems
- Historical USGS quadrangles
- Historical aerial photographs from the USGS Earth Explorer aerial imagery dataset
- The NRHP
- The Nevada Register of Historic Places
- The National Park Service
- Oregon and California Trails Association
- The Nevada Department of Transportation
- Sonoma State University
- Private cultural resources management firms

The Class I cultural resource inventory focuses on five tasks: synthesizing existing available archaeological, historical, architectural, and ethnohistoric work; creating an outline of currently understood precontact Indigenous history, Indigenous ethnohistory, and Euro-American history in the region of the GLNP; identifying data gaps and Class III inventory needs by assessing the adequacy of existing work; developing criteria to evaluate site significance considering a focused research design; and developing sensitivity maps based on the potential (high, medium, and low) to find cultural resources by geographical area.

Class III Cultural Resources Inventory

A Class III cultural resources inventory has been developed for the DAPE of the action alternatives that have been carried forward for detailed analysis here. Cultural resources have been identified and documented according to BLM standards, and the participation of tribal monitors was encouraged. The portions of the DAPE that had already been surveyed to Class III standards for cultural resources by a qualified professional within the last 20 years were not resurveyed. However, previously recorded sites in those areas were revisited and updated, as necessary. The Class III inventory includes all federal and state lands, but it excludes all private lands. When a right of entry (ROE) is obtained from private landowners for the GLNP, all private lands in the DAPE would be inventoried for cultural resources prior to construction, and they would be monitored during construction.

Historic Properties Treatment Plan

It is anticipated that avoiding all effects on NRHP-eligible sites would not be possible; therefore, the GLNP would have adverse effects on historic properties if an action alternative is selected. Preliminary measures to resolve those effects are identified in the GLNP HPTP (Appendix O). This treatment plan and the assessment of effects it is based upon were developed in consideration of discussions with consulting parties, including Native American tribes and other relevant land-managing entities, such as the Forest Service. The BLM provided the HPTP to consulting parties on February 11, 2025, and provided them until April 27, 2025, to complete their review.

Assuming an action alternative is selected, the BLM would continue consultation to further refine the HPTP to avoid, minimize, or mitigate adverse effects on historic properties and develop a monitoring plan for construction, an unanticipated discovery plan, a plan to report the completed mitigation measures to the consulting parties, and a Native American Graves Protection and Repatriation Act plan of action. The final HPTP would likely contain additional details and site-specific recommendations.

Visual Effects

Section 3.10.4, Visual Resources, Environmental Consequences, contains a detailed description of the anticipated temporary and long-term impacts on visual resources from construction, O&M, and decommissioning of the GLNP under the alternatives. This includes a table summarizing fieldwork done at key observation points (KOPs; see also Figure 3-15, Visual Resource Management Classes and Visual Quality Objective, in Appendix A) within the visual resource analysis area, defined as 5 miles on either side of the Proposed Action's components.

As part of the HPTP, cultural resources are assessed for potential visual effects using a 3-mile-wide corridor on either side of the transmission line centerline for a 6-mile-wide visual effects analysis area. Historic properties that are eligible or listed under Criteria A, B, or C; retain integrity of setting, feeling, and association; and are within both the viewshed and the VAPE could be visually affected by the GLNP. Sites meeting these criteria may require mitigation to resolve adverse effects if they cannot be avoided through design, and treatment measures are proposed accordingly in the HPTP (Appendix O).

Indicators

- Historic properties or potential historic properties within the APE (both the DAPE and VAPE) where impacts/effects are anticipated
- Cultural resources indicated as sensitive or otherwise important to tribes within the APE where impacts/effects are anticipated, such as the Numu Newe SMA
- Number of national trail crossings and miles of national trails within the proposed utility corridor

Assumptions

- Cultural resources are nonrenewable, and damage to them typically results in permanent impacts.
- The BLM will continue to follow existing regulatory procedures for the consideration of impacts on cultural resources, such as Section 106 of the NHPA, or BLM and Nevada SHPO agreement protocols.
- Archaeological sites significant for regional and national history may exist within the APE that have never been evaluated for listing on the NRHP. This analysis assumes all sites are eligible until evaluated when they are subject to the GLNP's effects.
- The GLNP will be engineered to avoid historic properties and unevaluated resources, to the extent practicable.

Comparative Summary Tables

Table 3-70 presents the acreage of the GLNP APE and its parts (DAPE and VAPE) under the alternatives. It is worthwhile to note that while the total acreage and the number of cultural resources included in the APE under each action alternative varies, the relative magnitude of the effects on cultural resources under each alternative will relate more to the specific sites affected and the nature of the effects they will experience than to the total acreage or number of cultural resources contained within the APE under each alternative.

Table 3-70. APE by Alternative (Acres)

APE	No Action	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
DAPE	—	42,207	41,876	41,550
VAPE	—	921,156	943,516	918,201
Total	**—**	**963,363**	**985,392**	**959,751**

Sources: BLM, FS, and NVE GIS 2024; Clay et al. 2025a through 2025d

Table 3-71 presents a summary of the known cultural resource types within the DAPE and VAPE by alternative. The VAPE counts are inclusive of those for the DAPE, since the DAPE is a smaller area entirely within the VAPE. Many cultural resources identified during the Class I or III surveys for the GLNP contain more than one "component," or site type, within the same site. These multicomponent resources are not double-counted in the table totals below. A subset of the archaeological sites documented during the Class III inventory were also identified as cultural resources by tribal inventory participants, presented in Table 3-71 below as "tribally identified resources".

Table 3-71. Known Cultural Resources within the APE

Site Type	Location	No Action	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
Precontact	DAPE	—	375	334	382
	VAPE	—	457	410	455
Historic	DAPE	—	341	341	340
	VAPE	—	393	403	386
Multicomponent	DAPE	—	85	64	88
	VAPE	—	102	95	105
Total	**DAPE**	**—**	**801**	**739**	**810**
	VAPE	**—**	**952**	**908**	**943**
Tribally Identified*	DAPE	—	44	29	46
	VAPE	—	55	49	55

Sources: BLM, FS, and NVE GIS 2024; Clay et al. 2025a through 2025d
*Tribally identified resources are also accounted for under other site types in the table, and are not double counted in the table totals.

Table 3-72 presents a summary of the known cultural resources' NRHP eligibility recommendations and determinations within the DAPE and VAPE by alternative. The cultural resources identified by tribal participants during the Class III survey (see Table 3-71, above) have had NRHP eligibility recommendations developed that incorporate the information shared by tribal participants. Cultural resources recommended or determined NRHP eligible under Criteria A, B, and/or C have a potential for impacts under the NHPA within the VAPE. Cultural resources determined not eligible or eligible only under Criterion D would not have a potential for impacts under the NHPA within the VAPE.

Table 3-72. NRHP Eligibility of Known Cultural Resources within the APE

Resource Location	NRHP Eligibility	No Action	Proposed Action	Other Resource Consideration Alternative	BLM Preferred Alternative
DAPE	Eligible	—	141	104	146
	Unevaluated	—	0	0	0
	Not Eligible	—	660	635	664
	Total	**—**	**801**	**739**	**810**
VAPE	Eligible (A, B, and/or C)	—	83	75	83
	Eligible (D only)	—	86	77	86
	Unevaluated	—	0	0	0
	Not Eligible	—	783	756	774
	Total	**—**	**952**	**908**	**943**

Sources: BLM, FS, and NVE GIS 2024; Clay et al. 2025a through 2025d

Direct and Indirect Impacts from the No Action Alternative

Under the No Action Alternative, no impacts from development of GLNP facilities would occur. There would be no changes to current conditions and trends regarding cultural resources from selecting the No Action Alternative.

Direct and Indirect Impacts Common to All Action Alternatives

Under all action alternatives, impacts on cultural resources associated with geotechnical investigations would include the potential for ground disturbance within the 50-foot by 50-foot work area established at each borehole location. Impacts on cultural resources may also include temporary, short-term effects associated with auditory, atmospheric, and visual intrusions from the presence and activity of geotechnical investigation equipment and personnel. All proposed areas for geotechnical investigations have been inventoried to Class III standards for cultural resources. The investigations would avoid impacts on cultural resources through a variety of strategies, including monitoring, borehole relocation, use of alternative access, or drilling type and borehole abandonment (NV Energy 2025). Because of this, the BLM does not anticipate adverse effects on historic properties from geotechnical investigations.

Construction, O&M, and decommissioning of the GLNP could result in temporary and long-term impacts on cultural resources due to surface-disturbing or setting-altering activities, such as road use and improvement or facility and infrastructure placement. Impacts on cultural resources from surface-disturbing or setting-altering activities would include damaging, destroying, or displacing artifacts and features; as well as access-related impacts like vandalism and looting. Potential non-physical impacts on cultural resources include direct and indirect impacts, such as introducing visual, audible, or atmospheric elements out of character with a historic setting or restriction of access to resources of importance to Tribes due to fencing used for sensitive area avoidance.

The intensity and nature of impacts would depend on the specific project activity causing the impact and on the resource affected. For example, a transmission line spanning an archaeological site eligible for inclusion on the NRHP only under Criterion D (association with information potential) would likely not be considered and adverse effect. However, a transmission line spanning a resource like a trail, road, or a landscape eligible under Criterion A (association with an event) may still adversely affect the integrity of the resource by diminishing a feeling or setting associated with its significance.

Under the action alternatives, the BLM would designate a utility corridor where other linear projects could be located; this could increase the potential for impacts on cultural resources within and near the ROW and decrease the potential for impacts in other areas.

Many cultural resources that occur on or just below the ground are susceptible to surface disturbance and erosion damage, including modifying spatial relationships of artifacts and destroying features and stratified deposits. The information loss may be relevant to the site function, dates of occupation, subsistence, and past environments; all these are important to understanding past cultures.

Depending on the extent and type of activity, the amount of physical disturbance could be from slight artifact shifts out of context in a small portion of the site to wholesale destruction of an entire site. Should a portion of a site be affected, it is possible that most of the information available from a site could be retrieved and contributed to the prehistoric record of the region, thereby reducing the severity of the impacts. However, adverse impacts that result in an irreversible and irretrievable loss of cultural resource value are of the highest severity.

Under the action alternatives, construction, O&M, and decommissioning of the proposed access roads (the DAPE) would overlap approximately 41.1 acres of the 209,181-acre Numu Newe SMA. Impacts on the SMA from development of the GLNP include those described above. These impacts could directly affect the resources for which the SMA was designated, including historic, cultural, and archaeological values. These impacts would be identical under the action alternatives. See Section 3.12.4, Special Designations, Environmental Consequences, for greater detail.

Though the length varies by alternative, under the action alternatives, portions of a congressionally designated national trail route and a trail route recommended as eligible for addition to the California NHT would fall within the proposed utility corridor. Potential impacts on the Pony Express NHT and Central Overland Emigrant Route-Simpson Route from construction, O&M, and decommissioning of the proposed transmission line include those described above for cultural resources in general, particularly the physical impacts related to increased access in and around the analysis area and visual impacts such as construction of modern elements out of character with a historic setting. Impacts on trail resources would be most pronounced at locations within the proposed utility corridor and where the GLNP would cross the trail, which vary by alternative.

Under the action alternatives, there would be project adherence to EMM CON-21 (see Appendix D), which is related to worker education, and EMMs related to worker education, temporary site boundary marking, cultural resource management services standards, restriction of project-related travel to designated routes, development of a mitigation plan and unanticipated discovery plan, and a commitment to seek avoiding impacts on tribal interests as identified through subsequent consultation and tribal monitoring (EMMs CULT-1 through CULT-8 in Appendix D). These measures would be protective against impacts on cultural resources from increased access, alteration of the setting, and surface-disturbing activities related to the GLNP.

Under all the action alternatives, the RODs and BLM Approved RMPA would commit to necessary mitigation for cultural resources in the DAPE and VAPE of the alternative selected. This would be done to mitigate adverse effects, as defined under the NHPA Section 106 implementing regulations, on NRHP-eligible cultural resources. See Section 3.8.8, Design Features and Mitigation for more details on design features and likely mitigation for cultural resources under the action alternatives.

Direct and Indirect Impacts from the Proposed Action

Under the Proposed Action, 3.6 miles of the Pony Express NHT and 4.3 miles of the Central Overland Emigrant Route-Simpson Route would fall within the proposed utility corridor. Under the Proposed Action, the transmission line would cross the Pony Express NHT a total of five times and would cross the Central Overland Emigrant Route-Simpson Route a total of seven times. Anticipated impacts on the NHTs would be those described under *Direct and Indirect Impacts Common to All Action Alternatives.* Impacts would be greater than they would be under the No Action Alternative, with a magnitude correlating to the length of trail impacted. See Section 3.12.4, Special Designations, Environmental Consequences, for more detail on the

impacts on the Pony Express NHT and Central Overland Emigrant Route-Simpson Route under the Proposed Action.

Under the Proposed Action, the DAPE would contain 141 archaeological sites that have been determined or recommended eligible for inclusion on the NRHP and 44 cultural resources identified by tribal specialists (BLM, FS, and NVE GIS 2024). Anticipated impacts on cultural resources in the DAPE would be as described under *Direct and Indirect Impacts Common to All Action Alternatives,* and greater than those under the No Action Alternative.

Under the Proposed Action, the VAPE would contain 83 archaeological sites that have been determined or recommended eligible for inclusion on the NRHP under Criteria A, B, or C (BLM, FS, and NVE GIS 2024). The VAPE would also contain 55 cultural resources identified by tribal specialists (BLM, FS, and NVE GIS 2024). Anticipated impacts on cultural resources in the VAPE would be as described under *Direct and Indirect Impacts Common to All Action Alternatives,* and greater than those under the No Action Alternative.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Under the Other Resource Consideration Alternative, 1.4 miles of the Pony Express NHT and 5.5 miles of the Central Overland Emigrant Route-Simpson Route would fall within the proposed utility corridor. Under the Proposed Action, the transmission line would cross the Pony Express NHT a total of 4 times and would cross the Central Overland Emigrant Route-Simpson Route a total of 16 times.

Anticipated impacts would be similar to those analyzed under the Proposed Action and greater than those under the No Action Alternative. However, compared with the Proposed Action, the impacts would be less in magnitude on the Pony Express NHT and greater in magnitude on the Central Overland Emigrant Route-Simpson Route. This is due to 2.2 fewer miles of the Pony Express NHT and 1.2 more miles of the Central Overland Emigrant Route-Simpson Route coming within the proposed utility corridor, as well as one fewer crossing of the Pony Express and 9 more crossings of the Central Overland Emigrant Route-Simpson Route under the Other Resource Consideration Alternative. See Section 3.12.4, Special Designations, Environmental Consequences, for more detail on the impacts on the Pony Express NHT and Central Overland Emigrant Route-Simpson Route.

Under the Other Resource Consideration Alternative, the DAPE would contain 104 archaeological sites that have been determined or recommended eligible for inclusion on the NRHP and 29 cultural resources identified by tribal specialists (BLM, FS, and NVE GIS 2024). Anticipated impacts on cultural resources in the DAPE would be as described under *Direct and Indirect Impacts Common to All Action Alternatives,* and greater than those under the No Action Alternative.

Under the Other Resource Consideration Alternative, the VAPE would contain 75 archaeological sites that are determined or recommended eligible for inclusion on the NRHP under Criteria A, B, or C (BLM, FS, and NVE GIS 2024). The VAPE would also contain 49 cultural resources identified by tribal specialists (BLM, FS, and NVE GIS 2024). Anticipated impacts on cultural resources in the VAPE would be as described under *Direct and Indirect*

Impacts Common to All Action Alternatives, and greater than those under the No Action Alternative.

Direct and Indirect Impacts from the BLM Preferred Alternative

Under the BLM Preferred Alternative, 3.8 miles of the Pony Express NHT and 4.5 miles of the Central Overland Emigrant Route-Simpson Route would fall within the proposed utility corridor. Under the BLM Preferred Alternative, the transmission line would cross the Pony Express NHT a total of five times and would cross the Central Overland Emigrant Route-Simpson Route a total of seven times.

Anticipated impacts would be similar to those analyzed under the Proposed Action and greater than those under the No Action Alternative. However, the impacts on the Pony Express NHT and Central Overland Emigrant Route-Simpson Route would be greater than under the Proposed Action. This is due to 0.2 more miles of the Pony Express NHT and 0.2 additional miles of the Central Overland Emigrant Route-Simpson Route within the proposed transmission and utility corridor. See Section 3.12.4, Special Designations, Environmental Consequences, for more detail on the impacts on the Pony Express NHT.

Under the BLM Preferred Alternative, the DAPE would contain 146 archaeological sites that are determined or recommended eligible for inclusion on the NRHP and 46 cultural resources identified by tribal specialists (BLM, FS, and NVE GIS 2024). Anticipated impacts on cultural resources in the DAPE would be as described under *Direct and Indirect Impacts Common to All Action Alternatives,* and greater than those under the No Action Alternative.

Under the BLM Preferred Alternative, the VAPE would contain 83 archaeological sites that are determined or recommended eligible for inclusion on the NRHP under Criteria A, B, or C (BLM, FS, and NVE GIS 2024). The VAPE would also contain 55 cultural resources identified by tribal specialists (BLM, FS, and NVE GIS 2024). Anticipated impacts on cultural resources in the VAPE would be as described under *Direct and Indirect Impacts Common to All Action Alternatives,* and greater than those under the No Action Alternative.

3.8.8 Design Features and Mitigation

The GLNP is anticipated to result in direct effects on cultural resources; some of these effects could adversely affect historic properties. Adverse effects diminish the characteristics of a cultural resource, such as those that make it eligible for listing on the NRHP. Adverse effects related to the GLNP that would require mitigation include physical destruction or alteration of a historic property or unevaluated resource; impact on tribal interests; and changes to the setting of historic properties, such as visual or auditory effects. Mitigation cannot reverse adverse effects on historic properties; however, under the NHPA, mitigation does resolve the effects through actions like the development of interpretive materials or the recovery of important archaeological and historical data that would have been otherwise lost.

Under the action alternatives, project adherence to EMMs (Appendix D, Section D.1.1), as discussed under *Direct and Indirect Impacts Common to All Action Alternatives*, would minimize the impacts on cultural resources under the action alternatives. Adverse effects on NRHP-eligible cultural resources from the GLNP's construction would be mitigated according to the procedures outlined in the HPTP. Measures to avoid, minimize, or mitigate effects have been

developed on a site-by-site basis in consideration of the input received from consulting parties. These measures could be further refined before their implementation and may include a combination of avoidance, monitoring, or mitigation. The BLM and Forest Service will commit to mitigation measures in the RODs and BLM Approved RMPA, in compliance with 36 CFR 800.8(c)(4); no memorandum of agreement or programmatic agreement will be required.

The buffered boundaries of historic properties would be provided to the Proponent to assess if the GLNP can be engineered to avoid many historic properties, to the extent practicable. For example, historic properties that may be adversely affected by improving or constructing access roads for the GLNP could be avoided by rerouting access roads away from historic properties. Historic properties in the ROW that are eligible under Criterion D would be adversely affected by the construction of a transmission line structure in the middle of the site. However, redesigning the spacing of the line structures outside the site, with lines spanning over the site to avoid direct physical effects, could be implemented to avoid an adverse effect on the historic property. The 525 kV transmission line structures would have a typical span of 1,200 feet, while distribution line structures would have a typical span of 230 feet (Table 2-3). Historic properties would be spanned to the extent practicable to avoid physical adverse effects.

NRHP-eligible properties that ground-disturbing activities could not avoid would be monitored during construction activities and/or subject to mitigation prior to construction. During construction, all NRHP-eligible properties within the DAPE would be flagged with a 98-foot (30-meter) buffer. Any GLNP activities occurring within the flagged boundary would be monitored by a professional archaeologist to ensure construction crews stay on approved roads; eligible components of the site, including surface artifacts and features, would not be disturbed by construction; and construction crews stop work in the event of an unanticipated discovery. In some instances, monitoring of construction activities could be all that is needed to avoid or minimize adverse effects on sites, particularly in places where ground-disturbing activities would not affect the eligible portions of sites.

The GLNP is anticipated to result in adverse effects on historic properties that would require treatment or mitigation. Adverse effects may be the result of physical disturbance to the site or the visual effects of the GLNP infrastructure and activities. Preliminary measures to resolve those effects on all potentially affected sites are identified in the HPTP (Appendix O). These measures include data recovery, such as systematic archaeological excavation; intensive surface mapping, artifact inventory, and other nondestructive analysis methods, where possible. Mitigation measures for historic-era sites would include archival research and the preparation of a historic context. Mitigation measures proposed include the following:

- Archaeological testing or excavation and data recovery
- Intensive surface mapping and artifact inventory
- In-field (non-collection) artifact analysis
- Remote sensing or other geophysical investigations
- Collaborative research with tribes, including interviews
- Archival research
- Development of historic contexts

- Development of website content for digital public archaeology products
- Development of interpretive signage
- Tribal and archaeological monitoring
- Cultural sensitivity training for GLNP field workers
- Installation of fencing to protect sites
- Road closures and reclamation
- Completion of Historic American Building Survey or Historic American Engineering Record documentation
- Landscaping and other design features to minimize visual effects
- Nomination of resources to the NRHP
- Additional field investigations to define potential archaeological and historic districts
- Repair of existing damage to historic properties
- Other mitigation determined appropriate through consultation

3.9 Native American Religious Concerns

This section discusses Native American concerns identified during the NEPA process as well as through coordination and consultation on cultural resource surveys and results. Federally recognized tribes are invited to comment on this document with the intent to revise or supplement this section with their knowledge and perspective. Ongoing tribal consultation will continue to be incorporated into the affected environment and impact analyses.

3.9.1 Issues Identified for Analysis

- How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect resources of cultural and religious significance to each tribal community, and their treaty rights and privileges?
- Would geotechnical investigations, construction, O&M, and decommissioning of the GLNP restrict tribal members' access to sacred sites?

3.9.2 Analysis Area

The analysis area for Native American religious concerns consists of areas in which consulted Native American tribes may have concerns for the resources, places, or other concepts that could be affected by the GLNP. The analysis area accounts for physical disturbances and viewshed changes resulting from the GLNP, and it corresponds to the visual effects APE defined for the project. The analysis area is also the same as the cumulative effects study area for cultural resources utilized in the Class I inventory (Far Western Anthropological Research Group 2022). For the GLNP, the Native American religious concerns analysis area is a 6-mile-wide corridor (3 miles on either side of the transmission line centerline) for the length of the 235-mile-long project. This results in a total analysis area of approximately 856,300 acres.

3.9.3 Regulatory Context

Federal agencies such as the BLM and Forest Service maintain a relationship with tribes that used, and continue to use, the area for important cultural activities and religious purposes. In

addition to the consultation mandated through Section 106 of the NHPA, the BLM and Forest Service have the responsibility to conduct government-to-government consultation with tribes. Government-to-government consultation is guided by numerous regulations, policies, and laws related to the federal government's trust relationship with Indian tribes, such as the following:

- American Indian Religious Freedom Act (1973)—This act protects and preserves Native Americans' rights to exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and freedom to worship through ceremonial and traditional rights.
- Native American Graves Protection and Repatriation Act (1990; 25 USC 3001–3002)
- Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (2000)—This executive order directs federal agencies to establish regular and meaningful consultation with tribal officials.
- Executive Order 13007, Indian Sacred Sites (1996)—This executive order requires federal agencies to accommodate access to and ceremonial use of Native American sacred sites. Additionally, federal agencies should seek to avoid adversely affecting the physical integrity of sacred sites.

3.9.4 Indigenous Knowledge

IK, including the "special expertise" recognized in relation to cultural resources (see Section 3.8.3, Regulatory Environment), is applied to phenomena across biological, physical, social, cultural, and spiritual systems. IK can be developed over millennia, continues to develop, and includes understanding based on evidence acquired through direct contact with the environment and long-term experiences, as well as extensive observations, lessons, and skills passed from generation to generation. IK is developed, held, and stewarded by Indigenous peoples and is often intrinsic within Indigenous legal traditions, including customary law or traditional governance structures and decision-making processes.

Indigenous peoples are not all the same. Each nation and community holds and retains its own IK based on unique foundations and experiences, as well as relationships with varied environments. IK is distinct from local knowledge or individual knowledge, both of which are based on experiences that may not have been validated within the culture of an Indigenous group.

The federal government recognizes that IK freely shared by one community may be closely guarded by another and will respect requests regarding the confidentiality of sensitive information provided by tribes, to the extent possible under the law, particularly in consideration of potential future litigation or Freedom of Information Act requests (ACHP 2021).

Article 19 of the United Nations Declaration of the Rights of Indigenous Peoples uses the term "free, prior, and informed consent," although the declaration does not define it. The Food and Agriculture Organization of the United Nations (United Nations 2016) defines "free, prior, and informed consent" as "a specific right that pertains to Indigenous peoples and is recognized in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). It allows them to give or withhold consent to a project that may affect them or their territories." Free, prior,

and informed consent in this document refers to consent to the use of IK by the BLM and Forest Service; it does not refer to consent for authorization of the GLNP.

It is DOI policy to obtain free, prior, and informed consent from Indigenous peoples before receiving and including IK in government actions and scientific research. The terminology and descriptions of IK here are based on the best available guidance (DOI 2023), but the BLM and Forest Service will adjust language as requested by the tribes whose interests are being discussed.

The BLM and Forest Service are working to respectfully and accurately describe the concerns and interests of tribes, and they invite comment by tribes on the incorporation of IK and special expertise into this document and the process overall.

3.9.5 Consultation and Coordination

Government-to-government consultation between the BLM, the Forest Service, and federally recognized Native American tribes is guided by the 1994 Memorandum on Government-to-Government Relations with Native American Tribal Governments and BLM Manual 1780, Tribal Relations. The BLM initiated consultation on March 12, 2022, and September 30, 2022, via letters notifying the tribes of the GLNP and inviting them to participate in the NEPA process as cooperating agencies and to be consulting parties to the Section 106 process (see Appendix N). Additional information on cooperating agency and NHPA Section 106 consulting party coordination can be found in Section 4.2, Consultation and Coordination; Section 1.7, Lead Agency, Cooperating Agencies, and Consulting Parties; and Section 3.8, Cultural Resources.

The following tribes were invited to be cooperating agencies and consulting parties to the Section 106 process:

- Confederated Tribes of the Goshute Reservation
- Duckwater Shoshone Tribe
- Ely Shoshone Tribe
- Fallon Paiute-Shoshone Tribe
- Fort McDermitt Paiute and Shoshone Tribe
- Lovelock Paiute Tribe
- Moapa Band of Paiutes
- Pahrump Paiute Tribe
- Pyramid Lake Paiute Tribe
- Reno-Sparks Indian Colony
- Shoshone-Bannock Tribes
- Shoshone-Paiute Tribes of Duck Valley
- Summit Lake Paiute Tribe
- Susanville Indian Rancheria
- Te-Moak Tribe of Western Shoshone

- Timbisha Shoshone Tribe
- Walker River Paiute Tribe
- Washoe Tribe of Nevada and California
- Winnemucca Indian Colony
- Yerington Paiute Tribe
- Yomba Shoshone Tribe

Those tribes actively participating as cooperating agencies and consulting parties are included in Table 1-2, Participating Cooperating Agencies and Consulting Parties.

In addition to formal government-to-government consultation, the BLM and Forest Service regularly coordinate with tribes regarding projects of interest, such as the GLNP, and potential locations of interest identified through cultural surveys and investigations (see Section 3.8, Cultural Resources). The BLM and Forest Service will continue to coordinate with tribes at cooperating agency meetings during the NEPA process. Coordination carried out so far has included meetings, informal phone calls and emails, council and committee presentations, coordination with THPOs and cultural resource staff, and field visits. Coordination has also included instances in which the GLNP was discussed in conversations covering other projects or topics. The BLM regularly provides brief updates on projects when engaging tribes on other projects and topics.

The BLM hosted three field meetings with tribes; one was October 21 and 22, 2022, with representatives from the BLM, Far Western Anthropological Research Group Inc, the Duckwater Shoshone Tribe, and the Yomba Shoshone Tribe. The second meeting was on November 18, 2022, with representatives from the BLM, Far Western Anthropological Research Group Inc, and the Fallon Paiute-Shoshone Tribe. A third field meeting occurred on November 21 and 22, 2024, and was attended by a representative from the Duckwater Shoshone Tribe. Additionally, the following tribes have participated in field surveys to identify archaeological and historic sites and tribally important locations on the landscape: the Duckwater Shoshone Tribe, Walker River Paiute Tribe, Fallon Paiute-Shoshone Tribe, Yomba Shoshone Tribe, and Pyramid Lake Paiute Tribe.

3.9.6 Affected Environment

The analysis area crosses ancestral and contemporary lands of the Western Shoshone and Northern Paiute communities. The following provides a brief overview of this cultural area; much of the information is adapted from Tiley and McBride (2013). Some common themes related to areas of high-potential tribal sensitivity in the GLNP area include potential restriction of access, as well as impacts on natural and cultural resources such as religious sites, vegetation, or water. The following discussion does not provide specific examples relating to each individual group; rather, it is as broad overview of similar patterns across groups.

Western Shoshone (Newe)

The Western Shoshone consist of 48 culturally and politically distinct groups that speak dialects of Shoshone (or Shoshoni), which is a Central Numic language (Fowler and Lilijeblad 1986). The Western Shoshone are a culturally defined ethnic identify, not a discrete linguistic group

(Thomas et al. 1986). Western Shoshone Tribes generally identify the entirety of Newe Sogobia as their traditional homeland (Harney 1995), which is the ethnographic area defined in the Treaty of Ruby Valley.

Western Shoshone religion centers on *buha*, or power, which includes the balancing of relationships between humans, the natural world, and guardian spirits. Some places on the landscape are considered particularly imbued with significance (Tiley and McBride 2013). Often, significance is associated with natural resources, such as water, including lakes, springs, and water holes (Hultkrantz 1986).

Northern Paiute (Numu)

The Northern Paiute consist of 22 separate groups that are culturally and politically distinct but share a common language. The *Tovusidokados* ("grass bulb eaters" or "grass seed eaters") and *Toidokados* ("cattail eaters") are the primary ethnohistoric groups that overlap the GLNP study corridor (Fowler and Liljeblad 1986).

Many Northern Paiute spiritual beliefs are highly personal and not always freely discussed (Fowler 1992). Generally speaking, everything on earth is considered to be alive and imbued with *puha*, which is a form of power, life force, or energy. Although *puha* is everywhere, there are places with more of this force than others. These places include named locations such as rock formations, hot springs, specific caves, trails, and petroglyph panels. Many of these places are considered significant to past, present, and future generations (Fowler 1992).

Identification of Native American Religious Concerns

On October 22, 2022, the BLM and its cultural resources contractor met with representatives of the Duckwater Shoshone Tribe and Yomba Shoshone Tribe in the analysis area near Austin, Nevada. The following information is summarized from that field visit and other informal conversations. It was conveyed that Indigenous cultural resources found on the landscape have spiritual significance in their location, and that traditional resource procurement is intertwined with spiritual practice. The field visit included discrete prayer sites, rock writing and habitation sites, and areas for hunting game and gathering medicinal plants. The following areas were identified and toured for an overview of significant places: Monitor Valley, Hickison Summit, Big Smoky Valley and Grass Valley, the Toiyabe Range, Reese River Valley, Mt. Airy, Smith Creek Valley, the Desatoya Mountains, the Clan Alpine Mountains, Cold Springs, and Chalk Mountain.

Important places to the Newe, both past and present, may be located anywhere on the landscape. Elevated landforms were identified as potential locations for places of prayer, which may be physically identifiable. High-potential areas often view one or more significant geological features or landmarks. Some places are significant for resources that are available only at certain times of year; others are significant because of their proximity to springs or other water sources and may be represented by extensive archaeological sites (BLM 2022).

On July 16, 2024, the BLM and Forest Service held a government-to-government consultation meeting with an informational presentation on the alternatives and an opportunity for discussion. Tribal representatives identified concerns regarding the routes of the current Proposed Action and the BLM Preferred Alternative, compared with that of the Other

Resource Consideration Alternative, from near Hickison Summit through the Toiyabe Range, including the Big Smoky Valley, Grass Valley, and the Simpson Park Mountains. Concerns expressed were over the potential physical and visual impacts on cultural resources, traditional uses, and religious expression, including the potential for impacts under the NHPA and American Indian Religious Freedom Act.

During a field visit on November 21 and 22, 2024 the Duckwater Shoshone Tribe representative present provided the BLM information on areas of interest within the BLM-administered analysis area to aid the BLM in considering effects on these locations appropriately.

3.9.7 Environmental Consequences

This section addresses the impacts on Native American religious concerns as a result of the No Action Alternative and action alternatives. Where possible, impacts on those concerns are detailed as expressed by consulted Native American tribes. However, in some instances, important locations and their uses are considered confidential information; therefore, potential effects are described in general without specific reference to locations. Additionally, while government-to-government consultation and coordination with tribes may highlight specific areas of religious concern, these areas may not encompass all religious concerns within a community due to the sensitive nature of information. The environmental consequences discussion below aims to detail specific impacts, where possible, while acknowledging that some impacts may occur and cannot be quantified due to the sensitive nature of the information.

Methodology

The primary method to identify Native American religious concerns is tribal consultation, coordination, and inclusion in archaeological surveys. The BLM has initiated and continues consultation with Native American tribes through government-to-government relations following BLM Manual 1780, NHPA Section 106, and additional tribal coordination occurring though presentations and meetings. In addition to consultation efforts, a historic context was developed based on the Class I cultural resources inventory to identify archaeological and historic sites, and ethnographic overviews. This effort identified places significant to tribes as reported in ethnographic literature. It also provided a background and historic setting for Native American religious concerns identified during this process.

As referenced in Section 3.8, Cultural Resources, if an action alternative is chosen, federal agencies will continue consultation to develop a more detailed treatment plan to resolve adverse effects on historic properties. This includes resolution of effects on any inadvertent discoveries made in the course of project implementation, as it is the responsibility of federal agencies to provide for a process that resolves adverse effects upon such properties (36 CFR 800.13). It is also the responsibility of federal agencies to identify, protect, and repatriate any Native American cultural items such as human remains or associated funerary objects, as required under the Native American Graves Protection and Repatriation Act.

Direct and Indirect Impacts from the No Action Alternative

Under the No Action Alternative, existing impacts on Native American religious concerns would continue as a result of current conditions and trends. There would be no impacts

associated with geotechnical investigations, construction, O&M, and decommissioning activities for the GLNP.

Direct and Indirect Impacts Common to All Action Alternatives

Geotechnical investigations for and construction, O&M, and decommissioning of the GLNP would result in impacts on tribal interests, including Native American religious concerns, as identified by tribes through consultation. The tribes themselves define impacts on Native American religious concerns. Through consultation tribes have identified impacts that would occur in association with all of the action alternatives. Some of these impacts would be temporary in nature and concentrated during construction efforts. These include a loss of access to important locations, removal of vegetation or other important resources used by tribes, changes in views because of ground disturbance, and increased human presence and activity. Increased noise and human presence associated with construction can also disrupt traditional and religious uses of areas. Temporary fencing used for sensitive area avoidance or emergency stabilization and rehabilitation could temporarily restrict access to locations of tribal importance.

There is the potential for long-term impacts on Native American religious concerns, including changes in important viewsheds, particularly where locations of tribal importance intersect the transmission line or associated infrastructure. While impacts associated with construction would decrease over time, the presence of infrastructure in the vicinity of important tribal locations could disrupt traditional uses and ceremonies. Additionally, the presence of new infrastructure could prevent or alter access to important areas of tribal use. All access roads, both new and improved, would be maintained as permanent components of the action alternatives. While these roads could facilitate tribal access to areas, they could also increase human presence in areas that were previously remote. Additionally, trash could increase along roads, altering important locations and uses.

Under the action alternatives, the BLM would designate a utility corridor. With this designation, any future linear ROW applications within proximity to this utility corridor could be collocated, unless review determined a need for an alternative location. The collocation of additional linear ROWs within the utility corridor could increase the potential for impacts such as those described above. The increase in aboveground infrastructure could change important views or access to important resources. Additionally, there could be increased human presence within the utility corridor as multiple linear ROW are monitored and maintained, increasing the potential for the disruption of traditional uses, and changing tribal access and use of important areas.

Some cultural resources are also important locations for Native American traditional and religious use. Potential impacts on cultural resources are described in Section 3.8.7, Environmental Consequences. However, activities that increase awareness of or access to cultural resources could result in impacts on Native American religious concerns. Illegal artifact collection, vandalism, or looting because of increased access to or awareness of tribally important cultural resource locations could have impacts on Native American religious uses.

Under the action alternatives, there would be project adherence to EMM CON-21 in Appendix D, which is related to worker education, and cultural resource-specific EMMs related to

worker education, temporary site boundary marking, cultural resource management services standards, restriction of project-related travel to designated routes, development of a mitigation plan and unanticipated discovery plan, and a commitment to seek avoiding impacts on tribal interests as identified through subsequent consultation and tribal monitoring (EMMs CULT-1 through CULT-8 in Appendix D). These measures would be protective against impacts on cultural resources, particularly adverse effects on historic properties and impacts on tribal interests, from increased access, alteration of the setting, and surface-disturbing activities related to the GLNP.

Direct and Indirect Impacts from the Proposed Action

Construction, O&M, and decommissioning of the GLNP would result in temporary and long-term impacts on Native American religious concerns, as described under *Direct and Indirect Impacts Common to All Action Alternatives*.

A government-to-government consultation meeting on July 16, 2024, indicated that the current route of the Proposed Action from Hickison Summit through the Toiyabe Range, similar to the closely aligned Forest Service Northern Alternative segment under the BLM Preferred Alternative, would cause a greater level of impact to Native American religious concerns than the Other Resource Consideration Alternative.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Construction, O&M, and decommissioning of the GLNP would result in temporary and long-term impacts on Native American religious concerns, as described under *Direct and Indirect Impacts Common to All Action Alternatives*. Some impacts, such as those related to surface disturbance, are anticipated to be greater under this alternative than under the Proposed Action. This is due to the route of the transmission line and more extensive construction necessary to complete the project, particularly in areas without existing transmission infrastructure.

A government-to-government consultation meeting on July 16, 2024, indicated that the current route of the Other Resource Consideration Alternative from Hickison Summit through the Toiyabe Range (also referred to as the Forest Service Southern Alternative) would cause a lower level of impacts on tribal interests, including Native American religious concerns, than the Proposed Action or the BLM Preferred Alternative.

Direct and Indirect Impacts from the BLM Preferred Alternative

Construction, O&M, and decommissioning of the GLNP would result in temporary and long-term impacts on Native American religious concerns, as described under *Direct and Indirect Impacts Common to All Action Alternatives*. Impacts are anticipated to be similar to those described under the Proposed Action due to the similarity of the transmission line placement and footprint.

A government-to-government consultation meeting on July 16, 2024, indicated that the current route of the BLM Preferred Alternative from Hickison Summit through the Toiyabe Range (also referred to as the Forest Service Northern Alternative), similar to the closely aligned Proposed

Action, would cause a greater level of impact to Native American religious concerns than the Other Resource Consideration Alternative.

3.10 Visual Resources

3.10.1 Issues Identified for Analysis

- What level of visual change would occur to scenic views from sensitive viewing platforms?
- What is the magnitude of change to the existing landscape characteristics and to the inherent scenic quality of the GLNP area?
- How would the GLNP components affect the visual quality for adjacent landowners?
- How would geotechnical investigations, construction and O&M activities affect night skies?

3.10.2 Analysis Area

The analysis area for visual resources is defined as a 5-mile buffer around the alternative project areas identified in Section 3.1, Introduction, totaling approximately 1,614,747 acres (2,523 square miles). This distance was used because it corresponds with the BLM's foreground–middle-ground distance zone (3 to 5 miles away). This is the area where management activities might be viewed in detail. The outer boundary of this distance zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape.

3.10.3 Affected Environment

The analysis area is in the Great Basin Range within the Fallon-Lovelock Area major land resource area (MLRA; MLRA 27) and Central Nevada Basin and Range MLRA (MLRA 28B; NRCS 2022).[10] The Fallon-Lovelock MLRA is an area of vast, aggraded desert plains and valleys that divide isolated mountain ranges that move from north to south. The fault blocks that make up the mountains have sharply sloping sides. The main rivers and their tributaries cut through the mountains and valleys. The elevation generally ranges from 3,300 to 5,900 feet in the valleys, but on some mountain peaks, the elevation can reach more than 7,870 feet. The Central Nevada Basin and Range MLRA is an area of long alluvial fans bordering the basins that vary from gently sloping to strongly sloping. The fault blocks that make up the mountains have sharp side slopes. Due to the little rainfall in the area, they are not properly dissected. This MLRA has many confined basin valleys that feature playas or sinks. In the valleys and basins, the elevation ranges from 4,900 to 6,550 feet, whereas in the mountains, it ranges from 6,550 to 11,900 feet. The MLRA does not have any major rivers (NRCS 2022).

Geology in the analysis area is typical of the Fallon-Lovelock and Central Nevada Basin and Range MLRAs. The MLRAs exhibit a diverse and complex geology that reflects the dynamic tectonic processes shaping the Basin and Range province. In the Fallon-Lovelock MLRA, approximately half of the area showcases surface deposits of alluvial valley fill influenced by lacustrine sediments. The remaining portion is characterized by andesite and basalt rocks of

[10] Major land resource areas (MLRAs) are geographically associated units of land sharing dominant physical characteristics, including the physiography, geology, climate, water, soils, biological resources, and land uses (NRCS 2022).

varying ages. Throughout the Central Nevada Basin and Range MLRA, there are scattered outcrops of older Tertiary intrusives and recent tuffaceous sediments. The valleys are predominantly filled with alluvial deposits, including lake deposits at the lowest elevations in closed basins. The composition of the alluvial valley fill varies, with coarser materials like cobbles, gravel, and coarse sand near the mountains and finer materials like sands, silts, and clays at the distal ends of the fans (NRCS 2022). See Section 3.2, Soil Resources, and Section E.3, Geology and Minerals, for more information about the geology and soils visible in the analysis area.

Vegetation in the analysis area is typical of the Fallon-Lovelock and Central Nevada Basin and Range MLRAs; it is dominated by sagebrush steppe ecosystems, juniper woodlands, and various grass species, such as cheatgrass and Indian ricegrass, which contribute to the understory. See Section 3.4, Vegetation Communities and Resources (including At-risk Species, Noxious Weeds and Invasive Plants, and Riparian Areas), for more information about vegetation visible in the analysis area.

Lands with wilderness characteristics provide outstanding opportunities for solitude or for primitive and unconfined recreation; they also may possess supplemental values, including those that are ecological, geological, or other features of scientific, educational, scenic, or historical value. There are approximately 12 acres of inventoried lands with wilderness characteristics found to possess wilderness characteristics that overlap the GLNP area. See Section E.7, Lands with Wilderness Characteristics, in Appendix E, for more information about the lands with wilderness characteristics visible in the analysis area. The analysis area also includes the Clan Alpine Mountains and Desatoya Mountains Wilderness Areas and Simpson Park WSA. See Section 3.12, Special Designations, for more information about areas with special designations that are visible in the analysis area.

Additionally, the analysis area covers parts of the Humboldt-Toiyabe National Forest. The forest extends from the Sierra Nevada range in the west to the Great Basin in the east. The landscape of the forest in the analysis area is a mosaic of rugged mountain terrain, high plateaus, and expansive valleys. The vegetation in the forest varies with elevation, showcasing a range from dense coniferous forests of pine and fir at higher elevations to sagebrush steppe and juniper woodlands in the lower regions. The forest's geology is characterized by ancient mountain ranges, volcanic features, and evidence of glacial activity, providing a geological tapestry that spans millions of years (Forest Service 2023).

The analysis area is primarily viewed from roadways and trails. US Routes 50 and 95, as well Nevada State Routes 121, 305, and 892, bisect the analysis area. US Route 50 is also known as "the Loneliest Road in America," which offers travelers an immersive experience in the region's solitude. A stretch of the highway from Carson City to Lander, Nevada, aligns with the historic Pony Express and California NHTs. The highway also features a number of Nevada State historical markers that provide information about significant events, people, or locations in the area (Nevada State Historic Preservation Office 2023). Several miles of secondary roadways and a section of railways cross through the analysis area. Vehicles traveling along roads and through the area's communities are the primary sources of nighttime light. Generally, the population of neighboring communities in more rural areas ranges from a few hundred to a few

thousand residents, whereas the population of larger towns or cities ranges from tens to several hundreds of thousands of residents.

Dirt roads, hiking trails, peaks, and other recreational and cultural opportunities surrounding the analysis area afford views of the BLM-administered lands. Some of these other opportunities include visiting Sand Mountain, a dune field near Fallon; Lee Hot Springs, known for its geothermal features and desert bathing experience; Fairview Peak Fault, a geological wonder and striking example of extensional tectonics; and the Hickison Petroglyph Natural Area, located along the Pony Express Trail, which invites history and archaeology enthusiast to explore ancient rock art.

3.10.4 Environmental Consequences

Methodology

Under FLPMA, the BLM has the responsibility to manage lands in a manner that will protect the quality of scenic values. The BLM meets statutory requirements with the VRM program described in BLM Manual 8400 (Visual Resource Management; BLM 1984), Handbook 8431 (Visual Resource Contrast Rating; BLM 1986a), and Handbook H-8410-1 (Visual Resource Inventory; BLM 1986b).

The BLM's VRM system classifies and manages scenic values on public lands through a VRI process that helps guide land use planning. Information collected during the VRI process consists of viewer sensitivity, scenic quality, and distance zones. This process is a view-based measurement where landscape attractiveness is rated with an A, B, or C rating. Factors taken into account are landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. The interrelationship with land uses in adjacent lands can affect the visual sensitivity of an area. (BLM 1986b). A VRI scenic quality rating of A is for areas with the highest visual appeal, and a VRI scenic quality rating of C is for areas with the lowest visual appeal. Table 3-73 lists the scenic quality ratings for the analysis area, as shown in Figure 3-16, Visual Resource Inventory and Scenic Quality Rating Units and Ratings, in Appendix A.

Table 3-73. Scenic Quality Ratings

VRI Class	Scenic Quality Rating	Proposed Action Alternative (Acres)	Other Resource Consideration Alternative (Acres)	BLM Preferred Alternative (Acres)
II	A	3,202	2,720	3,212
II	B	9,516	10,279	9,199
III	B	2,002	1,660	1,883
III	C	3,941	3,880	4,279
IV	B	1,895	1,892	1,753
IV	C	5,658	5,647	5,650
Not inventoried	Not inventoried	1,071	1,071	1,071

Source: BLM, FS, and NVE GIS 2024

Visual design considerations are incorporated into all surface-disturbing projects regardless of size or potential impact. Emphasis is placed on providing these inputs during the initial planning and design phase to minimize costly redesign and mitigation at later phases of project design

and development. Every effort should be made to inform potential applicants of the visual management objectives, so they can adequately incorporate visual design considerations into their initial planning and design efforts. In addition, the use of EMM VIS-4 (see Appendix D) would avoid or reduce visual impacts of development and artificial light at night on BLM-administered lands.

The contrast rating process (BLM Handbook 8431)[11] is used as a visual design tool in project design and as a project assessment tool during environmental review. The contrast rating process provides a systematic means to evaluate the visual effects on visual resource values from proposed projects or activities, and to determine whether a project or activity is in conformance with the VRM class allocation(s). The steps in the visual resource contrast rating process are summarized as follows:

1. Obtain project description: To effectively evaluate the visual impacts of a proposed project, a detailed project description is needed. The proposed project is described above under Chapter 2, Proposed Action and Alternatives.
2. Identify VRM class objectives: BLM-administered lands are designated as VRM Class I, II, III, or IV. The VRM classes for the analysis area are obtained from the BLM Ely, Battle Mountain, and Carson City RMPs. Table 3-74 lists the VRM classes in the analysis area for the BLM-administered lands shown in Figure 3-15, Visual Resource Management Classes and Visual Quality Objective, in Appendix A.

Table 3-74. VRM Classes in the Analysis Area

VRM Class	Proposed Action Alternative (Acres)	Other Resource Consideration Alternative (Acres)	BLM Preferred Alternative (Acres)
I	1	1	1
II	15	15	15
III	3,967	3,950	3,475
IV	812	812	707
Unclassified	21,113	21,000	21,406

Source: BLM, FS, and NVE GIS 2024

VRM class objectives are as follows:

- VRM Class I: The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- VRM Class II: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

[11] https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_H8431.pdf

- VRM Class III: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- VRM Class IV: The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

3. Select KOPs: The contrast rating is done from the most critical viewpoints. This is usually along commonly traveled routes or at other likely observation points. Factors that are considered in selecting KOPs are the angle of observation, number of viewers, length of time the project is in view, relative project size, season of use, and light conditions. The KOPs used for this contrast rating are described in Table 3-75, below. The BLM selected KOPs based on travel routes, cultural and historic sites, and recreation sites in the analysis area.

Table 3-75. KOPs

KOP Number	Approximate Elevation (feet)[12]	Approximate Direction of View	Approximate Distance to Proposed Action Alternative (Miles)	Approximate Distance to Other Resource Consideration Alternative (Miles)	Approximate Distance to BLM Preferred Alternative (Miles)
1	4,295	East-southeast	1.2	1.2	1.2
2	3,921	South	1.6	1.6	2.1
3	4,022	North	1.6	1.6	1.6
4	3,937	South	3.2	3.2	3.2
5	3,986	South-southeast	4.4	4.4	4.4
6	4,469	Northeast	6.6	6.6	6.6
7	5,528	Northwest	2.5	2.5	2.5
8	5,531	North-northeast	0.4	0.4	0.7
9	6,578	North	3	3	3
10N	6,539	North-northwest	2.2	2.2	2.5
10S	6,539	South-southwest	Not applicable	0.3	Not applicable
11	6,581	North	0.3	Not applicable	0.6
12	6,532	North-northwest	0.8	Not applicable	1.0
13	6,568	North	1.3	Not applicable	1.5
14	6,024	South	1.9	1.9	1.9
15	6,663	North	2.0	2.0	2.0
16	6,453	North	1.7	1.7	1.7
17	6,253	North	2.8	2.8	2.8
18	6,654	South-southwest	1.1	1.1	1.1
19	6,368	East-northeast	1.4	1.4	1.4

[12] Rounded to the nearest tenth.

KOP Number	Approximate Elevation (feet)[12]	Approximate Direction of View	Approximate Distance to Proposed Action Alternative (Miles)	Approximate Distance to Other Resource Consideration Alternative (Miles)	Approximate Distance to BLM Preferred Alternative (Miles)
20	6,545	North	0.9	0.9	0.9
21	7,228	South-southwest	Not applicable	0.3	Not applicable
22N	7,487	South-southwest	3.3	Not applicable	3.6
22S	7,487	North	Not applicable	0.1	Not applicable

Source: BLM, FS, and NVE GIS 2024

4. Prepare visual simulations: Simulations portray the relative scale and extent of a project. They also help individuals visualize and respond to development proposals, making public participation in the planning process more effective. Prior to preparing the simulations:
   - Viewshed analyses were prepared for each KOP. The viewshed analyses were used to confirm the areas across the landscape that are visible from each KOP. These are used to confirm the portions of the proposed project that would be visible from each KOP. Appendix L, Key Observation Point Viewsheds, shows the areas that are visible within 5 miles of the KOP.
   - A site visit was conducted on October 10–13, 2022, to photograph the landscape from each KOP. The direction of view that was photographed is described in Table 3-75. The photographs and fieldnotes were used to prepare simulations, and complete BLM Form 8400-4.
   - Simulations were prepared for KOPs 1, 5, 8, 10N, 10S, 11, 15, 18, 20, 21, and 22S. Appendix M, Existing Landscape Photos and Photo Simulations, contains photographs showing existing landscape conditions and proposed project simulations for select KOPs.
5. Complete the visual contrast rating worksheet (BLM Form 8400-4) from the KOPs (Appendix N, Contrast Rating Worksheets): A contrast rating worksheet was completed for the Proposed Action's KOPs. Because of the similarity and proximity of the BLM Preferred Alternative and Other Resource Consideration Alternative to the Proposed Action, the same contrast rating worksheets are used for those alternatives. Where necessary, important differences between the alternatives are identified and analyzed below.

   KOPs 3, 6, 13, 16, and 22N were not included in this contrast rating because there would be no change to the landscape character in these areas; this is because landscape features, such as topography or vegetation, would screen views of the alternative. To obtain views of the alternative from these KOPs, viewers would need to relocate from the KOP to less-established or less-visited nearby areas. Section 3.13.4, Environmental Consequences, describes the contrast rating results.

A portion of the analysis area crosses Humboldt-Toiyabe National Forest near Austin, Nevada. The Forest Service does not use the VRM system to manage visual resources. It uses the Visual Management System for the Humboldt-Toiyabe National Forest (Forest Service 1979). Forest Service visual quality objectives (preservation, retention, partial retention, modification, and

maximum modification) provide objectives and measurable standards. They are used to describe the degree of alteration that may occur to the visual resource on National Forest System lands. To provide for analysis consistency, the BLM's contrast rating process is used for all KOPs, including on National Forest System lands. The analysis area contains the following visual quality objectives:

- Retention: This visual quality objective provides for management activities which are not visually evident. Under retention, activities may only repeat form, line, color, and texture which are frequently in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc. should not be evident. This visual quality objective is not visible from the KOPs.
- Partial retention: Management activities remain visually subordinate to the characteristic landscape when managed according to the partial retention visual quality objective. Activities may repeat the form, line, color, or texture common to the characteristic landscape, but changes in their qualities of size, amount, intensity, direction, pattern, etc. remain visually subordinate to the characteristic landscape. Activities may also introduce form, line, color, or texture that are found infrequently or not at all in the characteristic landscape, but they should remain subordinate to the visual strength of the characteristic landscape.
- Modification: Under the modification visual quality objective, management activities may visually dominate the original characteristic landscape. However, activities of vegetation and landform alteration must borrow from the naturally established form, line, color, or texture so completely and at such a scale that their visual characteristics are those of natural occurrences within the surrounding area of the character type. Additional parts of these activities, such as structures, roads, slash, and root wads, must remain visually subordinate to the proposed composition. Activities that are predominately an introduction of facilities, such as buildings, signs, and roads, should borrow the naturally established form, line, color, and texture so completely and at such scale that their visual characteristics are compatible with the natural surroundings.

Table 3-76 lists the Forest Service's visual quality objectives in the analysis area, as shown in Figure 3-15, Visual Resource Management Classes and Visual Quality Objective, in Appendix A.

Table 3-76. Visual Quality Objectives in the Analysis Area

VRM Class	Proposed Action Alternative (Acres)	Other Resource Consideration Alternative (Acres)	BLM Preferred Alternative (Acres)
Retention	0	7	0
Partial Retention	363	650	464
Modification	935	572	1,082

Source: BLM, FS, and NVE GIS 2024

Indicators

- Conformance with visual management class objectives or comparison with VRI scenic quality rating classes

Assumptions

- Protection of visual resources would be commensurate with the standards identified in each VRM class.
- Visual values will become increasingly important to residents of and visitors to the area.
- Residents and visitors to the analysis area are sensitive to changes to visual values and to the area's overall scenic quality, which contributes to living conditions and the visitor experience.
- Activities that cause the most visual contrast and are the most noticeable to the viewer will have the greatest impact on scenic quality.
- As the number of acres of disturbance increases, the impact on visual values will also increase.
- The Forest Service does not have a formal procedure for visual impact assessment. To provide for analysis consistency, the contrast rating process is used for all KOPs, including on National Forest System lands. The visual quality objective of partial retention is assumed to be equivalent to VRM Class II, and the visual quality objective of modification is assumed to be equivalent to VRM Class III.

Direct and Indirect Impacts from the No Action Alternative

Under the No Action Alternative, there would be no impacts on visual resources attributed to the geotechnical investigations, construction, O&M, and decommissioning activities for the GLNP.

Direct and Indirect Impacts from the Proposed Action

Characterizing the contrast created by the GLNP is performed by completing the contrast rating worksheet for each KOP (Appendix N, Contrast Rating Worksheets). All EMMs, such as VIS-1 through VIS-19 (see Appendix D), and additional proposed mitigation measures are considered in the rating. The rating is completed by determining the degree of contrast (strong, moderate, weak, or none) created in the basic features (land/waterbody, vegetation, and structures) for the basic elements (form, line, color, and texture). The following general criteria and factors are used when rating the degree of contrast:

- None: The element contrast is not visible or perceived.
- Weak: The element contrast can be seen but does not attract attention.
- Moderate: The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- Strong: The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

The following factors are considered when applying the above criteria: distance, angle of observation, length of time the proposed project is in view, relative size or scale, season of use, light conditions, recovery time, spatial relationships, atmospheric conditions, and motion.

The contrast ratings are used to determine conformance with VRM class objectives for the area (see Figure 3-15, Visual Resource Management Classes and Visual Quality Objective, in Appendix A). For comparative purposes, the four degrees of contrast (none, weak, moderate, and strong) roughly correspond with VRM Classes I, II, III, and IV, respectively. This means that a "strong" contrast rating may be acceptable in a VRM Class IV area but would not meet the VRM objectives for a VRM Class III area. In making these comparisons, the combined effect of all the contrast ratings is also considered. Certain combinations of ratings may indicate there is a stronger overall contrast than the individual ratings show. For example, several "moderate" ratings when viewed in combination may warrant an overall "strong" rating.

The overall goal for the VRM program is to design features to lower the level of contrast that a project may have on BLM-administered lands. Mitigation is something that is used when there is a strong contrast to the natural landscape. The placement and application of color are design features that can assist with making a project less intrusive.

For areas in the analysis area that are unclassified under the VRM system, the use of the contrast rating worksheet is valid. The scenic quality rating was used to help determine and evaluate contrast of the proposed project design, location, and resource of concern. Due to the length of the proposed project, the BLM did not determine an interim rating for the analysis area. However, design features assist with meeting landscape contrast in areas with scenic quality rating A (refer to Appendix N, Contrast Rating Worksheets).

Table 3-77, below, summarizes the results of the contrast rating worksheets. All KOPs are on BLM-administered lands, except KOPs 11, 12, 21, and 22S are on National Forest System lands. Under this alternative, the long-term contrast would conform to the VRM class objectives. No additional mitigation is proposed that would reduce the contrast created by the Proposed Action.

Table 3-77. VRM Class Conformance – Proposed Action

KOP Number	Contrast Rating Description	Analyzed VRM Class – VRM Class Objectives Conformance (Yes/No)
1	The proposed transmission line would be approximately 1.2 miles away from KOP 1 and would parallel an existing transmission line. The Fort Churchill Substation, where the proposed transmission line would begin, is approximately 2.1 miles from KOP 1. There would be a slight, weak degree of contrast in the form. This is because of the distance to the proposed transmission line and the presence of an existing transmission line. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. The VRI scenic quality rating unit name is Mason Valley.	VRM Class Unclassified – Not applicable [Scenic quality rating C]

KOP Number	Contrast Rating Description	Analyzed VRM Class – VRM Class Objectives Conformance (Yes/No)
2	The proposed transmission line would be approximately 1.6 miles away from KOP 2 and would parallel an existing transmission line. There is an existing fence and telephone line that can be seen from KOP 2. There would be a slight, weak degree of contrast in the form. This is because of the distance to the proposed transmission line and the presence of an existing transmission line. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. There is no VRI for this area.	VRM Class Unclassified – Not applicable
4	The proposed transmission line would be approximately 3.2 miles away from KOP 4 and parallel an existing transmission line. There is an existing fence that can be seen from KOP 4 as well as an additional utility line less than a mile away. There would be a weak degree of contrast because of the distance to the proposed transmission line and the presence of existing utility lines nearby. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. The VRI scenic quality rating unit name is Diamond Well.	VRM Class Unclassified – Not applicable [Scenic quality rating C]
5	The proposed transmission line would be approximately 4.4 miles away from KOP 5 and parallel an existing transmission line. There is a fence that can be seen in the distance as well as an additional utility line less than a mile away from KOP 5. There would be a weak degree of contrast because of the distance to the proposed transmission line and the presence of existing utility lines nearby. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. The VRI scenic quality rating unit name is Diamond Well.	VRM Class Unclassified – Not applicable [Scenic quality rating C]
7	The proposed transmission line would be over 2.5 miles away from KOP 7 and near another transmission line. There would be a slight, weak degree of contrast in the form. This is because of the distance to the proposed transmission line, the presence of other nearby existing transmission lines, and hills that block views of the proposed transmission line. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. The VRI scenic quality rating unit name is Edge of Edwards Creek Valley.	VRM Class Unclassified – Not applicable [Scenic quality rating C]
8	The proposed transmission line would be approximately 0.4 miles away from KOP 8 and parallel an existing transmission line. There would be a weak to moderate degree of contrast in the form, line, and texture. This is because of the proximity of the proposed transmission line to KOP 8. The height of the proposed transmission line would cause it to stand out when compared with the lack of other tall features and the presence of short vegetation. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. The VRI scenic quality rating unit name is Edge of Edwards Creek Valley.	VRM Class Unclassified – Not applicable [Scenic quality rating C]

KOP Number	Contrast Rating Description	Analyzed VRM Class – VRM Class Objectives Conformance (Yes/No)
9	The proposed transmission line would be over 3 miles from KOP 9. There would be a slight, weak degree of contrast in the form and line. This is because of the distance to the proposed transmission line, the proposed transmission line parallels an existing transmission line, and the terrain blocks views of the proposed transmission line. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. The VRI scenic quality rating unit name is South Shoshone Range.	VRM Class Unclassified – Not applicable [Scenic quality rating B]
10N	The proposed transmission line would be approximately 2.2 miles away from KOP 10N. There would be a weak degree of contrast in the form line, color, and texture. This is because of the distance to the proposed transmission line, and the proposed transmission line would be similar to other structures in the area. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. The VRI scenic quality rating unit name is Upper Reese Valley Foothills.	VRM Class Unclassified – Not applicable [Scenic quality rating B]
11	The proposed transmission line would be approximately 0.3 miles away from KOP 11. There would be a weak to moderate degree of contrast in the form, line, and texture because there are few existing structures visible from KOP 11. The proposed transmission line would parallel an existing transmission line, so the proposed transmission line would be similar to other features in the landscape.	Forest Service Modification Visual Quality Objective (VRM Class III) – Yes
12	The proposed transmission line would be approximately 0.8 miles away from KOP 12. There would be a slight, weak degree of contrast in the form. This is because the proposed transmission line would parallel an existing transmission line, and it would resemble the structure of the nearby telephone line.	Forest Service Modification Visual Quality Objective (VRM Class III) – Yes
14	The proposed transmission line would be approximately 1.9 miles away from KOP 14. There would be a weak degree of contrast because the proposed transmission line would parallel an existing transmission line in the distance and be situated behind hills. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. The VRI scenic quality rating unit name is Antelope Valley East.	VRM Class Unclassified – Not applicable [Scenic quality rating B]
15	The proposed transmission line would be approximately 2.0 miles away from KOP 15. There would be a slight, weak degree of contrast in the form because the proposed transmission line would parallel two existing transmission lines and because of the distance to the proposed transmission line. VRM class conformance was not determined because this area is unclassified for a VRM class. Instead, the contrast is used for comparison with the scenic quality rating. The VRI scenic quality rating unit name is Fish Creek Range.	VRM Class Unclassified – Not applicable [Scenic quality rating A]
17	The proposed transmission line would be approximately 2.8 miles away from KOP 17 and parallel an existing transmission line. There would be a weak degree of contrast because of the distance to the proposed transmission line and the presence of an existing transmission line nearby.	VRM Class III – Yes

KOP Number	Contrast Rating Description	Analyzed VRM Class – VRM Class Objectives Conformance (Yes/No)
18	The proposed transmission line would be approximately 1.1 miles away from KOP 18. There would a weak degree of contrast because the proposed transmission would parallel two existing transmission lines, and views would be partially blocked by hills.	VRM Class III – Yes
19	The proposed transmission line would be approximately 1.4 miles away from KOP 19. There would be a weak degree of contrast in the form, line, and texture because the proposed transmission line would add artificial elements to existing artificial elements at the Summit Substation. The substation would expand its footprint, and the transmission line would divide the landscape across the toe of the hillside.	VRM Class III – Yes
20	The proposed transmission line would be approximately 0.9 miles away from KOP 20. There would be a weak to moderate degree of contrast in the form and line because the proposed transmission line would add artificial elements to existing artificial elements at the Summit Substation. The substation would expand its footprint, and the transmission line would noticeably divide the landscape across the toe of the hillside.	VRM Class III – Yes

Note: KOPs 10S, 21, and 22S were not included in this table because they are only applicable to the Other Resource Consideration Alternative.

Impacts would affect visual resources in the short term (during geotechnical investigations, construction, and decommissioning) and the long term (during O&M). Long-term impacts are addressed in the contrast rating worksheets. The allocation of a utility corridor could increase impacts within the utility corridor and decrease impacts outside the utility corridor. Adherence to Proponent-committed environmental protection measures and resource-specific EMMs VIS-1 through VIS-19 (see Appendix D) would minimize the impacts on visual resources under this alternative.

During construction and decommissioning, crews could work in multiple areas at the same time. Views of the analysis area would be cluttered with equipment, materials, and temporary support infrastructure and fences. The bold colors and geometric, boxy forms of vehicles, materials, and equipment would not resemble the colors and forms of the surrounding terrain and vegetation. Rigid, vertical, and horizontal project elements and infrastructure would create various focal points on an open landscape, and they would not resemble other landscape elements, which are mostly short vegetation. These impacts would occur when equipment, materials, and temporary support infrastructure are present. Furthermore, the construction of the GLNP would alter the visual landscape for adjacent landowners through the installation of tall towers and power lines, the clearing of vegetation, and the creation of a linear visual impact. These changes would disrupt the natural scenery and introduce visual clutter.

Geotechnical investigations, construction, O&M, and decommissioning would generate dust from vehicle movement, excavation, and wind. Fugitive dust would diminish atmospheric clarity. This impact on visual resources would persist until the dust settles or is blown elsewhere.

Night Skies

Geotechnical investigations, construction, O&M, and decommissioning would add artificial light and glare to areas in the analysis area that are nearly absent of artificial light. Lights would be used to illuminate work sites for visibility and safety. Also, reflective surfaces on equipment and vehicles would create glare. The artificial light would also increase skyglow (light that is scattered back to earth by aerosols and clouds). Artificial light and glare would affect the visibility of stars and other astronomical phenomena in the surrounding area. The impacts from lights and glare would occur when equipment and vehicles are present and when infrastructure lights are in use. Adherence to resource-specific EMMs VIS-4, VIS-9, and VIS-10 (see Appendix D) would be implemented to mitigate these effects and minimize disruptions to nighttime conditions.

Construction, O&M, and decommissioning activities, as well as artificial light and skyglow, can affect the presence and behavior of animals viewed in the analysis area. Given the limited activities and negligible artificial light in the analysis area, project activities and lights would essentially be the main sources of disturbances affecting animal behaviors. Changes to animal behaviors and use of the analysis area can be long term, depending on a variety of factors, including the type of animal and loss of habitat in the analysis area.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Under the Other Resource Consideration Alternative, impacts on visual resources would be similar to those under the Proposed Action with minor variations, depending on the changes to the route of the transmission line as well as the existing landscape features and presence of existing built features (such as transmission lines and substations) that occur within or adjacent to the specific KOP. These impacts are already addressed for the applicable KOPs listed above in Table 3-77, VRM Class Conformance – Proposed Action. The allocation of a utility corridor could increase impacts within the utility corridor and decrease impacts outside the utility corridor.

This alternative also involves the KOPs listed below in Table 3-78, VRM Class Conformance – Other Resource Consideration Alternative. Under this alternative, the long-term contrast would not conform to the VRM class objective used for the analysis for KOP 22S. Changes would not repeat the basic elements of form, line, and texture found in the predominant natural features of the characteristic landscape. This is because of the proximity of this alternative to the KOP, the lack of similar infrastructure and natural features nearby, the lack of terrain capable of screening the project, and the height of the transmission line compared with the surrounding landscape elements (mostly short grasses and bushes). Similarly, the contrast would not meet the Forest Service's partial retention visual quality objective, because management activities would not remain visually subordinate to the characteristic landscape.

Table 3-78. VRM Class Conformance – Other Resource Consideration Alternative

KOP Number	Contrast Rating Description	Analyzed VRM Class – VRM Class Objectives Conformance (Yes/No)
10S	The proposed transmission line would be approximately 0.3 miles from KOP 10S. There would be a weak to moderate degree of contrast in the form, line, color, and texture because there are no existing structures visible from KOP 10S. The height and proximity of the transmission line would make it stand out and be clearly visible above short, uniform trees. Instead, the contrast is used for comparison with the scenic quality rating.	Forest Service Modification Visual Quality Objective (VRM Class III) – Yes
21	The proposed transmission line would be approximately 0.3 miles from KOP 21. There would be a weak to moderate degree of contrast in the form, line, color, and texture because there are no existing structures visible from KOP 21. The height and proximity of the transmission line would make it stand out and be clearly visible above short vegetation.	Forest Service Modification Visual Quality Objective (VRM Class III) – Yes
22S	The proposed transmission line would be approximately 0.1 miles from KOP 22S. There would be a weak to strong degree of contrast in the form, line, color, and texture because of the closeness of the transmission line to the KOP. The objective of VRM Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. The height and proximity of the transmission line would make it stand out and be clearly visible above short grasses and bushes.	Forest Service Partial Retention Visual Quality Objective (VRM Class II) – No

Note: This table does not repeat KOPs that are already listed above in Table 3-77, VRM Class Conformance – Proposed Action, which are also applicable to this alternative.

Direct and Indirect Impacts from the BLM Preferred Alternative

Under the BLM Preferred Alternative, impacts on visual resources would be similar to those under the Proposed Action with minor variations, depending on the changes to the route of the transmission line as well as the existing landscape features and presence of existing built features (such as transmission lines and substations) that occur within or adjacent to the specific KOP. The allocation of a utility corridor could increase impacts within the utility corridor and decrease impacts outside the utility corridor.

3.11 Lands, Realty, and Cadastral Survey

Lands, realty, and cadastral survey is assessed by analyzing current land activities, landownership, fee and ROW/easement boundaries, and land use designations. A land use assessment must also consider legal guarantees or limitations, such as those provided by easements, deeds, ROWs, claims, leases, licenses, permits, and antiquated or unsurveyed land boundaries. Federally managed lands are not zoned, but they may be encumbered by easements, ROWs, mining claims, or permits. Special designation areas provide additional protection for areas with unique natural, historic, scenic, or recreational resources and are addressed in Section 3.12, Special Designations. The Public Lands Survey System boundaries of lands within and adjacent to the GLNP are shown on Figure 3-17, Legal Description, in Appendix A.

3.11.1 Issues Identified for Analysis

- How would existing or planned land uses, ROWs, land use authorizations, or locational uncertainty of land boundaries conflict with, or require substantial modifications of, the proposed transmission line?
- How would the transmission line impact land use patterns or other land use areas near or adjacent to the line?
- What are the conflicts with federal, state, or local plans or policies?

3.11.2 Analysis Area

The lands, realty, and cadastral survey analysis area is the same as the project area for each alternative, as described under Section 3.1, Introduction. The Proposed Action's project area is 36,917 acres. The Other Resource Consideration Alternative's project area is 36,756 acres. The BLM Preferred Alternative's project area is 36,830 acres.

3.11.3 Affected Environment

Land Use Plans

Federal land uses in the land use analysis area are governed by various land use plans. These plans typically establish goals, objectives, management direction, standards, and guidelines that apply to the land and resources managed. To ensure the best balance of uses and resource protections for public lands, federal agencies undertake extensive land use planning through a collaborative approach with local, state, and tribal governments; the public; and stakeholder groups. The documents provide land use planning and management direction on a broad scale and guide future actions on federal land. Land use plans are the basis for every on-the-ground action the agencies undertake.

As required by the FLPMA, BLM-administered lands that are not designated for special management must be managed under the principles of multiple use and sustained yield. Section 2.4 discusses the need for land use planning amendments to address potential nonconformance with the 2015 ARMPA. In addition, the 10-mile portion of the Proponent's proposed route, which would traverse National Forest System lands, is not consistent with the standards and guidelines in the 1986 Toiyabe Forest Plan, as amended. In particular, the proposed route is inconsistent with standards and guidelines in amendment 17 (Forest Service 2015a) and the Greater Sage-grouse Record of Decision for Nevada and Land Management Plan Amendment (Forest Service 2015b).

BLM Field Offices and RMPs

The field offices relevant to the analysis area include the Sierra Front Field Office (Carson City District Office), Stillwater Field Office (Carson City District Office), Mount Lewis Field Office (Battle Mountain District Office), and Bristlecone Field Office (Ely District Office). The following applicable RMPs apply to the analysis area:

- Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, Including the Greater Sage-Grouse Sub-Regions of Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, and Utah (BLM 2015)

- Approved Resource Management Plan/Record of Decision for Solar Energy Development in Six Southwestern States (BLM 2012)
- Approved Resource Management Plan/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (BLM 2009)
- Record of Decision and Resource Management Plan Amendments for Geothermal Leasing in the Western United States (BLM and Forest Service 2008a)
- Carson City Field Office Consolidated Resource Management Plan (BLM 2001)
- Shoshone-Eureka Resource Management Plan and Record of Decision (BLM 1986)
- Approved Ely District Record of Decision and Approved Resource Management Plan (BLM 2008b)

Federal

The BLM, Forest Service, and DOD have property or land use allocations within the analysis area. The analysis area also contains private or other designated lands. Aside from BLM-administered lands, the Forest Service manages the largest acreage, which is predominantly concentrated in the central region of the lands, realty, and cadastral survey analysis area (see Figure 1-1). The Austin-Tonopah Ranger District of the Humboldt-Toiyabe National Forest manages the National Forest System lands. Lands managed by the Austin-Tonopah Ranger District are managed under the Toiyabe National Forest Land and Resource Management Plan, as amended (Forest Service 1986).

State of Nevada

The State of Nevada has various small properties that overlap the analysis area. Most of these properties are in the analysis area's western portion (Figure 1-1). On State lands, a ROE would need to be obtained from the State of Nevada before construction begins. A ROE allows an individual, government agency, or organization to enter private or public lands for a specific purpose, such as conducting surveys, environmental assessments, construction, or other activities. ROEs are usually temporary and granted by the landowner or authority managing the property, often with specific conditions or limitations.

County Plans

The county plans that apply to the to the GLNP include the following:

- Churchill County
  - 2020 Churchill County Master Plan (Churchill County 2020)
- Eureka County
  - Master Plan Final 2010 (Eureka County 2010)
  - Water Resources Master Plan (Eureka County 2016)
- Lander County
  - Lander County Master Plan 2024 Draft (Lander County 2022)
- Lyon County
  - 2020 Lyon County Master Plan (Lyon County 2020)

- White Pine County
  - White Pine County Land Use Plan (White Pine County 2009)
  - 2007 White Pine County Public Lands Policy Plan (White Pine County 2007)

The master plans of Churchill, Lander, Lyon, and White Pine Counties all include directives and standards pertaining to transmission infrastructure, emphasizing the necessity for coordination among the respective counties, the BLM, and the Nevada State Office of Energy (Churchill County 2020; Lander County 2022; Lyon County 2020; White Pine County 2009). Eureka County's guidance for transmission or energy is not as specific for transmission energy projects (Eureka County 2010).

Local Plans

The towns that overlap the analysis area are Austin and Eureka, Nevada. These municipalities do not have municipal-specific plans; they follow the Lander and Eureka Counties' master plans.

Land Use Conditions

Two communities are within or adjacent to the GLNP, Austin and Eureka, Nevada. The town of Austin is approximately 150 miles east of Carson City. Austin had a population of 47 and 64 housing units in 2022 (US Census Bureau 2022a). Austin is compact, with limited services and few infrastructure-related facilities. The town of Eureka is approximately 270 miles east of Carson City. Eureka had a population of 315 and 246 housing units in 2022 (US Census Bureau 2022b). Eureka supports the surrounding area with a healthcare facility, public parks, an airport, public library, police and fire services, and primary and secondary schools.

Since the analysis area is mostly rural, there are very few land use categories within the lands, realty, and cadastral survey analysis area. Most land use falls under the agricultural and multiple-use BLM-administered lands categories. Table 3-79 summarizes the predominant land use categories found in the lands, realty, and cadastral survey analysis area.

Table 3-79. Land Use Categories within the Land Use Analysis Area

Land Use Category	Land Use Category Definition and Summary
Residential	Low-, medium-, and high-density single-family residential, multifamily residential (for example, apartment complex), rural residential, and mobile home parks. The communities of Austin and Eureka include low-density, single-family, and rural residential.
Commercial	Restaurants, gas stations, banks, grocery stores, motels and hotels, and other retail businesses. Limited commercial use occurs in Austin and Eureka along US Highway 50.
Industrial	Warehouse businesses, manufacturing companies, storage facilities, and other uses. There are no substantial industrial uses within the analysis area. The analysis area overlaps some mining claims and material sites.
Military	Bases and firing ranges managed by the DOD. A small portion of the analysis area would cross the Fallon Naval Air Station Lands.
Agriculture	Ranching, farming, and dairy operations. Agricultural land uses within the analysis area are primarily ranching and livestock grazing.

Land Use Category	Land Use Category Definition and Summary
Utilities/Energy Infrastructure	Power plants, substations, transmission lines, pipelines, canals, designated utility corridors, and solar farms. Utility and energy land uses occur throughout the analysis area and include pending ROW applications for renewable energy projects proposed on BLM-administered lands. There is an existing 230 kV line adjacent to the project area.
Communication Facilities	Cellular, radio, and television facilities. A variety of communication facilities are scattered throughout the analysis area.
Transportation	Minor roads (county highways and city streets), major roads (interstates and state highways), railroads, trails, etc. The major road within the analysis area is US Highway 50.

Source: BLM, FS, and NVE GIS 2024

Land Use Authorizations

Land use authorizations on BLM-administered surface land include ROW grants, permits, leases, and easements under several different authorities, including Section 302 of FLPMA; the Recreation and Public Purposes Act of 1926, as amended (43 USC 869); and the Mineral Leasing Act of 1920, as amended (30 USC 185). Renewals and requests for new ROWs are the primary demand for the BLM lands, realty, and cadastral survey program in the analysis area.

Various land use authorizations are active within the analysis area; these are predominantly allocated for utility-related infrastructure. Specific ROWs are discussed further in Section 3.11.4, Environmental Consequences.

Rights-of-Way and Special Use Permit Application(s)

The BLM ROW program is the most active portion of the lands, realty, and cadastral survey program in terms of the number of cases processed. The BLM's objective is to grant ROW and temporary use permits to any qualified individual, business entity, or governmental entity and to regulate, control, and direct the use of ROWs on public land to accomplish the following:

- Protect and prevent unauthorized encroachments on adjacent properties, on federal interagency boundaries, and within BLM-administered lands.
- Prevent unnecessary or undue environmental damage to the lands and resources.
- Promote the utilization of ROWs in accordance with engineering and technological compatibility, national security, and current land use plans.
- Coordinate, to the fullest extent possible, all ROW actions with state and local governments, interested individuals, and appropriate quasi-public entities.

ROW exclusion areas are designated areas where ROWs should not be permitted. ROW avoidance areas are designated areas where new ROWs would be allowed but should ideally be located elsewhere. Exceptions may be considered in these designations if analysis shows that placing ROWs in other locations is not feasible or would result in greater impact.

Users can apply for a special use permit application for use on the surface of National Forest System land that allows occupancy, use, rights, or privileges of agency land. Like a ROW, the special use permit application authorization is granted for a specific use of the land for a specific period of time.

3.11.4 Environmental Consequences

Methodology

Information was obtained from various federal, state, and local agency documents and maps, including BLM RMPs, city and county land use plans, and aerial imagery for the land use project area.

Indicators

- Conflicts with, or substantial modifications or terminations of, existing or planned land uses, ROWs, or land use authorizations
- Alterations to land use patterns or other use areas near the project area
- Conflicts with federal, state, and local land use plans, goals, and policies

Assumptions

- Demand for ROW-related energy facilities will increase once a larger transmission line is installed.
- Demand for survey and marking fee land and administrative boundaries will increase with demand for more land use authorization applications, access roads, energy and communication infrastructure, and other ROWs.
- No lands will be purchased, exchanged, or acquired during the planning process for the GLNP.
- Most of the land use occurs on BLM-administered lands because more than 85 percent of the lands, realty, and cadastral survey project area is on BLM-administered lands.
- County plans are current as stated and may be modified in the future.
- Fewer acres within the permanent ROW areas would be disturbed compared with the temporary ROW.

Direct and Indirect Impacts from the No Action Alternative

Under the No Action Alternative, there would be no surface-disturbing activities associated with the GLNP. This alternative would maintain the status quo, and there would be no effect on other land uses within the project area. Existing ROWs would remain unaffected, but the absence of a large transmission line would result in reduced future development of energy-related infrastructure, hindering the development of energy projects to meet demand. No new utility corridors would be established, reducing the possibility of collocation or distribution of existing utility infrastructure.

Under the No Action Alternative, there would be existing utility corridors on approximately 391,866 acres of BLM-administered lands and approximately 23,063 acres of DOD-administered lands (see Figure 2-10, No Action, Extents 1–15, in Appendix A). Future and existing fossil fuel and renewable energy projects would continue to use this corridor to apply for access roads, energy and communication infrastructure, and other ROWs.

Direct and Indirect Impacts from the Proposed Action

Conflicts with, or Substantial Modifications or Terminations of, Existing or Planned Land Uses, ROWs, or Land Use Authorizations

Three land use allocations (avoidance, exclusion, and open) coincide with the Proposed Action; these are outlined in Table 3-80. Land use allocations would not change by alternative; rather, the proposed transmission line would cross through different ROW land use allocations depending on the alternative that is chosen. Under the Proposed Action, approximately 29,082 acres of temporary disturbance and 7,834 acres of permanent disturbance would occur. However, the anticipated ground disturbance associated with the Proposed Action transmission and distribution lines and ancillary project components would be smaller than these areas.

Table 3-80. Land Use Allocations under the Proposed Action

Land Use Allocation	Acres	Percentage of Total Acres
ROW avoidance	15,497	44.9
ROW exclusion	346	1.0
ROW open	18,650	54.1
Total	**34,493**	**100**

Source: BLM, FS, and NVE GIS 2024

The Proposed Action would have the highest number of ROW exclusion areas; however, these exclusion areas would represent only 1 percent of the total project area. A majority of the project area would be open to some form of ROW development or land use authorization. During construction, other existing uses for ROW/permit holders could be temporarily impacted; however, the Proponent would coordinate with land users prior to construction activities to minimize potential impacts.

Under the Proposed Action, there are a number of land use authorizations established, primarily consisting of transmission lines, which constitute 65.8 percent of the existing ROW miles in the project area. Fencing (9.9 percent) and roads (5.3 percent) represent the second- and third-highest proportions of total existing ROW miles within the project area. Table 3-81 displays the existing land use authorizations that overlap with the Proposed Action.

Table 3-81. BLM and Forest Service Land/Special Use Authorizations under the Proposed Action

Land Use Authorization Types	Total Miles	Percentage of Total Miles
Communication site	0.7	0.4
Fence	17.1	9.9
Grazing district	0.7	0.4
Land treatment area	7.1	4.1
Material site	5.4	3.1
Pipeline	2.9	1.7
R/W plant site	1.0	0.6
Railroad/tram	0.4	0.2
Road	9.1	5.3
Study plot	1.2	0.7
Telephone line	5.5	3.2

Land Use Authorization Types	Total Miles	Percentage of Total Miles
Telephone/telegraph	1.7	1.0
Transmission line	113.7	65.8
Unsurvey boundary	1.2	0.7
Withdrawal class reserves	5.1	3.0
Total	**172.8**	**100**

Source: BLM, FS, and NVE GIS 2024

The Proposed Action would designate a utility corridor up to 3,500 feet in width across approximately 198 miles that would encompass approximately 82,600 acres of BLM-administered lands. The designation of a utility corridor could increase future ROW applications for renewable energy, energy and communication infrastructure, and access roads in the utility corridor. However, the corridor could also facilitate the development and collocation of future ROW applications in one general area; depending on future ROW applications, this could reduce impacts outside the corridor. Existing ROWs would be temporarily impacted during construction; however, the BLM would coordinate with permit holders prior to construction to minimize impacts. There are no current or pending ROW applications on BLM-administered land that would be sited within the utility corridor.

In the project area (refer to Figure 3-18, Right-of-Way Authorizations, in Appendix A), there are numerous existing and proposed ROW authorizations. Approximately 168 miles (or approximately 85 percent) of the proposed utility corridor would be collocated or dually collocated with existing 230 and 345 kV transmission lines. Within the analysis area, the primary adjacent ROW to the proposed transmission line is an existing 230 kV transmission line.

Alteration to Land Use Patterns or Other Use Areas near the Project Area

The Proposed Action would not conflict with existing uses such as commercial, residential, military, agricultural, utility, transportation, or communication facilities in the project area. This is largely due to the predominant BLM-administered lands in the project area. Agricultural lands would not be impacted by the geotechnical investigations, construction or operation of the transmission line. However, the potential impacts on industrial uses (such as minerals and gravel) are discussed further in Section E.3, Geology and Minerals. During construction, other existing land use patterns or adjacent areas that are utilized by other ROW/permit holders may be temporarily impacted; however, the BLM would coordinate with land users prior to construction.

The transmission line would bypass Austin, Nevada, and closely approach Eureka, Nevada. For further details on visual impacts arising from the transmission line, please refer to Section 3.10, Visual Resources.

The Proposed Action would designate a new utility corridor that could help facilitate the expansion of future land uses. The creation of a new utility corridor could impact new applications for linear ROWs because they would likely be proposed within the new utility corridor. Future ROW projects could use the newly designated corridor to reduce impacts outside the utility corridor. Land use within the utility corridor could increase because there could be a large amount of infrastructure collocated in the utility corridor.

Conflicts with Federal, State, and Local Land Use Plans, Goals, and Policies

The GLNP would comply with existing county plans (see Section 3.11.3, Affected Environment) with some exceptions for Eureka County. Possible temporary impacts on other ROW or permit holders, to private landowners or their operations, or to existing land uses, are not supported by Eureka County plans and policies. However, under the following EMMs in Appendix D the Proponent would coordinate directly with counties to minimize temporary impacts: BIO-16, PHS-10, PHS-11, TRANSP-2, SE-1, VIS-11, ROADS-4, ROADS-12, NOISE-7, and OPS-8.

The Proposed Action would intersect greater sage-grouse GHMAs and PHMAs under the jurisdiction of the BLM Carson City, Battle Mountain, and Ely District Offices. As per the land use plans amended by the 2015 ARMPA, these areas on BLM-administered lands are treated as avoidance areas for major ROWs outside utility corridors (BLM 2015a). In cases where disturbance limits are reached, these GHMAs and PHMAs are designated as exclusion areas for high-voltage transmission lines (exceeding 100 kV) outside designated utility corridors (BLM 2015a). The proposed utility corridor under the Proposed Action would include the entirety of the proposed 525 kV transmission line, which would bring the GLNP in conformance with the RMPs in the BLM Carson City, Battle Mountain, and Ely District Offices, as amended by the 2015 ARMPA.

Section 202 of the FLPMA requires the BLM to develop, maintain, and revise land use plans to provide for the management of tracts or areas of public lands on the basis of multiple use. The 2015 ARMPA does not prevent the proposed BLM from amending its land use plans, including the designation of a new utility corridor.

The Proposed Action would be inconsistent and cannot be made consistent with the standards and guidelines in the 1986 Toiyabe Forest Plan (Forest Service 1986), as amended, prepared under the National Forest Management Act and 36 CFR 219(ii). Specifically, the Proposed Action would not be consistent with the standards, guidelines, and desired conditions in the 1986 Toiyabe Forest Plan's amendment 17 (Forest Service 2015a) and the Greater Sage-grouse Record of Decision for Nevada and Land Management Plan Amendment (Forest Service 2015b).

Several lands are held by multiple federal and private entities within the GLNP area, with a majority (85.6 percent) under BLM-administered lands. Although most of the proposed transmission line would occur on BLM-administered lands, the Proposed Action would cross into National Forest System lands for approximately 10 miles. Table 3-82 breaks down the landownership by entity.

Table 3-82. Landownership within the Project Area under the Proposed Action

Land Manager/Owner	Total (Acres)[1]	Percentage of Total Acres
BLM	24,891	85.6
DOD	2,035	7.0
Forest Service	1,217	4.2
Private	939	3.2
Total	**29,082**	**100**

Source: BLM, FS, and NVE GIS 2024

[1]These acreages are based on the temporary ROW.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Conflicts with, or Substantial Modifications or Terminations of, Existing or Planned Land Uses, ROWs, or Land Use Authorizations

Three land use allocations coincide with the Other Resource Consideration Alternative, as outlined in Table 3-83.

The Other Resource Consideration Alternative would have the highest number of areas open to ROWs, representing 61.0 percent of the project area. The proposed transmission line would cross fewer ROW exclusion and avoidance areas due to its route being adjusted near Austin, Nevada. It also would cross fewer greater sage-grouse habitat areas. Under this alternative, a majority of the project area would be open to some form of ROW development or land use authorizations.

Table 3-83. BLM and Forest Service Land Use Allocations under the Other Resource Consideration Alternative

Land Use Allocation	Acres	Percentage of Acres in the Project Area
ROW avoidance	13,012	38.1
ROW exclusion	313	0.9
ROW open	20,823	61.0
Total	**34,148**	**100**

Source: BLM, FS, and NVE GIS 2024

Many land use authorizations are established as outlined in Table 3-84. Thee authorizations primarily consist of transmission lines, with 62.1 percent of the existing ROW miles in the project area. Fencing (12.3 percent) and roads (6.2 percent) would represent the second- and third-highest proportions of total existing ROW miles within the project area.

Under the Other Resource Consideration Alternative, approximately 145 miles (or approximately 71 percent) of the proposed utility corridor would be collocated or dually collocated with existing 230 and 345 kV transmission lines.

Table 3-84. Land Use Authorizations under the Other Resource Consideration Alternative

Land Use Authorization Types	Miles	Percentage of Total Miles
Communication site	0.3	0.2
Fence	21.5	12.3
Grazing district	0.7	0.4
Land treatment area	7.9	4.5
Material site	5.4	3.1
Pipeline	3.1	1.8
ROW plant site	1.0	0.6
Railroad/tram	0.4	0.2
Road	10.9	6.2
Study plot	1.2	0.7
Telephone line	5.8	3.3

Land Use Authorization Types	Miles	Percentage of Total Miles
Telephone/telegraph	1.7	1.0
Transmission line	108.3	62.1
Unsurvey boundary	0.9	0.5
Withdrawal class reserves	5.4	3.1
Total	**174.5**	**100**

Source: BLM, FS, and NVE GIS 2024

Similar to the Proposed Action, the Other Resource Consideration Alternative would designate a utility corridor up to 3,500 feet in width across approximately 205 miles that would encompass approximately 85,800 acres of BLM-administered lands. The utility corridor would facilitate the development and collocation of future ROW applications in one general area; depending on future ROW applications, this could reduce impacts outside the corridor. Existing ROWs would be temporarily impacted during construction; however, the BLM would coordinate with permit holders prior to construction to minimize impacts. As discussed under the Proposed Action, the designation of a utility corridor could increase future ROW applications for renewable energy, energy and communication infrastructure, and access roads in the utility corridor.

Alterations to Land Use Patterns or Other Use Areas near the Project Area

The Other Resource Consideration Alternative would not conflict with existing uses, such as commercial, military, agricultural, utility, transportation, or communication facilities, in the project area. This is largely due to the predominant BLM-administered lands in the project area. Agricultural lands would not be impacted by the geotechnical investigations for or construction and O&M of the transmission line. However, the transmission line would go through Austin, Nevada, to bypass the National Forest System lands. This would result in temporary impacts on the town, including noise and possible access issues, during the construction phases. It also would result in visual resource impacts near the town, which are discussed in Section 3.10, Visual Resources.

This alternative would also be routed farther away from the Desatoya Mountains Wilderness Area, thus reducing any potential impacts on the wilderness characteristics when compared with the Proposed Action. The potential impacts on industrial uses (such as minerals and gravel) are discussed further in Section E.3, Geology and Minerals. During construction, other existing land use patterns or adjacent areas that are used by other ROW/permit holders may be temporarily impacted; however, the BLM would coordinate with land users prior to construction.

Conflicts with Federal, State, and Local Land Use Plans, Goals, and Policies

As discussed under the Proposed Action, this alternative would comply with existing county land use plans except for some Eureka County plans and policies.

Under the Other Resource Consideration Alternative, there would be various federal and private entity landholders, with the majority of lands (85.6 percent) falling under BLM administration (see Table 3-85). Because the proposed transmission line would primarily traverse BLM-administered lands, conflicts in landownership between the BLM and other federal agencies would be minimal.

Table 3-85. Landownership under the Other Resource Consideration Alternative

Land Manager/Owner	Total (Acres)[1]	Percentage of Total Acres
BLM	24,762	85.6
DOD	2,030	7.0
Forest Service	1,066	3.7
Private	1,084	3.7
Total	**28,942**	**100**

Source: BLM, FS, and NVE GIS 2024

[1]These acreages are based on the temporary ROW.

Similar to the Proposed Action, the proposed utility corridor under the Other Resource Consideration Alternative would include the entirety of the proposed 525 kV transmission line, which would bring the GLNP in conformance with the RMPs in the BLM Carson City, Battle Mountain, and Ely District Offices, as amended by the 2015 ARMPA. In contrast to the Proposed Action, the Other Resource Consideration Alternative would be consistent with the standards, guidelines, and desired conditions in the 1986 Toiyabe Forest Plan's amendment 17 (Forest Service 2015a), the National Forest Management Act, and 36 CFR 219(ii).

Direct and Indirect Impacts from the BLM Preferred Alternative

Conflicts with, or Substantial Modifications or Terminations of, Existing or Planned Land Uses, ROWs, or Land Use Authorizations

There would be three land use allocations applicable to the BLM Preferred Alternative, as outlined in Table 3-86.

Table 3-86. Land Use Allocations under the BLM Preferred Alternative

Land Use Allocation	Acres	Percentage of Acres of the Project Area
ROW avoidance	15,458	45.0
ROW exclusion	35	0.1
ROW open	18,877	54.9
Total	**34,370**	**100**

Source: BLM, FS, and NVE GIS 2024

The BLM Preferred Alternative would traverse the second-highest number of ROW exclusion areas. Similar to the Proposed Action, these exclusion areas make up less than 1 percent of ROW authorizations within the project area.

There are many land use authorizations within the project area as outlined in Table 3-87 primarily consisting of transmission lines, which would constitute 65.1 percent of the existing ROW miles in the analysis area. Fencing (9.5 percent) and roads (4.9 percent) would represent the second- and third-highest proportions of total existing ROW miles.

Under the BLM Preferred Alternative, approximately 166 miles (or approximately 81 percent) of the proposed utility corridor would be collocated or dually collocated with existing 230 and 345 kV transmission lines.

Table 3-87. BLM Land Use Authorizations under the BLM Preferred Alternative

Land Use Authorization Types	Miles	Percentage of Total Miles
Communication site	0.3	0.2
Fence	16.9	9.5
Grazing district	0.7	0.4
Land treatment area	6.5	3.7
Material site	3.6	2.0
Pipeline	2.9	1.6
ROW plant site	1.0	0.6
Railroad/tram	0.4	0.2
Road	8.6	4.9
Study plot	1.0	0.6
Telephone line	5.0	2.8
Telephone/telegraph	1.7	1.0
Transmission line	115.2	65.1
Unsurvey boundary	7.7	4.4
Withdrawal class reserves	5.5	3.1
Total[1]	**177.1**	**100**

Source: BLM, FS, and NVE GIS 2024

[1]The total sum is not equal to the land use authorization types totals due to rounding.

Similar to the Proposed Action, the BLM Preferred Alternative would designate a utility corridor up to 3,500 feet in width across approximately 205 miles that would encompass approximately 83,400 acres of BLM-administered lands. The utility corridor would facilitate the development and collocation of future ROW applications in one general area; depending on future ROW applications, this could reduce impacts outside the corridor. Existing ROWs would be temporarily impacted during construction; however, the BLM would coordinate with permit holders prior to construction to minimize impacts. As discussed under the Proposed Action, the designation of a utility corridor could increase future ROW applications for renewable energy, energy and communication infrastructure, and access roads in the utility corridor.

Alterations to Land Use Patterns or Other Use Areas near the Project Area

Impacts on land use patterns or other use areas would be the same as those described in the Proposed Action section.

Conflicts with Federal, State, and Local Land Use Plans, Goals, and Policies

The proposed transmission line would comply with existing county land use plans (see Section 3.11.3, Affected Environment) with some exceptions for the Eureka County plans and policies.

Impacts from the BLM Preferred Alternative would be similar to those described under the Other Resource Consideration Alternative.

Under the BLM Preferred Alternative, there are various federal and private entity land holders, with the majority of lands (84.8 percent) falling under BLM administration. Because the proposed transmission line would primarily traverse BLM-administered lands, conflicts in landownership between the BLM and other federal agencies would be minimal. Furthermore, relocating the proposed transmission line to accommodate the Churchill County Alternative Segment and the Forest Service's Northern Alternative route would align with the 1986 Toiyabe Forest Plan's amendment 17 (Forest Service 2015a), ensuring consistency. Table 3-88 breaks down the landownership by entity.

Table 3-88. Landownership under the BLM Preferred Alternative

Land Manager/Owner	Total (Acres)[1]	Percentage of Total Acres
BLM	24,691	84.8
DOD	2,035	7.0
Forest Service	1,457	5.0
Private	937	3.2
Total	**29,120**	**100**

Source: BLM, FS, and NVE GIS 2024

[1]These acreages are based on the temporary ROW.

Similar to the Proposed Action, the proposed utility corridor under the BLM Preferred Alternative would include the entirety of the proposed 525 kV transmission line, which would bring the GLNP in conformance with the RMPs in the BLM Carson City, Battle Mountain, and Ely District Offices, as amended by the 2015 ARMPA. In addition, the Desatoya Mountains Wilderness Area would be avoided, which would comply with the Carson City District Consolidated RMP (BLM 2001). In contrast to the Proposed Action, the BLM Preferred Alternative would be consistent with the standards, guidelines, and desired conditions in the 1986 Toiyabe Forest Plan's amendment 17 (Forest Service 2015a), the National Forest Management Act, and 36 CFR 219(ii) because the entirety of the proposed 525 kV transmission line would be within an existing designated utility corridor on National Forest System lands.

3.12 Special Designations (National Historic Trails, Special Management Areas, Wild and Scenic Rivers, Wilderness, and Wilderness Study Areas)

3.12.1 Issues Identified for Analysis

How would geotechnical investigations, construction, O&M, and decommissioning of the GLNP affect existing and new congressionally designated areas?

3.12.2 Analysis Area

The analysis area for special designations is the same as the project area for each alternative, as described under Section 3.1, Introduction. The Proposed Action's project area is 36,917 acres. The Other Resource Consideration Alternative's project area is 36,756 acres. The BLM

Preferred Alternative's project area is 36,830 acres. Where the analysis area intersects a special designation area, the analysis area extends to include the entirety of that area.

3.12.3 Affected Environment

National Historic Trails

National trails include congressionally designated historic and scenic trails and administratively designated recreation trails. Scenic trails are established "for maximum outdoor recreation potential, and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass" (BLM 2012a). Historic trails are "extended trails which follow as closely as possible and practicable the original route or routes of travel of national historical significance" and are designated for "the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment" (BLM 2012a). National recreation trails are established for "a variety of compatible outdoor recreation uses in or reasonably accessible to urban areas or high-use areas" (BLM 2012a). While similar to historic and scenic trails, national recreation trails are designated by the BLM and do not require congressional approval.

The BLM manages the Pony Express NHT within the project analysis area and the California Trail NHT, within 5 miles of the project analysis area. Congress designated the Pony Express and California Trails in 1992 for inclusion into the National Trails System. The trails were designated to commemorate important aspects of American history in the nineteenth century, including a horse-and-rider mail delivery system (the Pony Express) and western overland migration in the mid-nineteenth century (California Trail) (NPS 1999). See Figure 3-19, National Scenic and Historic Trails, in Appendix A for more project-specific information.

In 2019, the National Park Service completed a feasibility and suitability study in response to a request from Congress to the Secretary of the Interior to evaluate 64 named routes and any other routes the Secretary deemed appropriate in the Omnibus Public Lands Management Act of 2009. Based on the 2019 study, the National Park Service has recommended to Congress the Central Overland Emigrant Route-Simpson Route as an eligible trail for addition to the California NHT (NPS 2019). This route is within the project analysis area and is shown on Figure 3-19, National Scenic and Historic Trails, in Appendix A. Only Congress may designate routes for addition to the existing NHTs, and no action has been taken.

National Trails System Act

The National Trails System Act of 1968, as amended (16 USC 1241–1251), establishes the framework for congressional designation of national scenic and historic trails, administrative responsibilities for designated trails, and a process for studying the feasibility and desirability of new trails that may be eligible for designation as a national trail.

The Secretary of the Interior is charged with administration of national trails following their congressional designation and executes requirements under the National Trails System Act. These requirements may include establishing an advisory council for each trail, completing a trail-wide comprehensive plan, and leading efforts to develop the trail in coordination with land-managing agencies. National trail administration responsibilities are fulfilled as directed in the National Trails System Act in coordination with tribes; other national trail administrators;

national trail managing agencies, including all BLM public land managers along the congressionally designated national trail); other federal, state, and local government agencies; private and nonprofit organizations; willing landowners; land users; and individuals (BLM 2012a).

In January 2020, the BLM published Technical Reference 6280-1, National Scenic and Historic Trails Inventory, Assessment, and Monitoring, Volume 1: Methodology and Volume 2: Field Guide. These guidance documents were created to help implement the policies and purposes set forth in the National Trails System Act by advancing a consistent and repeatable approach for collecting resource-integrated baseline data for the NHTs and trails of all kinds.

The GLNP NHT Inventory and Assessment report (see Appendix Q) describes the historic setting and the affected environment of the GLNP as it relates to the National Trails System.

Since a National Trail Management Corridor has not yet been established in the affected land use plans, the first step in the process was to conduct a viewshed analysis to evaluate whether the project might affect NHT segments. JRP Historical Consulting LLC (JRP), in collaboration with Far Western Anthropological Research Group Inc. (Far Western) and the BLM, conducted this analysis, which showed that portions of two congressionally designated trails, the Pony Express and California NHTs, were located within a 5-mile viewshed (10-mile-wide corridor) of the GLNP, along with two trails recommended as suitable for NHT designation, the Central Overland Emigrant Route-Simpson Route #35E and a small portion of the Bidwell-Bartleson Route #39. A 5-mile viewshed corresponds to the maximum extent of the middle-ground distance zone where a casual observer would notice impacts. The results of this analysis showed that the GLNP could have an adverse impact on the scenic quality of portions of the trails.

Based on this analysis, segments of the Pony Express NHT, California NHT, and Central Overland Emigrant Route-Simpson Route were identified to be inventoried and mapped Inventory Analysis Units. Three high-potential historic sites, Sand Springs Station, Cold Springs, and Edwards Creek Station, and one high-potential segment, Overland Canyon to Simpson Park Station, are within the APE. All these resources are associated with the Pony Express NHT.

The four primary landscape elements—scenic, historic and cultural, recreation, and natural—were considered in the analysis of the trails. Inventory data received from the BLM were used to characterize the affected environment for all the trails and for all alternative routes regardless of jurisdiction. Suitable inventory points were identified along the segments to represent typical views and existing recreation and interpretive developments, and to reflect how a visitor might interact with the trail. In November 2024, teams from JRP and Far Western recorded the existing character of the trail landscape and analyzed the potential visual contrast created by the GLNP at 128 KOPs using the BLM's Contrast Rating Form 8400-4.

By considering these components, a comprehensive inventory of specific trail segments was developed. This inventory identified potential impacts on the NHTs' historic setting, character, and viewshed (see Appendix Q).

Wild and Scenic Rivers (WSRs)

WSRs are streams or segments of streams designated by Congress under the authority of the WSR Act of 1968 (Public Law 90-542, as amended; 16 USC 1271–1287) for the purpose of preserving the stream or stream section in its free-flowing condition, preserving water quality, and protecting its outstandingly remarkable values (ORVs). ORVs are identified on a segment-specific basis and may include scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values. Section 5(d)(1) of the WSR Act directs federal agencies to consider potential WSRs through their land use planning process.

During planning efforts, the BLM reviews all streams within its jurisdiction and evaluates their eligibility, suitability, and tentative classification. The three types of tentative classifications for eligible river segments are wild, scenic, and recreational. The tentative classification is based on the degree of human development currently along an eligible river; it is used as a guide for future management activities. Wild rivers are rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted. Scenic rivers are free of impoundments, with shorelines or watersheds still largely undeveloped but accessible in places by roads. Recreational rivers are readily accessible by road and may have some developments, impoundments, or diversions from the past.

Two eligible WSR segments are within the analysis area, Illipah Creek and Simpson Creek. See Table 3-89, below, and Figure 3-20, Wild and Scenic Rivers, in Appendix A for more information.

Table 3-89. Eligible WSR Segments in the Analysis Area

Segment Name	Segment Length (Miles)	ORVs	Tentative Classification
Illipah Creek	0.3	Recreation	Recreational
Simpson Creek	0.1	Scenic	Recreational

Source: BLM, FS, and NVE GIS 2024

In 2022, a suitability study was completed in Nevada for the Battle Mountain and Ely District Offices. The final suitability studies determined neither the Simpson Creek nor the Illipah Creek WSR segments met the criteria to be suitable for inclusion in the National Wild and Scenic River System (BLM 2022a, 2022b).

Special Management Areas

With the passage of the National Defense Authorization Act in 2023, Congress designated the Numu Newe SMA (see Figure 3-21, Special Management Areas, in Appendix A) to be managed by the BLM. The 209,181-acre area was designated to protect, conserve, and enhance the unique and nationally important historic, cultural, archaeological, natural, and educational resources of the Numu Newe traditional homeland (Congress 2022; BLM, FS, and NVE GIS 2024).

Though a comprehensive management plan has not been developed, the National Defense Authorization Act includes stipulations that the SMA must be managed consistent with the purposes under Section 2981(c)(2) of the Military Withdrawals Act of 2013 (Public Law 113-66) and that use of motor vehicles is authorized where appropriate, including maintenance of

existing roads. The act includes stipulations to ensure, to the maximum extent practicable, the protection and preservation of traditional cultural and religious sites within the SMA; to carefully and fully integrate, to the maximum extent practicable, the traditional and historical knowledge and special expertise of the Fallon Paiute-Shoshone Tribe and other affected Indian tribes; and to ensure public access within the SMA for hunting, fishing, and other recreational purposes.

For additional information on the cultural and tribal significance of the Numu Newe SMA, see Section 3.9, Native American Religious Concerns, and Section 3.8, Cultural Resources.

Wilderness Areas

Per BLM Manual 6340 (BLM 2012b), the BLM's objectives for the management of wilderness areas are to manage and protect BLM wilderness areas in such a manner as to preserve wilderness character; manage wilderness for the public purposes of recreational, scenic, scientific, education, conservation, and historic use while preserving wilderness character; and effectively manage uses permitted under Section 4(c) and 4(d) of the Wilderness Act of 1964 while preserving wilderness character.

With the passage of the National Defense Authorization Act in 2023, Congress designated the Clan Alpine Mountains (128,362 acres) and Desatoya Mountains (65,065 acres) Wilderness Areas (see Figure 3-22, Wilderness Areas, in Appendix A). Although the GLNP would not directly overlap these wilderness areas, portions of these wilderness areas are near (within 5 miles of) the GLNP. The Clan Alpine Mountains Wilderness Area includes most of the Clan Alpine Mountain Range in west-central Nevada. Numerous deep and rugged canyons radiate from the range's major peaks, including the tallest peak, Mount Augusta. The Desatoya Mountains Wilderness Area contains canyons, ridges, and rock outcrops present throughout with its tallest point at the 9,973-foot Desatoya Peak.

Wilderness Study Areas (WSAs)

With the passage of the FLPMA in 1976, Congress directed the BLM to inventory, study, and recommend which public lands under its administration should be designated as wilderness. The Nevada Statewide Wilderness Study Report, published in October 1991 (BLM 1991), reported the results of the study in Nevada and made recommendations to Congress about which areas should be designated as wilderness. The final recommendations for wilderness designation were forwarded to Congress on June 22, 1992. Congress has not yet acted on all the recommendations.

Section 603(c) of the FLPMA mandates that the BLM manage WSAs, with some exceptions, "according to [the] authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness." This management directive is referred to as the "non-impairment" mandate and applies until Congress passes legislation to either designate the WSAs as part of the National Wilderness Preservation System or release them from further study or protection. Activities permissible within WSAs include temporary uses that create no new surface disturbance and that do not involve permanent placement of structures. Temporary, non-disturbing activities, as well as valid existing rights or activities that

meet the exception to the non-impairment standard (described in Section 1.6.C.2 of BLM Manual 6330; BLM 2012c), may generally continue in WSAs.

Although the GLNP would not directly overlap any WSAs, portions of the Simpson Park (49,670 acres) WSA is near (within 5 miles of) the GLNP. The Simpson Park WSA contains a high point formed by Fagin Mountains at 9,147 feet.

3.12.4 Environmental Consequences

Methodology

Effects on special designations would occur from the GLNP when conflicts with the objectives or values of the special designation occur, or if the GLNP would have impacts on a special designation's natural, recreational, scenic, or scientific qualities. Unless specifically identified in the designation or case law, impacts on visual resources outside special designations, such as views to or from a special designation unit, are not afforded legal protection; impacts on visual resources are addressed in Section 3.10, Visual Resources.

Indicators

- Acreages of special designations overlapping the GLNP where conflicts with the objectives of the special designation occur

Assumptions

- Short-term impacts on special designations would occur during the construction period.
- Long-term impacts on special designations would occur during O&M of the proposed transmission facilities and associated infrastructure.

Direct and Indirect Impacts from the No Action Alternative

It is anticipated that under the No Action Alternative, the current uses and trends for WSRs, NHTs, SMAs, wilderness areas, and WSAs would continue to occur. Under the No Action Alternative, there would be no impacts on WSRs, NHTs, SMAs, wilderness areas, or WSAs attributed to the geotechnical investigations, construction, O&M, and decommissioning activities for the GLNP.

Direct and Indirect Impacts Common to All Action Alternatives

None of the proposed boreholes for the geotechnical investigations would overlap the WSRs, NHTs, SMAs, wilderness areas, or WSAs; therefore, there would be no impacts on WSRs, NHTs, SMAs, wilderness areas, or WSAs attributed to the geotechnical investigations.

Direct and Indirect Impacts from the Proposed Action

National Historic Trails

Under the Proposed Action, the proposed transmission line and utility corridor, including construction, O&M, and decommissioning, would overlap approximately 3.6 miles of the Pony Express NHT and approximately 4.3 miles of the Central Overland Emigrant Route-Simpson Route (eligible NHT segment for addition to the California National Historic Trail), crossing the Pony Express NHT five times and the Central Overland Emigrant Route-Simpson Route seven

times. Table 3-90 shows the ROW classes overlapping these trails and the number of trail crossings by the proposed transmission line under the Proposed Action.

Table 3-90. Overlapping ROW Classes and Trail Crossings under the Proposed Action

Segment Name	Number of Trail Crossings	Segment Length (Miles)	ROW Avoidance (Miles)	ROW Exclusion (Miles)	ROW Open (Miles)
Pony Express NHT	5	3.6	1.9	0	1.7
Central Overland Emigrant Route-Simpson Route	7	4.3	2.2	0	2.1

Sources: BLM, FS, and NVE GIS 2024, NPS GIS 2024

ROW avoidance affords the NHT and eligible NHT segment protection because the area is designated for ROWs to be avoided if at all feasible.

Impacts on the designated NHT alignments from construction could include direct ground disturbances from work and staging areas and temporary visual and noise impacts. These could impact the trail's scenic and visual qualities by introducing components not similar to common built features in the existing landscape. These could also impact recreational opportunities due to the presence of construction equipment, temporary fencing, and noise and visual disturbances. Much of the proposed GLNP runs through land that has a high Sensitivity Level rating, and a new high-voltage transmission line could reduce the scenic quality of the landscape in areas where the line is introduced. Within 0.35 miles of the proposed transmission line, the scale of the steel H-frame transmission structures that would be used in the national trails study area would demand attention and begin to dominate the landscape (Appendix Q, page 85).

Additionally, activities from construction would disturb soils and vegetation and affect the appearance of mountain, basin, foothills, and riparian landscapes representative of the Basin and Range physiographic province. The impacts identified would be most pronounced at the locations where the transmission line crosses the trails (Appendix Q, page 85). Appendix L, Key Observation Point Viewsheds, shows the potential trail crossings and areas of the NHTs that are visible within 5 miles of a KOP.

Twelve of the KOPs where visual resource fieldwork was conducted for the GLNP (KOPs 2, 4, 6, 7, 8, 9, 10N, 10S, 11, 12, 21, and 22S; Table 3-66) are along segments of trails inventoried (see Appendix Q). Simulations were prepared for photographs at five of these KOPS (8, 10N, 11, 21, and 22s; Appendix M). Under the Proposed Action, the visual resources analysis, based on fieldwork and simulations at these KOPs, visual contrast would conform to the VRM class objectives without additional mitigations (Section 3.10.4).

Impacts associated with O&M activities could include disturbances from helicopter or vehicle use during annual inspections and emergency maintenance. Maintenance roads would be constructed to improve access, therefore increasing ground disturbance and visual impairment. Impacts associated with the decommissioning process would be similar to those under the construction-related impacts, but likely to a lesser extent.

No impacts are anticipated on the California Trail Interpretive Center. This is because it is located outside Elko, Nevada, approximately 82 miles north of the closest alternative.

Under the Proposed Action, adherence to treatment measures identified for trail-related archaeological sites in the HPTP (Appendix O) and resource-specific EMMs related to reducing contrast through construction design and location (VIS-7, VIS-8, VIS-11, and CON 15), use of native plants for reclamation (VIS-13), limiting the spread of exotic and invasive species (OPS-6, BIO-15, BIO-16, BIO-17, and BIO-18), and allowing access to the Pony Express NHT during the annual re-ride event (CON-23) would minimize the impacts on NHTs anticipated under this alternative. EMMs for the GLNP were developed in consideration of the recommendations made in Section 8.1 of Appendix Q, Opportunities to Improve Management, which were informed by BLM Manual 6280 Appendix 1, Design Features and Best Management Practices for National Trails and Associated Resources.

Wild and Scenic Rivers

Under the Proposed Action, the proposed transmission line and utility corridor, including construction, O&M, and decommissioning, would overlap 148 acres of the Illipah Creek eligible WSR corridor and 184 acres of the Simpson Creek eligible WSR corridor. Pursuant to Chapter 3.6 of BLM Manual 6400 (BLM 2012d), the BLM would consider exercising its discretion to deny applications for ROW grants if the BLM determines through appropriate environmental analysis that the ROW proposal is not compatible with the river's classification and the protection and enhancement of river values. Where the ROW proposal is found to be compatible, additional or new facilities should be located, to the greatest extent possible, to share, parallel, or adjoin an existing ROW.

Both Illipah Creek and Simpson Creek have tentative classifications of recreational due to already existing human development within their eligible WSR corridors. Impacts on the ORVs and other river-related values could include direct ground disturbances from construction, work and staging areas, and views of the transmission line, substations, and temporary fencing. For Illipah Creek, the recreation ORV could be temporarily impacted by a lack of access during construction, sound and visual disturbances from construction, and more permanent visual impairment from the completed transmission line. For Simpson Creek, the scenic ORV could be temporarily impacted from construction and work and staging areas, and more permanent visual impairment from the completed transmission line. Impacts associated with the Proposed Action could alter both segments' ORVs and tentative classifications on a temporary basis. The free-flowing character of both segments would not be impacted. For the more specific analysis on visual resources, see Section 3.10, Visual Resources.

Impacts associated with O&M activities could include disturbances from helicopter or vehicle use during annual inspections and emergency maintenance. Maintenance roads would be constructed to improve access, therefore potentially increasing recreational use and impacts on the ORVs. Where the transmission line would overlap an eligible WSR, a permanent ROW would be established; this could include clearing of vegetation, which could impact the scenic ORV of Simpson Creek. For the more specific analysis on visual resources, see Section 3.10, Visual Resources. Appendix L, Key Observation Point Viewsheds, shows the areas of Simpson Creek that are visible within 5 miles of a KOP. Impacts associated with the decommissioning

process would be similar to those under the construction-related impacts, but likely to a lesser extent.

Special Management Area

Under the Proposed Action, the proposed access roads, including construction, O&M, and decommissioning, would overlap approximately 41.1 acres of the Numu Newe SMA. The proposed transmission line would not overlap the SMA. Impacts on the SMA from construction would include direct ground disturbance from work and staging areas. These impacts could affect the historic, cultural, archaeological, natural, and educational resources for which the SMA was designated.

Where the access roads would overlap the SMA, a permanent ROW would be established; this could include clearing of vegetation, which could permanently alter the historic, cultural, archaeological, natural, and educational resources for which the SMA was designated. Impacts associated with the decommissioning process would be similar to those under the construction-related impacts, but likely to a lesser extent.

Wilderness and Wilderness Study Areas

Under the Proposed Action, the proposed transmission line and utility corridor, including construction, O&M, and decommissioning, would not directly overlap any wilderness areas or WSAs. Though no permanent closures would occur under the Proposed Action, recreation access could be limited due to nearby construction activities and from temporary fencing. Impacts associated with O&M activities could include disturbances from helicopter or vehicle use during annual inspections and emergency maintenance. Maintenance roads would be constructed to improve access, therefore potentially increasing recreational use and impacts on wilderness characteristics, including impacting the naturalness, outstanding opportunities for solitude or primitive and unconfined types of recreation, and any supplemental values. Impacts associated with the decommissioning process would be similar to those under the construction-related impacts, but likely to a lesser extent.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

National Historic Trails

Under the Other Resource Consideration Alternative, the proposed transmission line and utility corridor, including construction, O&M, and decommissioning, would overlap approximately 1.4 miles of the Pony Express NHT and approximately 5 miles of the Central Overland Emigrant Route-Simpson Route, crossing the Pony Express NHT 4 times and the Central Overland Emigrant Route-Simpson Route 16 times. Table 3-91 shows the ROW classes overlapping these trails and the number of trail crossings by the proposed transmission line under the Other Resource Consideration Alternative.

Table 3-91. Overlapping ROW Classes and Trail Crossings under the Other Resource Consideration Alternative

Segment Name	Number of Trail Crossings	Segment Length (Miles)	ROW Avoidance (Miles)	ROW Exclusion (Miles)	ROW Open (Miles)
Pony Express NHT	4	1.4	0.2	0	1.2
Central Overland Emigrant Route-Simpson Route	16	5.5	2.2	0	2.8

Sources: BLM, FS, and NVE GIS 2024, NPS GIS 2024

Impacts would be similar to those analyzed under the Proposed Action; however, there would be 0.5 fewer miles of the Pony Express NHT overlapping lands managed as open to ROW development and 0.7 more miles of the Central Overland Emigrant Route-Simpson Route overlapping lands managed as open to ROW development. Under the Other Resource Consideration Alternative, there would also be one fewer crossing of the Pony Express NHT and nine more crossings of the Central Overland Emigrant Route-Simpson Route than under the Proposed Action.

Under the Other Resource Consideration Alternative, the long-term contrast visible at KOP 22S would not conform to the BLM VRM class objective used for analysis or meet the Forest Service's partial retention visual quality objective without additional mitigations (Section 3.10.4). Overall, the Other Resource Consideration Alternative would have the strongest potential for impact upon trails due to the number of potential crossings (Appendix Q, page 86).

Under the Other Resource Consideration Alternative, adherence to treatment measures identified for trail-related archaeological sites in the HPTP (Appendix O) and resource-specific EMMs would minimize the impacts on NHTs, as described under the Proposed Action.

Wild and Scenic Rivers

Under the Other Resource Consideration Alternative, the proposed transmission line and utility corridor, including construction, O&M, and decommissioning, would overlap both eligible WSR segments, Illipah Creek and Simpson Creek. Impacts would be the same as those analyzed under the Proposed Action.

Special Management Areas

Under the Other Resource Consideration Alternative, the proposed access roads, including construction, O&M, and decommissioning, would overlap approximately 41.1 acres of the Numu Newe SMA. Impacts would be the same as those analyzed under the Proposed Action.

Wilderness and Wilderness Study Areas

Under the BLM Preferred Alternative, impacts would be the same as those analyzed under the Proposed Action.

Direct and Indirect Impacts from the BLM Preferred Alternative

National Historic Trails

Under the BLM Preferred Alternative, the proposed transmission line and utility corridor, including construction, O&M, and decommissioning, would overlap approximately 3.8 miles of the Pony Express NHT and approximately 4.5 miles of the Central Overland Emigrant Route-Simpson Route, crossing the Pony Express NHT five times and the Central Overland Emigrant Route-Simpson Route seven times. Table 3-92 shows the ROW classes overlapping these trails and the number of trail crossings by the proposed transmission line under the BLM Preferred Alternative.

Table 3-92. Overlapping ROW Classes and Trail Crossings under the BLM Preferred Alternative

Segment Name	Number of Trail Crossings	Segment Length (Miles)	ROW Avoidance (Miles)	ROW Exclusion (Miles)	ROW Open (Miles)
Pony Express NHT	5	3.8	1.8	0	2.0
Central Overland Emigrant Route-Simpson Route	7	4.5	2.0	0	2.5

Sources: BLM, FS, and NVE GIS 2024, NPS GIS 2024

Impacts would be similar to those described under the Proposed Action; however, there would be 0.3 more miles of the Pony Express NHT overlapping lands managed as open to ROW development and 0.4 more miles of the Central Overland Emigrant Route-Simpson Route managed as open to ROW development. Under the BLM Preferred Alternative, the transmission line would cross the Pony Express NHT and the Central Overland Emigrant Route-Simpson Route the same number of times as under the Proposed Action (five and seven, respectively).

Under the BLM Preferred Alternative, adherence to treatment measures identified for trail-related archaeological sites in the HPTP (Appendix O) and resource-specific EMMs would minimize the impacts on NHTs, as described under the Proposed Action.

Wild and Scenic Rivers

Under the BLM Preferred Alternative, the proposed transmission line and utility corridor, including construction, O&M, and decommissioning, would overlap both eligible WSR segments—Illipah Creek and Simpson Creek. Impacts would be the same as those analyzed under the Proposed Action.

Special Management Areas

Under the BLM Preferred Alternative, the proposed access roads, including construction, O&M, and decommissioning, would overlap approximately 41.1 acres of the Numu Newe SMA. Impacts would be the same as those analyzed under the Proposed Action.

Wilderness and Wilderness Study Areas

Under the BLM Preferred Alternative, impacts would be the same as those analyzed under the Proposed Action.

3.13 Social and Economic Conditions

3.13.1 Issues Identified for Analysis

- How would temporary population changes as a result of GLNP construction impact the social setting and public services of local communities and counties?
- How would changes in permitted grazing operations on BLM-administered lands from the GLNP impact economic conditions?
- How would the GLNP impact energy costs for Nevada ratepayers?
- How would the GLNP impact economic conditions in towns and counties along the transmission line?
- How would geotechnical investigations, construction and O&M impact the quality or access of resources and goods with nonmarket values on BLM-administered lands for the surrounding communities?
- How would the GLNP affect local property values?

3.13.2 Analysis Area

The analysis area is defined as the geographic region within which social and economic conditions may affect or be affected by the GLNP. This area extends to five counties in Nevada—Churchill, Eureka, Lander, Lyon, and White Pine—and equates to approximately 16,407,738 acres (BLM, FS, and NVE GIS 2024). These counties were identified as the socioeconomic analysis area because the GLNP would traverse these counties, and most of the effects on the populations, social settings, and the economy would occur within this region.

3.13.3 Affected Environment

The socioeconomic affected environment section offers a comprehensive overview of the interplay between human activities and the surrounding landscape within the socioeconomic analysis area. Through examination of population dynamics, economic conditions, social factors, and nonmarket values, this section illuminates the intricate relationship between development initiatives and the quality of life for residents in these regions. By delving into these key facets, the following analysis aims to provide stakeholders with a holistic understanding of how the proposals may shape the socioeconomic landscape.[13]

The socioeconomic analysis area is defined as the five counties where the GLNP would intersect: Churchill, Eureka, Lander, Lyon, and White Pine Counties. Most information in the following subsections is reported at the county level; this is because there can be limitations or inconsistencies with gathering and reporting publicly available data at a more granular scale than county level. However, there could be large differences in economic and social conditions and characteristics across small rural communities within these counties that would not be picked up in the data presented. When possible, the BLM discusses these differences in regions of the counties.

[13] Additional information on social characteristics of counties in Nevada can be found in the county-level socioeconomic baseline reports published by the Nevada Economic Assessment Project, accessed here: https://extension.unr.edu/neap/about-neap-program.aspx.

Population

In 2022, the five counties in the analysis area had a total estimated population of 101,191 (Table 3-93). Almost 60 percent of the analysis area population resided in Lyon County in 2022, which includes the cities of Fernley and Yerington. Churchill County is the second-most-populated county within the analysis area, containing approximately 25 percent of the area's total population and the city of Fallon.

Table 3-93. 2022 Analysis Area Population by County and City

County (City)	Population	Percentage of the Analysis Area Population	Size of County in Acres
Churchill	**25,409**	**25.1**	**3,215,467**
(Fallon)	9,243	9.1	—
Eureka	**1,622**	**1.6**	**2,675,173**
Lander	**5,728**	**5.7**	**3,532,482**
Lyon	**59,435**	**58.7**	**1,295,518**
(Fernley)	23,035	22.8	—
(Yerington)	3,108	3.1	—
White Pine	**8,997**	**8.9**	**5,693,255**
(Ely)	3,957	3.9	—
Total	**101,191**	**100**	**16,411,895**

Sources: US Census 2022; Forest Service 2009

The combined populations of Eureka, Lander, and White Pine Counties represented approximately 16.2 percent of the total 2022 population in the socioeconomic analysis area. The only incorporated place in these three counties is the city of Ely, located in White Pine County.

Age

From 2010 to 2021 in Churchill, Eureka, and Lander Counties, the median age grew between 4.9 and 5.7 percent. In Lyon County, it grew 10.1 percent, and in White Pine County it shrank by 1.2 percent. In 2021, the median age in the analysis area counties ranged from 38.9 years in Lander County to 43.6 years in Lyon County. See Table 3-94 and Table 3-95 for a detailed breakdown of the median age and percent change from 2010 to 2022.

Table 3-94. 2010–21 Median Age by County in Years

County	Median Age 2010	Median Age 2021	Median Age Percent Change 2010–21
Churchill	38.4	40.5	5.5
Eureka	40.5	42.5	4.9
Lander	36.8	38.9	5.7
Lyon	39.6	43.6	10.1
White Pine	41.8	41.3	-1.2

Source: US Census 2022

Table 3-95. 2022 Population by Age Range

County	Under 20 Years	20–39 Years	40–59 Years	60–79 Years	Over 80 Years
Churchill	6,255	6,536	5,817	5,753	1,048
Eureka	475	182	340	497	128
Lander	1,646	1,222	1,792	898	170
Lyon	13,609	14,038	14,754	14,610	2,424
White Pine	1,876	2,411	2,398	1,900	412

Source: US Census 2023a

Economic Conditions

Employment and Income

Table 3-96 gives a breakdown of the 2021 labor force and 2022 unemployment in the socioeconomic analysis area. Lyon County contained the highest percent of labor force in the analysis area (59.3 percent), followed by Churchill County (24.7 percent), White Pine County (8.5 percent), Lander County (6.1 percent), and Eureka County (1.4 percent). Unemployment rates in the analysis area ranged from 2.9 to 4.9 percent; these rates were lower than the nonmetropolitan statewide average.

Table 3-96. Labor Force and Unemployment

Metric	Eureka County	Lander County	White Pine County	Lyon County	Churchill County	Analysis Area Total	Nevada, Nonmetropolitan
Civilian labor force in 2021	587	2,540	3,549	24,829	10,349	41,854	120,260
Unemployment rate 2022 (percent)	2.9	3.4	3.1	4.9	3.6	4.2	5.3

Sources: US Census 2022; Bureau of Labor Statistics 2023a

Table 3-97 shows the trend in the average annual unemployment rate for the analysis area over the last few decades.

Table 3-97. Unemployment Trend

Metric	1990	2000	2010	2022	Change 2010–22
Analysis area annual unemployment rate	6.2	5.3	14.7	4.2	-10.5

Source: Bureau of Labor Statistics 2023a

Employment and Labor Force

Table 3-98 breaks down the analysis area labor force for 2021. The education, healthcare, and social assistance sector is the largest employment sector in the socioeconomic analysis area, though many other sectors also contribute meaningfully to county economies, including the sectors in agriculture and ranching, mining, and recreation and tourism.

Table 3-98. 2021 Labor Force by Sector

Sector	Eureka County	Lander County	White Pine County	Lyon County	Churchill County	Analysis area Total	Nevada, Nonmetropolitan
All civilian sectors	**587**	**2,540**	**3,549**	**24,829**	**10,349**	**41,854**	**120,260**
Agriculture, forestry, fishing, hunting, and mining	283	960	707	800	632	3,382	14,618
Construction	44	244	212	1,953	1,052	3,505	10,223
Manufacturing	16	81	73	3,448	693	4,311	8,234
Wholesale trade	0	58	54	894	282	1,288	2,628
Retail trade	39	113	292	3,323	961	4,728	13,494
Transport, warehousing, and utilities	30	206	257	1,737	770	3,000	6,960
Information	0	18	17	249	172	456	1,196
Finance, insurance, and real estate	0	0	56	977	288	1,321	4,485
Waste management, professional, administrative, and management services	17	161	160	1,871	1,025	3,234	8,751
Education, health care, and social assistance	130	338	562	3,891	2,090	7,011	19,711
Arts, entertainment, recreation, accommodation, and food services	5	94	584	2,736	964	4,383	15,196
Public administration	6	258	416	1,751	959	3,390	9,290
All other services	17	9	159	1,199	461	1,845	5,474

Source: US Census 2022

Ranching and Mining

Many communities across the analysis area rely on the agricultural, ranching, and mining sectors to provide jobs, labor income, and economic stability. The mining sector is a major component of the area's economy, with substantial earnings and sales. Employment in the mining, quarrying, and oil and gas extraction sector (NAICS[14] Sector 21) ranged from less than 1 percent in Churchill County to over 80 percent in Eureka County, although much of the mining in Eureka County occurs in the northern part of the county, rather than in the southern region where the GLNP would be located (University of Nevada, Reno Extension 2022). Under the agriculture, forestry, fishing, and hunting sector, ranching is also important to the local economies as well as to the social characteristics of the communities across the analysis area. Employment ranges from about 2 percent in Lander County to about 6 percent in Lyon County (University of Nevada, Reno Extension 2022).

[14] Federal agencies use the North American Industry Classification System (NAICS) to classify businesses when collecting, analyzing, and publishing statistical data about the US economy.

Payments from federal lands, including those used for ranching and mining, provide revenue in the area. These payments support local services and infrastructure, further contributing to socioeconomic stability.

Tourism and Outdoor Recreation

Tourism

Tourism generated $75.2 billion in total economic impact in Nevada in 2022. This is an increase of 20.3 percent over 2021, which was up 76.6 percent from 2020. The statewide 2022 impact of tourism included 412,500 jobs (13.3 percent of the state total) and $5.5 billion in state and local taxes. In Nevada, the gaming, retail, lodging, transportation, food and beverage, and recreation sectors all benefited from visitor spending. At the county level, the 2022 economic impact of tourism shows a wide variation within the analysis area, with visitor spending ranging from $16.6 million in Eureka County to $150.4 million in Lyon County. The value of state and local taxes and the percentage of jobs in the area earned from tourism show a similar variation (see Table 3-99).

Table 3-99. Economic Impact of Tourism

Geography	Visitor Spending in Millions of Dollars	Number of Tourism Jobs (Percentage of Jobs in the Geography)	State and Local Taxes in Millions of Dollars
Statewide	75,200.0	412,500 (13.3)	5,500.0
Churchill County	89.2	1,200 (5.8)	7.6
Eureka County	16.6	106 (1.0)	0.5
Lander County	40.4	252 (3.6)	1.3
Lyon County	150.4	1,900 (6.5)	12.4
White Pine County	95.0	678 (8.0)	5.5
Analysis area counties combined	391.6	4,136 (5.4)	27.3

Source: Travel Nevada 2023a

The Travel Nevada Rural Visitor Profile (Travel Nevada 2023b) indicates that the top five purposes of a trip to Nevada for rural visitors in 2022 were vacation (23 percent), visiting friends or relatives (19 percent), entertainment (12 percent), gaming (10 percent), and road trips (6 percent).

Outdoor Recreation

In addition to its popularity, outdoor recreation contributes meaningfully to Nevada's economy. It is estimated that approximately 57 percent of the Nevada population engages in outdoor recreation yearly, and local trips (those within 50 miles of a participant's home) are the largest source of outdoor recreation-related economic activity in Nevada (Get Outdoors Nevada 2021). Outdoor recreation supported 53,835 jobs in 2022 (Bureau of Economic Analysis 2023b). Table 3-100 shows the economic value added to Nevada's economy by sector.

Table 3-100. Value Added by Outdoor Recreation to the Nevada Economy by Sector

Sector	2022 Value Added (thousands of dollars)
All industries	6,114,014
Private industries	5,967,914
Construction	194,678
Manufacturing	164,576
Retail trade	1,628,497
Transportation and warehousing	1,157,194
Finance, insurance, real estate, and leasing	189,784
Arts, entertainment, and recreation	1,141,096
Accommodation and food services	906,043
Government	146,101

Source: Bureau of Economic Analysis 2023b

Recreational Resources

Over 87 percent of Nevada is public land; for the most part, these lands are open to public recreation with limited exceptions (Get Outdoors Nevada 2021). The five counties in the analysis area contain a wealth of recreational resources, such as the Great Basin National Heritage Area (which includes Great Basin National Park); the Humboldt-Toiyabe National Forest; a multitude of designated wilderness areas and wilderness analysis areas; and the Fallon, Stillwater, and Ruby Lake National Wildlife Refuges. The California and Pony Express NHTs also cross the analysis area.

Aside from federally managed recreational resources, the lands managed by federally recognized tribes in the analysis area also contain recreational resources, such as fishing, camping, boating, hunting, and other recreational opportunities like those offered by the Walker River Paiute Tribe (2023) and the Confederated Tribes of the Goshute Reservation (CTGR 2021). State and local recreational resources are also important. The Nevada State Parks Department has designated three state parks and one state recreation area in the five analysis area counties (Nevada State Parks 2023), with many local parks and other recreational facilities present in the five analysis area counties.

Income

Table 3-101 shows 2022 analysis area income by county. All analysis area counties had a median household income within a few thousand dollars of the state nonmetropolitan median, except for Lander County, which was approximately $20,000 higher than the state nonmetropolitan comparison population. The county with the lowest median household income was Churchill, with a median household income approximately $2,000 lower than the state nonmetropolitan comparison population.

Per capita income in the analysis area ranged from $46,735 in Lyon County to $73,550 in Lander County. Only Lander County had a per capita income greater than the state nonmetropolitan average, while per capita income for the rest of the analysis area counties was less than the state nonmetropolitan average.

Table 3-101. 2022 Income by County

Metric	Eureka County	Lander County	White Pine County	Lyon County	Churchill County	Nevada, Nonmetropolitan
Per capita income	$49,631	$73,550	$57,323	$46,735	$54,206	$62,085*
Number of households	570	2,256	3,363	23,290	9,595	113,837
Median household income	$73,929	$92,388	$71,297	$70,026	$69,922	$71,926

Source: US Census 2023b, Bureau of Economic Analysis 2023a
* Per capita income was not available for the Nevada nonmetropolitan geography; statewide per capita income was used instead.

Energy Costs

On an annual average in Nevada, the residential electricity rate and residential electric bill is higher than the national average. The residential rate and bill tend to vary by county in the analysis area. The highest rate and bill occur in Churchill, Lander, and Lyons Counties (the residential rates all fall above the rate for the state, but the average electric bill for these three counties falls slightly below the average bill for the state, implying that electricity consumption is lower in these counties than in the rest of the state). The lowest residential rate and bill occur in White Pine County, with an electricity rate of about 8 cents per kilowatt-hour and an average monthly bill of slightly less than $120 (Find Energy 2023; see Table 3-102).

Table 3-102. 2023 Residential Rates and Electric Bill

Geographic Area	Residential Rate (cents per kilowatt-hour)	Residential Average Electric Bill ($ per month)
Churchill County	16.90	143.90
Eureka County	11.13	125.36
Lander County	16.90	143.95
Lyon County	16.90	143.95
White Pine County	8.02	119.97
Nevada (state average)	16.54	148.09
National average	15.90	137.53

Source: Find Energy 2023

From 2021 to 2023, total bundled residential electricity rates increased by about 45 percent (Find Energy 2023). The rate increases over the past 2 years were due to quarterly rate adjustments, increases to cover infrastructure improvements and upgrades, and public policy costs (Ross 2023, Gentry 2023). Additionally, another rate increase is expected to occur in January 2024 to cover infrastructure improvements and upgrades (Ross 2023).

Residential electricity bill costs tend to vary seasonally. In Nevada, electricity costs tend to be highest in the summer, when the demand for electricity increases due to air conditioning. Costs tend to be lowest in the winter. In 2023, across Nevada, the lowest monthly bill was in April at about $112 and the highest monthly bill was in July at about $272.67. *Tax Revenues*

Nevada General Fund revenues are derived from several sources, including sales tax, which made up the largest source of revenue at about $2.4 billion (29 percent) from 2019 to 2021.

The next largest source of revenue and largest major fund source is the Gaming Percentage Fee Tax at about $1.5 billion (18 percent). These two taxes account for almost half of the General Fund revenues, combined, before tax credits. The Modified Business Tax–Non-Financial Business Tax accounts for $1.2 billion (14 percent) of the General Fund revenues, and the Insurance Premium Tax accounts for $788 million (10 percent). All other major General Fund revenues represent 5 percent or less of the total and include the Commerce Tax (5 percent), Cigarette Tax (4 percent), Live Entertainment Tax–Gaming Tax (3 percent), Real Property Transfer Tax (2 percent), Modified Business Tax–Financial Businesses Tax (1 percent), and Modified Business Tax–Mining Businesses Tax (1 percent; Guinn Center 2021).

State revenue income tax is assessed at a rate of 6.85 percent, and the state sales tax is assessed at a rate of 4.6 percent. Local jurisdictions may also levy taxes, including local sales and use taxes, county option sales taxes, city or town option taxes, and taxes levied specifically to support transit and highways, or public facilities (see Table 3-103).

Table 3-103. Sales Tax Rates by County

County	State Tax (percent)	County-wide Tax (percent)	Maximum Tax (percent)
Churchill County	4.60	3.00	7.60
Eureka County	4.60	2.25	6.85
Lander County	4.60	2.50	7.10
Lyon County	4.60	2.50	7.10
White Pine County	4.60	3.00	7.60

Source: Guinn Center 2021
Note: Numbers presented do not include additional local sales taxes collected by cities and local governments, which can be as high as 0.5 percent.

The composition of revenue sources varies across departments. For example, the General Fund is the primary source of revenue that funds the Department of Education and the Nevada System of Higher Education. The Federal Fund is the primary source of revenue for the Department of Health and Human Services, US Department of Agriculture, and Department of Employment, Training, and Rehabilitation.

Social Conditions

Housing

Table 3-104 shows total housing stock, vacancy status, ownership, rental vacancy rates, and median gross rents and mortgage costs for the counties in the socioeconomic analysis area. In all counties, the number of homeowners exceeds renters, except in Eureka County. Rental vacancy rates range from zero in Eureka County to 26.2 percent in Lander County. Median monthly gross rents were lowest in Lander County at $792, followed by Eureka and White Pine Counties at $909 and $928, respectively. Lyon and Churchill Counties had the highest median monthly gross rents at $1,085 and $1,003, respectively. The median monthly gross rents for all counties in the analysis area were below the rents for the state. Median monthly mortgage costs ranged from a high of $1,492 in Lyon County to a low of $1,313 in White Pine County. Similar to monthly gross rent, monthly mortgage costs for all counties in the analysis area were below the mortgage costs across the state.

Table 3-104. Socioeconomic Analysis Area Housing Availability

Housing Characteristics	Churchill County	Eureka County	Lander County	Lyon County	White Pine County	Socioeconomic Analysis Area	State of Nevada
Total housing units	10,768	955	2,880	24,120	4,175	42,898	1,269,846
Occupied	9,753	555	2,298	22,342	3,482	38,430	1,141,952
Vacant	1,015	400	582	1,778	693	4,468	127,894
Owner-occupied housing units	3,636	81	1,024	11,184	1,198	17,123	445,071
Renter-occupied housing units	3,169	125	531	5,350	958	10,133	482,281
Rental vacancy rate	5.0%	0.0%	26.2%	5.4%	5.3%	6.3%	7.5%
Median monthly mortgage cost	$1,420	$1,463	$1,331	$1,492	$1,313	—	$1,655
Median gross rent	$1,003	$909	$792	$1,085	$928	—	$1,238

Source: US Census Bureau 2022
— = data not available

Recreational Vehicle Parks

Recreational vehicle (RV) parks are important as a recreational resource and potential temporary housing option during GLNP construction. Table 3-105 identifies the number of RV parks and available spaces by county. The number of spaces represents the total approximate number of spaces available at the identified RV parks in each county, not the number that would necessarily be available to rent.

Table 3-105. Socioeconomic Analysis Area RV Parks

County	Number of RV Parks[1]	Estimated Number of RV Spaces[2]
Churchill County	8	272
Eureka County	1	15
Lander County	12	258
Lyon County	13	648
White Pine County	22	404

Source: RV Life Campgrounds 2024; Nevada State Parks 2024a, 2024b
[1] These data were compiled from travel websites and do not necessarily account for all RV parks in the GLNP socioeconomic analysis area.
[2] These estimates represent the total number of spaces available at the identified RV parks, not necessarily the number that will be available to rent.

Hotels and Motels

Table 3-106 lists the hotel and motel accommodations for each county. These data are drawn from sources such as travel websites. They do not necessarily account for all existing hotel, motel, and bed and breakfast rooms in the socioeconomic analysis area. An estimated average 68 percent occupancy was assumed (Las Vegas Convention and Visitor Authority 2023).

Table 3-106. Hotels and Motels by County

County	Number of Hotels and Motels	Number of Rooms[1]	Estimated Number of Available Rooms[2]
Churchill	9	455	146
Eureka	4	137	44
Lander	12	221	71
Lyon	6	289	92
White Pine	20	755	242

Sources: Trip.com 2023; Travel Nevada 2023c

[1] These data were compiled from travel websites and do not necessarily account for all hotels and hotel rooms in the socioeconomic analysis area.

[2] The estimated number of rooms assumes an average 68 percent occupancy rate (Las Vegas Convention and Visitor Authority 2023).

Property Values

In April 2024, the average home value in the socioeconomic analysis area counties ranged from about $177,000 and $132,000 in White Pine and Eureka Counties, respectively, to about $395,000 and $364,000 in Lyon and Churchill Counties, respectively. The average home value across the analysis area was substantially lower than the average home value in Nevada, which is about $451,000. The housing value in Eureka County and White Pine County experienced a decrease from 2023 of 14.0 and 0.1 percent, respectively, whereas Lyon, Churchill, and Lander Counties all experienced an increase in housing values of 2.7, 3.9, and 5 percent from 2023 to 2024.

Education and Public Schools

County school districts administer public schools in the socioeconomic analysis area. As may be expected, counties with larger populations had a larger number of schools, and lesser-populated counties had fewer schools (see Table 3-107).

Table 3-107. Schools in the Socioeconomic Analysis Area

County	Pre-Kindergarten/ Elementary	Elementary	Kindergarten–8th Grade	Middle/Junior High	Junior/Senior High	High School	Kindergarten–12th Grade	Special Education	Adult Education
Churchill	1	3	0	1	0	1	1	0	1
Eureka	1	0	1	0	1	0	0	0	0
Lander	0	1	1	1	0	1	0	0	1
Lyon	0	9	0	4	1	4	2	1	1
White Pine	0	4	1	1	1	2	0	2	1

Source: Nevada Department of Education 2023

Law Enforcement

The size of the police department and number of law enforcement personnel within a county often vary with the corresponding population, with the highest number of personnel in the highly populated areas and counties. Response times in rural areas are often longer than in urban areas and vary widely. For example, in Lyon County, response times ranged from 5 to 17 minutes for high-priority calls and 26 to 62 minutes for lower-priority calls, whereas the national average response time for emergency responders is 8 minutes, and the average response time in Las Vegas is 6.8 minutes (Phan 2019; Fritz 2023; Penrose 2023).

Fire Services

The GLNP would cross through the jurisdiction of 16 fire departments (see Table 3-108). No agency tracks the service areas of these departments. It is likely there are gaps in fire protection services in some areas of the proposed route. In these cases, the closest or best-situated fire district would likely respond. Response times to a fire would vary within the socioeconomic analysis area depending on distance, access, and available staff and equipment. Some of the GLNP would cross open, remote lands where access is often limited, and response times may take longer than in more developed areas.

Table 3-108. County Fire Protection Agencies in the Socioeconomic Analysis Area

County	Agency	Number of Stations	Paid Staff	Volunteer Staff
Churchill	Fallon/Churchill Fire Department	3	5	41
Eureka	Crescent Valley Volunteer Fire Department	1	0	18
	Eureka Valley Fire Department	1	N/A	N/A
	Diamond Valley Fire Department	1	N/A	N/A
	Pine Valley Fire Department	1	N/A	N/A
	Dunphy Fire Department	1	N/A	N/A
	Newark Valley	1	N/A	N/A
Lander	Austin Volunteer Fire Department	3	0	12
	Battle Mountain Volunteer Fire Department	1	0	28
	Town of Kingston Fire Company	1	0	12
Lyon	Central Lyon County Fire District	7	28	15
	Mason Valley Fire Protection District	2	5	50
	North Lyon County Fire Protection District	2	35	33
	Smith Valley Fire Protection District	3	0	18
White Pine	Ely Volunteer Fire Department	1	5	39
	Lackawanna Volunteer Fire Department (part of North Region)	1	0	10
	Lund Volunteer Fire Department (part of North Region)	1	0	18
	McGill Volunteer Fire Department (part of North Region)	1	0	24
	Ruth Volunteer Fire and Emergency Medical Services (part of North Region)	1	0	20
	Snake Valley Volunteer Fire Department (part of North Region)	1	0	28
	Steptoe Valley Volunteer Fire Department (part of North Region)	1	0	16

Source: US Fire Administration 2023
N/A=Information not available

Health Care

Numerous types of medical care facilities are within the socioeconomic analysis area. All counties are served by a mix of rural clinics, rural hospitals, and private medical licensees, such as assisted-living services and home health care providers. The exception is Eureka County, where there are two rural clinics. Among other qualifications, rural hospitals and clinics are located outside metropolitan areas designated by the US Office of Management and Budget and the Census Bureau (Center for Medicare and Medicaid Services 2007; American Hospital Association 2023). Table 3-109 identifies the number of rural hospitals, rural clinics, and private medical facilities in each analysis area county.

Table 3-109. Healthcare Facilities by County

County	Rural Hospitals	Rural Clinics	Private Medical Facilities
Churchill	1	1	6
Eureka	0	2	0
Lander	1	1	2
Lyon	1	6	7
White Pine	1	1	4

Source: Nevada Division of Public and Behavior Health 2024

The time it takes to travel to the nearest medical facility depends on several factors, including the distance between where the injury takes place and the nearest medical facilities that treat the type of injury that occurred. The travel time to a medical facility in Lyon County, which has one rural hospital, six rural clinics, and seven private medical facilities, would likely be shorter than in Eureka County, which has only two rural clinics. Using ground transportation, travel to a hospital could range from 15 minutes, if the injury occurs near a hospital or clinic in Eureka or Lyon Counties (where there are hospitals or clinics near the GLNP), to 90 minutes, if the injury occurs in Lander County, where there are few nearby hospitals or clinics (Nevada Division of Public and Behavior Health 2024).

Nonmarket Values and Quality of Life

Public lands provide many resources and services that benefit communities in ways that may not be connected to market activities or reflected in market prices. These benefits attributed to experiences of public lands or uses of cultural and natural resources are called nonmarket values. Resources and services that have nonmarket values include natural and cultural resources that enhance the quality of life, way of life, or culture; visitor and viewer enjoyment; and sense of place or social cohesion. Resources with nonmarket values can increase the well-being and health of communities, which can, in turn, strengthen regional and local economic conditions.

Nonmarket values associated with public lands include use values (direct and indirect) and nonuse values (such as existence values). Nonmarket use values are realized from the consumptive and nonconsumptive use of natural resources through an experience or activity, such as climbing a peak, hunting, or viewing wildlife. Nonuse values are realized through the psychological benefit from the existence of resources that may never be experienced or from the knowledge that future generations could experience the natural or cultural resources, such as preservation of endangered species for future generations to view and enjoy.

It is difficult to quantify the value of resources with nonmarket use and nonuse values; however, nonmarket values are important to consider because they help describe the socioeconomic conditions that are not described through the discussion of market activities. To make informed land use decisions, both market and nonmarket values of natural and cultural resources on public lands must be considered and discussed.

In the socioeconomic analysis area, some nonmarket values that are important to the surrounding communities and general public include cultural and historical ways of life and social cohesion for livestock grazing permittees and their families and friends, access to clean air, access to subsistence resources, access to cultural and tribal resources, passing on traditional knowledge of public lands and resources to future generations, the rural way of life, scenic and visual enjoyment, access to solitude, mental and physical health from recreation in the analysis area, and existence values associated with wildlife, wild horses, and wild burros in the analysis area.

3.13.4 Environmental Consequences

The environmental consequences analysis evaluates how the social and economic effects of the geotechnical investigations, construction, O&M, and eventual decommissioning phases of the GLNP are distributed throughout the socioeconomic analysis areas. Where possible, socioeconomic impacts are described and quantified. However, where quantification of impacts was not possible, the analysis includes a qualitative discussion of possible effects. This section presents the impacts under the No Action Alternative and then compares the impacts that would be different for each action alternative.

Methodology

The impacts on economic activity from construction and O&M of the GLNP were estimated using the Impact Analysis for Planning (IMPLAN) model, an input-output model that provides a mathematical accounting of the flow of money, goods, and services through a region's economy and yields estimates of economic output, jobs, and labor income. The model provides estimates of how a direct increase in jobs and economic spending due to construction or O&M of the GLNP would ripple through the broader economy, affecting seemingly unrelated sectors. These ripple effects include impacts resulting from changes in economic activity in industries that sell inputs to the industries that may be directly impacted (for example, varying levels of economic output stemming from changes in supply purchases made by contracted construction companies), and impacts resulting from changes in household spending as households adjust their spending in response to increases or decreases in labor income supported by industries affected by management actions (for example, changes in purchases at local stores for personal groceries).

This analysis used IMPLAN Cloud and data from IMPLAN's 2022 data release. This means that parameters such as productivity and trade data reflect annual average economic conditions in the analysis area during 2022. IMPLAN 2022 is the most recent period of data currently available in the IMPLAN Cloud platform. Prior to running the model, the BLM converted the cost data to a consistent dollar year (2024) using sector-specific adjustment factors from the IMPLAN model. Unless stated otherwise, the values in this analysis are expressed in year 2024 dollars.

Two models were run separately. The first model analyzed only the impacts on the counties in the socioeconomic analysis area. This provided information on the local economic contributions from direct economic changes in the analysis area, but it did not provide data on the economic contributions that would result in other neighboring regions in the state from the direct changes in the analysis area. The second model took a multiregional approach and analyzed the impacts on the state of Nevada from direct impacts in the analysis area. The trade data available in the current version of IMPLAN (IMPLAN Cloud) make it possible to do a multiregional input-output analysis to track how an impact on any of the IMPLAN sectors in the identified socioeconomic analysis area affects outputs in any sector in other regions outside the analysis area. For this analysis, this feature allowed the estimation of how an impact in the counties in the analysis area disperses into the counties in the rest of the state, and how these effects in the rest of the state create additional local effects in the analysis area. As a result, it was possible to estimate not only the jobs and income generation in the analysis area, but to also estimate how the economic activity in the analysis area affects jobs and income in Nevada as a whole.

The current IMPLAN model has 546 economic sectors; of these, 274 are represented in the analysis area counties and 464 are represented across all counties in Nevada (IMPLAN 2022 data). For construction and decommissioning, the IMPLAN sector 52, Construction of new power and communication structures, was used to model an exogenous change in construction. For O&M, sector 60, Maintenance and repair construction of nonresidential structures, was used to model a change in maintenance.

Economic impacts for the GLNP construction activities were estimated and provided as an annual average over a time period of 2 years and 1 month.

Indicators

The following indicators were considered when analyzing the potential impacts related to social and economic conditions:

- Changes in the social setting and public services, including access to law enforcement, fire departments, emergency responders, and public education
- Changes in economic activity due to changes in permitted grazing operations on BLM-administered lands
- Changes in the way of life, culture, social cohesion, and preservation of nonmarket values, including direct and indirect use and nonuse values, for community members who value livestock grazing on public lands
- Changes in energy costs for Nevada ratepayers due to construction of the GLNP
- Changes in economic activity and market conditions, including jobs, labor income, economic output, tax revenue, and the unemployment rate, associated with construction and O&M of the GLNP
- Changes to the way of life, culture, social cohesion, health and safety, and preservation of nonmarket values, including direct and indirect use and nonuse values, for local

community member and individuals who value subsistence resources, cultural and tribal resources, recreation, and wildlife viewing

- Changes to property values due to changes in visual landscapes from the GLNP to local property owners

Assumptions

The following assumptions were used for the impact analysis on economic and social conditions due to the GLNP:

- Total costs were taken from the most recent estimates provided by the Proponent (Docket 23-08015, Volume 2); however, there will likely be changes to the total costs as the details of the project are refined. These changes in cost will lead to changes in impacts on economic conditions, such as changes in supported jobs, labor income, and economic output across the local and regional economy.
- Direct labor income was calculated based on the percentage of labor income costs to total costs estimated in 2020 (Docket 20-07023, Volume 9) and multiplied by the most recent estimate for total costs.
- Costs for out-of-state resources—calculated based on the percentage of costs for out-of-state resources to total costs estimated in 2020 (Docket 20-07023, Volume 9) and multiplied by the most recent estimate for total costs—were not included in the modeling for impacts on economic contributions, as these costs would occur outside of the analysis area.

Direct and Indirect Impacts from the No Action Alternative

Social Setting and Public Services

It is anticipated that under the No Action Alternative, the current uses and trends for the social setting and public services would continue to occur, as discussed in Section 3.13.3, Affected Environment. Under the No Action Alternative, there would be no impacts on social conditions and public services from changes in population attributed to the construction, O&M, and decommissioning of the GLNP.

Livestock Grazing

It is anticipated that under the No Action Alternative, the current uses and trends for economic and social conditions from livestock grazing on BLM-administered lands would continue to occur, as discussed in Section 3.13.3, Affected Environment, and Section E.5, Livestock Grazing, in Appendix E. Under the No Action Alternative, there would be no impacts on livestock grazing and available forage due to the construction, O&M, and decommissioning of the GLNP; therefore, there would be no impacts on economic and social conditions from livestock grazing operations on BLM-administered lands from the GLNP. See Section E.5, Livestock Grazing, in Appendix E for more information.

Energy Costs

It is anticipated that under the No Action Alternative, the conditions of energy costs would continue, as discussed in Section 3.13.3, Affected Environment. Under the No Action

Alternative, there would be no impacts on energy costs for Nevada ratepayers from changes in construction, O&M, and decommissioning of the GLNP.

Economic Conditions

Under the No Action Alternative, the economic conditions would continue as discussed in Section 3.13.3, Affected Environment. There would be no impact on economic conditions from changes in construction or O&M activities due to the GLNP.

Nonmarket Values

Under the No Action Alternative, the quality and access of goods with nonmarket values on BLM-administered lands would continue as discussed in Section 3.13.3, Affected Environment. There would be no impact on the quality of goods with nonmarket values from changes in construction or O&M activities due to the GLNP.

Property Values

Under the No Action Alternative, the conditions on property values in the surrounding areas would continue as discussed in Section 3.13.3, Affected Environment. There would be no impact on property values from changes in construction or O&M activities due to the GLNP.

Direct and Indirect Impacts Common to All Action Alternatives

Geotechnical investigations under the action alternatives would not result in any impacts on social conditions and public services, energy costs for Nevada ratepayers, economic conditions, the quality of goods with nonmarket values, or property values.

Direct and Indirect Impacts from the Proposed Action

Social Setting and Public Services

Construction

Under the Proposed Action, there is expected to be 500 workers during peak construction. Construction would occur year-round, depending on the weather. The jobs required for GLNP construction represent about 11.4 percent of the total workforce in the construction industry in the analysis area (see Table 3-99, 2021 Labor Force by Sector). The relatively high percentage of the total construction workforce suggests there would not be enough workers in the analysis area to complete the construction, and some of the workers who reside outside of the analysis area would need to temporarily move to nearby communities to complete the project.

Under the Proposed Action, the increase in workers moving to the area would temporarily increase the populations of the surrounding communities, which could strain the housing market in the analysis area. This strain on the housing market could be especially impactful in areas with limited housing availability, especially temporary housing vacancies such as rental properties and hotels. These areas where impacts from an increase in population could be greater are Eureka and Lander Counties, where there are limited available rental properties, RV spaces, and hotels rooms (see Table 3-104, Socioeconomic Analysis Area Housing Availability; Table 3-105, Socioeconomic Analysis Area RV Parks; and Table 3-106, Hotels and Motels by County). These impacts could be greater during seasonal peak periods when the area

experiences more tourism. However, during periods of low tourism, the local economies could experience greater revenue and activity levels due to the increased demand for temporary housing. Implementation of EMM SE-1 in Appendix D would allow for coordination with the Proponent and representatives in each county to address housing concerns.

The increase in population would likely increase activities throughout the social settings, such as increases in traffic and use of local restaurants and stores. These increases in use and traffic could reduce the quality of life of the surrounding communities, especially those who value the rural lifestyle. However, the impacts would be short term, only lasting until the completion of the construction, about 2 years. Additionally, adherence to EMMs TRANSP-1 through TRANSP-4 in Appendix D would help to limit and plan for changes in road traffic patterns and any incidental road closures that could impact quality of life for the surrounding communities (see Section E.8, Transportation and Travel Management, in Appendix E for more information).

The temporary increase in the populations of the surrounding communities could put a strain on public services, such as increased demand on law enforcement, fire departments, emergency medical responders, and the municipal water system, in the analysis area. There could be an impact on response times for these services, especially in rural counties such as Eureka County and Lander County, where there are a small number of fire department stations and medical facilities (see Section 3.13.3, Affected Environment, for more information). The increase in population could result in an increase in theft and criminal activity, which could put additional strain on law enforcement. Additionally, new access roads could require more law enforcement for traffic control. There is no anticipated impact on demand for public education for the families of the construction workers since the workers' families would only be living in the area temporarily. The Proponent would procure water from a municipal source or from commercial sources, which could lead to strain on the municipal water system, especially in rural areas that have limited capacity to add more water service, such as communities in Eureka County.

Operations and Maintenance

Under the Proposed Action, during O&M, there is expected to be nine annual full-time employees, on average; however, the facilities would be monitored and controlled remotely. Therefore, there would likely be no impacts on the population as a result of long-term workers for O&M activities. Because there would likely be no impacts on populations during O&M, there would likely be no impacts on public services and social conditions during this period.

Decommissioning

Under the Proposed Action, it is anticipated that during decommissioning, impacts on social conditions and public services due to temporary increases in the populations would be similar to those relating to construction. However, the impacts during decommissioning would likely be smaller and shorter in duration.

Livestock Grazing

Geotechnical Investigations, Construction, and Decommissioning

Under the Proposed Action, geotechnical investigations, construction and decommissioning activities could temporarily reduce access to forage and impact livestock grazing through roads, access to stockwater sources, temporary fencing, noise, and activity, which would displace

livestock (see Section E.5, Livestock Grazing, in Appendix E for more information on impacts on livestock grazing). These temporary impacts on forage and livestock could have a short-term impact on economic conditions through a reduction in jobs, labor income, and total economic output if there is an increase in cost associated with mitigating impacts or finding alternative sources of forage during this period. However, the impacts on economic conditions would only last until the geotechnical investigation, construction and decommissioning activities are complete and the land is reclaimed, as discussed in Section 3.4, Vegetation Communities and Resources, and Section E.5, Livestock Grazing, in Appendix E.

Under the Proposed Action, construction and decommissioning activities could lead to impacts on social conditions and access and the quality of nonmarket values associated with livestock grazing for the local farmers and ranchers and communities of interest who value livestock grazing on BLM-administered lands. These impacts would include a reduced quality of life as well as nonuse and existence values. However, the impacts are anticipated to be short term and only last until the construction or decommissioning activities are completed. The social conditions, access, and quality of nonmarket values would likely return once the activities are completed.

Operations and Maintenance

It is anticipated that under the Proposed Action, there would likely be no impacts on livestock grazing and available forage due to the O&M of the GLNP; therefore, there would be no impacts on economic and social conditions from livestock grazing operations on BLM-administered lands. It is anticipated that there would be no impact on the quality and access to nonmarket values associated with livestock grazing due to O&M activities of the GLNP. See Section E.5, Livestock Grazing, in Appendix E for more information.

Energy Costs

Construction and Decommissioning

Under the Proposed Action, the cost of construction for building the GLNP would be passed on to the electricity customers who are served by utility providers that will use the GLNP through higher electricity costs. Higher electricity costs could cause a strain on residential customers, especially those who live in counties with electricity rates that are higher than the state and national average rates or that have increased substantially over the past couple of years. The counties that have relatively higher electricity rates include Churchill, Lander, and Lyons Counties (Table 3-102, 2023 Residential Rates and Electric Bill). However, the increase in rate depends on approval by the State of Nevada Public Utilities Commission (the government entity responsible for setting the electricity rate and approving any increases in the rate); therefore, the magnitude of impact on residents from increases in electricity rates is uncertain.

Operations and Maintenance

Under the Proposed Action, the transmission capacity supplied by the GLNP during operations could allow energy sources to flow to more regions where energy sources are needed. This could result in reduced electricity prices, stabilizing of the electric grid, and fewer electricity price spikes. The residents in surrounding communities and counties where the energy would be distributed would see the greatest impact from the additional transmission capacity; however, the magnitude of the impact is uncertain.

Economic Conditions

Construction

Under the Proposed Action, the GLNP's total construction costs are expected to be about $1.04 billion (in 2024 dollars) over approximately 2 years. Approximately 20.8 percent of these costs are estimated to occur in the state. On an annual average, these in-state expenditures would support about 638 additional total jobs (about 400 additional direct jobs), $97.9 million more in total labor income (about $85.9 million in direct income labor), and $152.0 million more in total economic output (about $103.9 million in direct economic output) across Nevada than under the No Action Alternative (see Table 3-110). These impacts on economic conditions would be temporary, only lasting until the completion of the construction.

Under the Proposed Action, the additional 638 total jobs that would be supported per year through construction could reduce the regional unemployment rate; however, the impact on the unemployment rate would be small due to the short-term nature of the project.

Table 3-110. Average Annual Economic Contribution from GLNP Construction under the Proposed Action

Geographic Region	Type of Impact	Employment	Labor Income (million 2024$)	Economic Output (million 2024$)
Analysis area	Direct	400	$85.9	$103.9
	Indirect	27	$1.7	$7.3
	Induced	131	$5.4	$23.9
	Total	558	$93.0	$135.1
State of Nevada	Direct	400	$85.9	$103.9
	Indirect	49	$3.3	$13.2
	Induced	189	$8.7	$34.9
	Total	638	$97.9	$152.0

Source: IMPLAN 2021
Data for model region including counties in the study area in Nevada

Property taxes would be collected from the land that is acquired through the GLNP. These taxes would help support public services within the counties, state, public schools districts, local cities and towns, and special districts, which can, in turn, support the quality of life of residents in surrounding communities.

Operations and Maintenance

Under the Proposed Action, annual O&M is expected to support about nine direct annual full-time employees, and annual O&M costs are estimated to be about $1.3 million (in 2024 dollars). On annual average, the O&M costs and employment would support about 13 additional total jobs, about $1.2 million more in total labor income, and about $2.1 million more in total economic output across Nevada than under the No Action Alternative (see Table 3-111). These impacts on economic conditions would last throughout the life of the GLNP, which is expected to be 30 years.

Under the Proposed Action, the additional 13 total jobs that would be supported per year through O&M could reduce the regional unemployment rate; however, the impacts on the unemployment would be small.

Table 3-111. Average Annual Economic Contribution from GLNP O&M under the Proposed Action

Geographic Region	Type of Impact	Employment	Labor Income (thousand 2024$)	Economic Output (thousand 2024$)
Analysis area	Direct	9	$1,030	$1,329
	Indirect	1	$52	$222
	Induced	2	$70	$309
	Total	**12**	**$1,152**	**$1,861**
State of Nevada	Direct	9	$1,030	$1,329
	Indirect	1	$93	$378
	Induced	2	$104	$422
	Total	**13**	**$1,227**	**$2,129**

Source: IMPLAN 2021
Data for model region including counties in the study area in Nevada

Property taxes would be collected from the land that is acquired through the GLNP. These taxes would help support public services within the counties, state, public school districts, local cities and towns, and special districts, which can, in turn, support the quality of life of residents in surrounding communities.

Decommissioning

Under the Proposed Action, it is anticipated that during decommissioning, direct and total impacts on economic conditions through changes in jobs, labor income, and economic output through increased expenditures would be similar to those relating to construction. However, the impacts during decommissioning would likely be smaller and shorter in duration.

Nonmarket Values

Construction

Under the Proposed Action, construction of the GLNP could lead to impacts on access and the quality of nonmarket values, such as reductions in access to clean air and impacts on public health and safety due to changes in air quality. Construction activities for the GLNP would have the potential to increase pollutant emissions through fugitive dust particulate matter due to surface disturbance and increases in vehicle traffic (see Section E.2, Air Quality and Climate, in Appendix E for more information on impacts on air quality from the GLNP). These changes in air quality could affect the surrounding communities through access to use values as well as changes in the quality of nonuse and existence values. Dust-control measures, as identified in EMMs AIR-6 through AIR-9, AIR-11, and AIR-13 through AIR-16 in Appendix D, would be implemented; this would help to limit the impacts on access and the quality of nonmarket values from fugitive dust emissions. Any changes in access to clean air due to an increase in fugitive dust would likely be short term, lasting until the completion of the GLNP's construction.

Under the Proposed Action, construction of the GLNP would likely lead to changes in access to subsistence resources, which would result in impacts on access and the quality of nonmarket values for communities within and outside the analysis area, especially for tribal and low-income populations who value and rely on subsistence resources for food and traditional uses. GLNP construction activities would likely increase noise and surface disturbance, which could disturb small and big game animals that constitute subsistence resources and could result in habitat loss

and fragmentation. Additionally, construction activities could restrict access to areas where subsistence occurs.

Implementing EMMs, as described in Appendix D, could help to reduce the impacts on wildlife associated with construction of the GLNP; this would also reduce the impacts on access and quality of subsistence resources for the surrounding communities. Once construction and rehabilitation activities are complete, animals are anticipated to return to these disturbed areas (see Section 3.5, Fish and Wildlife, for more information on the impacts on subsistence resources).

Under the Proposed Action, construction of the GLNP could lead to impacts on access and the quality of nonmarket values associated with cultural and tribal resources, such as spiritual, cultural, and traditional uses of the land and resources; social cohesion across tribal members; passing on traditional knowledge to future generations; and others. These impacts on the quality and access to nonmarket values include changes in access or disturbance or destruction of cultural and tribal resources due to surface-disturbing activities, increased vandalism due to increased human traffic to the area, and visual impacts on culturally significant areas. These impacts would especially impact tribal populations within and outside the analysis area who use the land in the analysis area for spiritual, cultural, and traditional practices.

Some of these impacts on access and the quality of nonmarket values from changes in cultural and tribal resources would be short term, lasting only until the completion of the GLNP's construction activities. The BLM would implement EMMs, as identified in Appendix D, to help reduce inadvertent impacts on cultural resources (see Sections 3.8, Cultural Resources, and 3.9, Native American Religious Concerns, for more information).

Under the Proposed Action, construction activities for the GLNP would create intermittent, short-term delays in traffic due to moving construction vehicles and equipment, which could impact access and the quality of nonmarket values. These impacts on access and the quality of nonmarket values include a decrease in social cohesion, quality of life, or way of life for the surrounding community, especially for those residents who value the rural lifestyle that the current conditions offer. These impacts would likely be short term, lasting until the completion of the construction. Additionally, adherence to EMMs TRANSP-1 through TRANSP-4 in Appendix D would help to limit and plan for any incidental road closures that could impact quality of life for the surrounding communities (see Section E.8, Transportation and Travel Management, in Appendix E for more information).

There could be impacts on access and the quality of nonmarket values associated with changes in visual resources due to the GLNP's construction activities. Changes in visual resources due to the GLNP's construction include changes in scenery and fugitive dust from the surface disturbance (see Section 3.10, Visual Resources, for more details on impacts). Once the construction activities are completed, there would likely be fewer impacts on access and the quality of nonmarket values; however, for those who live near the transmission line and structures, there could be long-term visual impacts. Adherence to EMMs, as identified in Appendix D, would help to reduce the impacts on access and the quality of nonmarket values from changes in scenery for the surrounding communities.

Under the Proposed Action, construction of the GLNP could lead to impacts on access and the quality of nonmarket values associated with recreation; solitude; and primitive, natural landscapes. These impacts include reduced visitor or viewer enjoyment, reduced physical and mental health from decreased access to recreation in primitive areas, and reduced quality and access to the nonuse and existence values of preserving wilderness. These impacts would be greater for those who value recreating in areas where the transmission line would cross and those who value the existence of natural wilderness. Some of these impacts would be short term, lasting only until the completion of the construction activities. Some impacts associated with changes in visual scenery where the transmission line is located would be longer term. However, a portion of the transmission line would be collocated along an existing ROW that is already disturbed, so the impact on recreation would likely be small (see Sections E.9, Recreation and Visitor Services, and E.7, Lands with Wilderness Characteristics, in Appendix E; and 3.12, Special Designations [National Historic Trails, Special Management Areas, Wild and Scenic Rivers, Wilderness, and Wilderness Study Areas], for more information).

During the construction activities for the GLNP, there could be impacts on the quality of nonmarket values associated with conservation of wild horses and burros due to ground disturbance, which could impact the habitat and water resources that the wild horses and burros rely on. These impacts on the quality of nonmarket values would particularly impact those communities who value the existence of wild horses and burros. However, impacts on wild horses and burros from GLNP construction activities would be isolated to the area of herd management areas that the GLNP would cross; the activities would not impact the majority of the herd management area acres in the analysis area. Therefore, impacts on the quality of nonmarket values associated with wild horse and burro conservation would likely be small and would only last until the completion of the construction (see Section E.6, Wild Horse and Burros, in Appendix E for more information).

Operations and Maintenance

During the ongoing O&M activities, there would not likely be impacts on access and the quality of nonmarket values due to changes in access to clean air and health and safety due to air quality (see Section E.2, Air Quality and Climate, in Appendix E for more information on impacts on air quality from the GLNP).

Under the Proposed Action, ongoing O&M activities could result in impacts on access and the quality of nonmarket values due to changes in access to subsistence resources. These changes in subsistence resources could be associated with changes in vegetation management and the introduction and spread of invasive plant species and noxious weeds; however, the impacts are anticipated to be small (see Section 3.5, Fish and Wildlife, for more information on impacts on subsistence resources).

There are not anticipated to be impacts on access and the quality of nonmarket values due to changes in cultural and tribal resources from ongoing O&M activities for the GLNP (see Section 3.8, Cultural Resources, and Section 3.9, Native American Religious Concerns, for more information on impacts on cultural and tribal resources from the GLNP).

Ongoing O&M activities under the Proposed Action could result in impacts on access and the quality of nonmarket values due to increased traffic, such as a reduced quality of life for the

surrounding residents. However, the increased traffic for maintenance of the GLNP would likely be small and intermittent; therefore, the impacts on access and the quality of nonmarket values would likely be small (see Section E.8, Transportation and Travel Management, in Appendix E for more information).

During O&M activities, there would be impacts on access and the quality of nonmarket values due to changes in the landscape character and scenic quality as well as due to changes in access to solitude, primitive landscapes, and scenery (see Sections E.9, Recreation and Visitor Services, and E.7, Lands with Wilderness Characteristics, in Appendix E; and Sections 3.10, Visual Resources, and 3.12, Special Designations [National Historic Trails, Special Management Areas, Wild and Scenic Rivers, Wilderness, and Wilderness Study Areas], for more details on impacts). These impacts could result in a reduced quality of life, especially for those who value pristine, natural scenery. Adherence to EMMs, as identified in Appendix D, would help to reduce the impacts on access and quality of nonmarket values from changes in scenery for the surrounding communities.

There are not anticipated to be impacts on access and the quality of nonmarket values due to changes in wild horses and burros from ongoing O&M activities for the GLNP (see Section E.6, Wild Horse and Burros, in Appendix E for more information).

Under the Proposed Action, the designation of a utility corridor could consolidate the impacts on access and quality of nonmarket values, lead to an increase in impacts in acres in the utility corridor, and lead to a decrease in impacts in acres away from the utility corridor. The changes that would most likely lead to consolidated impacts on access and quality of nonmarket values in the utility corridor include changes in access to subsistence resources and changes in the landscape character and scenic quality due to the BLM collocating new applications for linear ROWs in the utility corridor. However, the magnitude of impacts on access and quality of nonmarket values in the utility corridor would depend on the number of applications that the BLM receives.

Decommissioning

Decommissioning of the GLNP would likely lead to similar impacts on access and the quality of nonmarket values from changes in air quality and access to clean air as the impacts during construction; however, the impacts during decommissioning would likely be shorter in duration (see Section E.2, Air Quality and Climate, in Appendix E for more information on impacts on air quality from the GLNP).

Potential impacts on access and the quality of nonmarket values due to changes in access to subsistence resources during decommissioning would be similar to those described for the construction phase, though to a lesser extent. After completion of decommissioning of the GLNP and reclamation of disturbed areas, vegetation would be restored to preconstruction conditions over the long term, and surface-disturbing activities would decrease. Therefore, access to and the quality of subsistence resources would likely return (see Section 3.5, Fish and Wildlife, for more information on impacts on subsistence resources).

Potential impacts on access and the quality of nonmarket values due to changes in cultural and tribal resources during decommissioning would be similar to those described for the

construction phase, though to a lesser extent (see Section 3.8, Cultural Resources, and Section 3.9, Native American Religious Concerns, for more information on impacts on cultural and tribal resources from the GLNP).

Potential impacts on access and the quality of nonmarket values due to changes in traffic during decommissioning would be similar to those described for the construction phase, though to a lesser extent (see Section E.8, Transportation and Travel Management, in Appendix E for more information).

Potential impacts on access and the quality of nonmarket values due to changes in visual resources during decommissioning would be similar to those described for the construction phase, though to a lesser extent. After completing the decommissioning of the GLNP and reclamation of disturbed areas, the scenery would likely return to current conditions (see Section 3.10, Visual Resources, for more details on impacts).

Potential impacts on access and the quality of nonmarket values due to changes in access to solitude and primitive and natural landscapes during decommissioning would be similar to those described for the construction phase, though to a lesser extent. After completing the decommissioning of the GLNP and reclamation of disturbed areas, the scenery would like return to current conditions, and access to solitude and primitive landscapes would return (see Sections E.9, Recreation and Visitor Services, and E.7, Lands with Wilderness Characteristics, in Appendix E; and 3.12, Special Designations [National Historic Trails, Special Management Areas, Wild and Scenic Rivers, Wilderness, and Wilderness Study Areas], for more information).

Potential impacts on the quality and access to nonmarket values associated with wild horse and burro conservation during decommissioning would be similar to those described for the construction phase, though to a lesser extent. After completing the decommissioning of the GLNP and reclamation of disturbed areas, the wild horse and burro habitat would likely return to current conditions (see Section E.6, Wild Horse and Burros, in Appendix E for more information).

Property Values

Construction and O&M

The effect of nearby high-voltage transmission lines on residential property values has been studied for nearly 70 years, and the results offer mixed conclusions. The results may have to do with many factors, such as methodology, study size, and the unique characteristics of individual properties. Studies that primarily rely on property owner surveys tend to show more negative impacts than market response studies (those that measure sales of comparable properties). However, market response studies tend to have a relatively small sample size (Chalmers 2012). Most studies have been conducted in urban or suburban areas rather than in rural areas (Headwaters Economics 2012), and the unique characteristics of each property affect the value of properties close to the line. Results from the studies range between no effect and a slight adverse effect. Adverse effects include lower sales prices and taking a longer time to sell than comparable properties that are not close to high-voltage transmission lines.

Factors that can influence residential property values close to transmission lines include:

- Proximity of the property to transmission line structures
- Type and size of transmission line structures
- Visibility conditions of the line, such as whether views are unobstructed or screened to some degree by vegetation and landforms
- The appearance of ROW or easement landscaping
- Whether the ROW is used for recreation
- Concern over the effects of electromagnetic fields near transmission lines

Jackson and Pitts (2007 and 2010) point out that when negative impacts are present, studies report an average decline of prices from 2 to 9 percent. Studies by Jackson and Pitts (2007 and 2010) concluded the following:

- The reduction in property pricing is attributable to the visual unattractiveness of the lines as well as concerns regarding sound, health, and safety.
- Impacts diminish as the distance between the high-voltage transmission lines and the affected properties increase and disappear completely at a distance of 200 feet from the lines (0.04 miles).
- Where views of transmission lines and towers are unobstructed, adverse impacts can extend up to 0.25 miles.
- If high-voltage transmission line structures are at least partially screened from view by vegetation or landforms, any adverse effects are reduced considerably.
- The value diminution attributed to high-voltage transmission line proximity is temporary and usually decreases over time, disappearing completely in 4 to 10 years.

A study by Chalmers (2012) analyzed approximately 600 miles of a 500 kV line where it crossed Montana. Chalmers's research reports on sales involving properties that sold between 2000 and 2010 and are within 500 feet (close to 0.1 miles) of the centerline of one of three 500 kV lines studied. Chalmers found that many circumstances can affect vulnerability to transmission line impacts in rural settings, including:

- If a property's sole use is residential, its vulnerability to price impacts from a transmission line increases.
- As the property size increases, vulnerability to adverse market impacts from a transmission line decreases.
- If substitute properties are available (additional housing in an area), vulnerability to price impacts and marketing delays can increase.

Although magnitudes varied, the 2012 Chalmers study noted that there were indications of price impacts and market delays associated with a 500 kV line on small, rural, residential parcels. The same study found no evidence of transmission line-related impacts on sales involving producing agricultural properties. Based on a small number of case studies, the Chalmers study found no identifiable impact on the sales of agricultural lands that have the

potential for recreation-related development due to a high-voltage transmission line's proximity to recreational amenities.

Studies of impacts during periods of physical change, such as during new transmission line construction or structural rebuilds, generally reveal greater short-term impacts than long-term effects. Some studies have concluded that other factors like location, size of the property or structure, property condition, and property improvements are more important criteria than the proximity to transmission lines in determining the value of residential real estate (Chalmers 2012).

Under the Proposed Action, construction and O&M of the GLNP could lead to a small decrease in property values for those residential properties where the transmission line would be visible. However, as discussed above, studies and surveys have shown that the impact of transmission lines on property values is very small or insignificant, visual screenings that block the view of the transmission lines reduce or eliminate the impact on property values, and the impact on property values reduces across distances and over time (Jackson and Pitts 2017). Therefore, the impacts from GLNP on property values would likely be short term and would likely dissipate over the length of the project, especially as more screen cover and vegetation around the properties are established to shield the view of the transmission lines.

Under the Proposed Action, the designation of a utility corridor could consolidate the impacts on property values, which could lead to an increase in impacts for those residential properties that have a direct line of sight to the utility corridor and a decrease in impacts for those residential properties farther away from the utility corridor. However, the magnitude of impacts on property values in and around the utility corridor would depend on the number of new applications for linear ROWs that the BLM receives.

Decommissioning

Under the Proposed Action, there could be increase in property values attributed to the decommissioning of the GLNP for those properties that are close to and have a direct line of sight to the transmission line or structures. However, as mentioned above under the impacts due to construction and O&M, impacts on property values due to transmission lines ae small and tend to decrease over time; therefore, the impact from decommissioning the GLNP would likely be very small.

Direct and Indirect Impacts from the Other Resource Consideration Alternative

Social Setting and Public Services

Construction, Operations and Maintenance, and Decommissioning

Under the Other Resource Consideration Alternative, there would likely be the same number of jobs needed to carry out the work during construction, O&M, and decommissioning of the GLNP as under the Proposed Action. Therefore, the impacts on social conditions and public services during construction, O&M, and decommissioning due to population changes would be similar to those under the Proposed Action. However, the transmission route under the Other Resource Consideration Alternative would run close to the town of Austin; therefore, impacts on social settings in Austin, such as decreases in quality of life from increases in traffic and use of local restaurants and stores during construction and decommissioning, would be greater than

under the Proposed Action. However, the impacts would be short term, only lasting until the completion of the construction or decommissioning.

It is additionally anticipated that under the Other Resource Consideration Alternative, impacts on social conditions and public services attributed to O&M of the GLNP would be the same as those under the Proposed Action.

Livestock Grazing

Geotechnical Investigations, Construction, Operations and Maintenance, and Decommissioning

It is anticipated that under the Other Resource Consideration Alternative, impacts on economic and social conditions from changes in livestock grazing attributed to the geotechnical investigations, construction, O&M, and decommissioning activities for the GLNP would be the same as under the Proposed Action.

Energy Costs

Construction, Operations and Maintenance, and Decommissioning

It is anticipated that under the Other Resource Consideration Alternative, impacts on electricity rates and bills to residents in surrounding communities and counties in Nevada attributed to the construction, O&M, and decommissioning of the GLNP would be the same as under the Proposed Action.

Economic Conditions

Construction and Decommissioning

Under the Other Resource Consideration Alternative, the total GLNP construction and decommissioning costs are expected to be similar to the costs under the Proposed Action. Therefore, it is anticipated that under the Other Resource Consideration Alternative, direct and total impacts on economic conditions through changes in jobs, labor income and economic output through increased expenditures during construction and decommissioning would be similar to those under the Proposed Action.

Under the Other Resource Consideration Alternative, impacts on unemployment rates during construction and decommissioning due to the additional jobs supported by the GLNP would be the similar to those under the Proposed Action.

Under the Other Resource Consideration Alternative, impacts on public services through increased property tax revenue that is collected from the land acquired through the GLNP would be similar to those as under the Proposed Action.

Operations and Maintenance

It is anticipated that under the Other Resource Consideration Alternative, direct and total impacts on economic conditions attributed to the O&M of the GLNP would be the same as those under the Proposed Action.

Nonmarket Values

Construction, Operations and Maintenance, and Decommissioning

It is anticipated that under the Other Resource Consideration Alternative, impacts on access and the quality of nonmarket values attributed to the construction, O&M, and decommissioning of the GLNP would be similar to those under the Proposed Action. However, due to the proximity of the GLNP to the town of Austin, the impacts on access and the quality of nonmarket values would be greater in Austin, compared with under the Proposed Action.

Under the Other Resource Consideration Alternative, the impacts on access and the quality of nonmarket values due to the designation of a utility corridor would likely be similar to the impacts described under the Proposed Action. However, due to the proximity of the GLNP to the town of Austin, the impacts on access and the quality of nonmarket values attributed to the construction, O&M, and decommissioning of the GLNP from the utility corridor would likely be greater in Austin.

Property Values

Construction, Operations and Maintenance, and Decommissioning

It is anticipated that under the Other Resource Consideration Alternative, impacts on property values attributed to the construction, O&M, and decommissioning of the GLNP would be similar to those under the Proposed Action. However, due to the proximity of the GLNP to the town of Austin, the impacts on property values would be greater in Austin, under the Other Resource Consideration Alternative, than under the Proposed Action.

The impacts on property values due to the designation of a utility corridor, under the Other Resource Consideration Alternative, would likely be similar to the impacts described under the Proposed Action. However, due to the proximity of the GLNP to the town of Austin, the impacts on property values from the utility corridor would likely be greater in Austin.

Direct and Indirect Impacts from the BLM Preferred Alternative

Social Setting and Public Services

Construction, Operations and Maintenance, and Decommissioning

Under the BLM Preferred Alternative, there would likely be the same number of jobs needed to carry out the work during construction, O&M, and decommissioning of the GLNP as under the Proposed Action. Therefore, the impacts on social conditions and public services during construction, O&M, and decommissioning due to population changes would be the same as under the Proposed Action.

Livestock Grazing

Geotechnical Investigations, Construction, Operations and Maintenance, and Decommissioning

It is anticipated that under the BLM Preferred Alternative, impacts on economic and social conditions from changes in livestock grazing attributed to the geotechnical investigations, construction, O&M, and decommissioning activities for the GLNP would be the same as those under the Proposed Action.

Energy Costs

Construction, Operations and Maintenance, and Decommissioning

It is anticipated that under the BLM Preferred Alternative, impacts on electricity rates and bills to residents in surrounding communities and counties in Nevada attributed to the construction, O&M, and decommissioning of the GLNP would be the same as those under the Proposed Action.

Economic Conditions

Construction and Decommissioning

Under the BLM Preferred Alternative, the total GLNP construction and decommissioning costs are expected to be similar to the costs under the Proposed Action. Therefore, it is anticipated that under the BLM Preferred Alternative, direct and total impacts on economic conditions through changes in jobs, labor income and economic output through increased expenditures during construction and decommissioning would be similar to those under the Proposed Action.

Under the BLM Preferred Alternative, impacts on unemployment rates during construction and decommissioning due to the additional jobs supported by the GLNP would be similar to those under the Proposed Action.

Under the BLM Preferred Alternative, impacts on public services through increased property tax revenue that is collected from the land acquired through the GLNP would be similar to those under the Proposed Action.

Operations and Maintenance

It is anticipated that under the BLM Preferred Alternative, impacts on economic conditions attributed to the O&M of the GLNP would be the same as those under the Proposed Action.

Nonmarket Values

Construction

It is anticipated that under the BLM Preferred Alternative, impacts on access and the quality of nonmarket values attributed to the construction of the GLNP would be similar to those under the Proposed Action.

Operations and Maintenance and Decommissioning

It is anticipated that under the BLM Preferred Alternative, impacts on access and the quality of nonmarket values attributed to the O&M and decommissioning of the GLNP would be similar to those under the Proposed Action.

Under the BLM Preferred Alternative, the impacts on access and the quality of nonmarket values due to the designation of a utility corridor would likely be the same as the impacts described under the Proposed Action.

Property Values

Construction, Operations and Maintenance, and Decommissioning

It is anticipated that under the BLM Preferred Alternative, impacts on property values attributed to the construction, O&M, and decommissioning of the GLNP would be the same as those under the Proposed Action.

Under the BLM Preferred Alternative, the impacts on property values due to the designation of a utility corridor would likely be the same as the impacts described under the Proposed Action.

3.14 Cumulative Impacts

3.14.1 Analysis Methods

The BLM has analyzed cumulative effects consistent with the BLM NEPA Handbook (H-1790-1). For this analysis, projects that could result in similar cumulative effects include linear projects, such as roads, transmission lines, and pipelines, and large area developments, such as military installations, planned area developments, substations, conventional and fossil-fueled power plants, and renewable energy developments.

This analysis evaluates the action alternatives' contribution to cumulative effects, which are assessed in three basic steps. The first step is to identify the cumulative effects' analysis area (CEAA) for each resource and relevant period. The next step is to identify and describe past, present, and RFFAs that are similar in kind and effect as the action alternatives or that have considerable impact on environmental resources, to which the action alternatives' effects would cumulatively contribute. The last step is to evaluate the action alternatives for the potential to have cumulative contributions to environmental effects that could affect the environment.

The action alternatives traverse various ecological zones and jurisdictions, both natural and built features, and lands with different management and owners. Where available, quantitative data describing the potential effects of RFFAs or development were used. Where reliable quantitative data could not be found, qualitative data were used to best assess the cumulative effects of the action alternatives, according to the assessment of resource specialists.

The methods used to assess cumulative effects are resource dependent, and include the following:

- Pre-NOI public workshops, scoping meetings, and consultation were used to identify proposed projects, development plans, environmental resources, local knowledge, and community concerns.
- Trend analysis was used quantitatively where data allowed, such as for renewable energy development; the analysis was qualitative when interviewing local experts, such as with land use and development patterns.
- GIS overlays and impact analyses were used to understand spatial and temporal relationships of the alternatives with past, present, and RFFAs. In addition, a GIS impact analysis was used to analyze the action alternatives' effects.
- An energy development forecast analysis was used to forecast reasonably foreseeable future renewable energy development based on RMPs, local plans, existing and planned

energy development projects, typical energy development units, and transmission facility configurations.

3.14.2 Time Frame of Effects and Cumulative Effects Analysis Area

Past, present, future, and RFFAs are relative to the baseline conditions established for the GLNP. The baseline conditions for the cumulative effects analysis are established by the No Action Alternative. The No Action Alternative indicates the federal ROW agencies would not grant or permit a ROW; the GLNP facilities, including transmission lines and ancillary project components, would not be built; and the existing environmental conditions, including the identification of past and present actions, events, and occurrences, as described previously, would persist.

Evaluating the action alternatives against the baseline conditions provides a reference point in time to gauge cumulative effects. In terms of the time frame, the cumulative effects analysis is considered over a 35-year period. Short-term or temporary impacts are impacts that would last up to 7 years (2 years to complete construction activities and 5 years for site restoration). Long-term impacts are impacts that would be longer than 7 years.

The proposed GLNP has a life expectancy of 35 years based on electrical demand, maintenance, and the expected life of the project facilities and major components. This cumulative impact analysis includes identification of the potential cumulative impacts that could occur during the geotechnical investigations, and construction and operation periods for the GLNP. Decommissioning of the GLNP would occur beyond the 30-year ROW grants for the cumulative impacts analysis. The scope of impacts during the time frame of decommissioning is considered speculative and cannot be meaningfully analyzed.

3.14.3 Cumulative Effects Analysis Area

The geographic extent of cumulative effects varies according to the affected resource being analyzed. Table 3-112 provides the defined CEAA for the action alternatives by resource, their overlap with spatially defined RFFAs in acres and/or miles, and their corresponding figures in Appendix A.

Table 3-112. Cumulative Effects Analysis Areas

Resources	Definition of CEAA	Total Acres of the CEAA	Acres of RFFAs within the CEAA[1]	Figure in Appendix A
Social values and economics	Lyon, Churchill, Lander, Eureka, and White Pine Counties	16,407,738	205,295	Figure 3-23
Cultural resources, Native American concerns, and special designations	5-mile buffer around the GLNP area (10-mile corridor)	1,873,288	26,863	Figure 3-24
Soil resources and lands, realty, and cadastral survey	The project area for each alternative	36,917/ 36,756/ 36,830[2]	1,169[3]	—

Resources	Definition of CEAA	Total Acres of the CEAA	Acres of RFFAs within the CEAA[1]	Figure in Appendix A
Aquatic fish and wildlife species (including special status species and threatened and endangered species), and water resources	The 12-digit HUC sub-watersheds that overlap the GLNP area	2,713,112	54,090	Figure 3-25
Terrestrial wildlife (including special status species and threatened and endangered species) and vegetation resources and communities (including riparian areas and wetlands)	5-mile buffer around the GLNP area (10-mile corridor)	1,873,288	26,863	Figure 3-26
Golden eagle	10-mile buffer around the GLNP area (20-mile corridor)	3,573,735	60,804	Figure 3-27
Visual resources	A 10-mile buffer from the GLNP KOPs	2,547,300	46,793	Figure 3-28
Paleontological resources	200-foot buffer around the GLNP area (400-foot corridor)	63,413	1,169	Figure 3-29

Source: BLM, FS, and NVE GIS 2024
[1]These calculations only include RFFAs that have spatial footprints and are sourced from the BLM's best available data.
[2]The Proposed Action CEAA is 36,917 acres. The Other Resource Consideration Alternative CEAA is 36,756 acres. The BLM Preferred Alternative CEAA is 36,830 acres.
[3]The same acreage of RFFAs would be within the CEAAs for each alternative.

3.14.4 Past and Present Actions

The cumulative effects analysis does not attempt to quantify the effects of past human actions and present actions by adding up all prior and existing actions on an action-by-action basis. Existing conditions reflect the aggregate impact of prior human actions and natural events that have affected the environment and could contribute to cumulative effects. By looking at current conditions, the residual effects of past human actions and natural events are captured, regardless of which particular action or event contributed to those effects. The Council on Environmental Quality issued an interpretive memorandum on June 24, 2005, regarding analysis of past actions, which states, "Agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions" (Council on Environmental Quality 2005).

3.14.5 Reasonably Foreseeable Future Actions

Per the BLM NEPA Handbook (H-1790-1), RFFAs are actions that have existing decisions, funding, or formal proposals or that are highly probable, based on known opportunities or trends (BLM 2008b). The RFFAs are projections being made so that future effects, cumulative and otherwise, can be estimated, as required by DOI NEPA. Specific projects within the resource CEAAs have been identified by the BLM and Forest Service. Table F-1 in Appendix F identifies the name of the RFFA along with a brief description of each project within the CEAAs.

Within the CEAAs of the resources analyzed for their contribution to cumulative impacts, there are an estimated 24 pending applications for solar projects.

In addition to solar RFFAs, other types of major projects include mineral exploration and mining operations, general development, utilities, communication facilities, and wildlife conservation management and habitat restoration. Other RFFAs and management activities occurring in the CEAAs that are highly probable include livestock grazing, range improvements, vegetation management, recreation (such as hunting and off-highway vehicle use), road improvements, transmission and distribution lines, telephone lines, communication towers, and community development. Ongoing activities also include wildland fire management activities and programs to minimize the spread of noxious weeds and invasive plant species.

3.14.6 Reasonably Foreseeable Future Actions Assumptions

The following assumptions apply for the RFFAs:

- Construction of the GLNP is not predicated on the development of the pending applications for solar projects or any other RFFAs along the approximately 235-mile transmission route.
- The actual acres of the RFFAs most likely would be less than the estimated acres of each RFFA noted in Appendix F, Table F-1.
- All the RFFAs may not be constructed. This results in an overestimate in the number of RFFAs and the number of acres potentially disturbed by the RFFAs.
- If the ROW applications for GLNP were to be denied by the federal ROW agencies, the pending solar projects would look at other transmission lines to distribute their generated power.
- The extent to which the RFFAs would be developed concurrently is difficult to predict and depends on numerous factors. Some are in the design stage. Others are undergoing NEPA evaluation. Other RFFAs may be authorized, but construction is not underway. Therefore, it is assumed that the RFFAs would not occur simultaneously.
- The RFFAs on federally administered lands or that use federal funds would be subject to environmental review (such as, NEPA, NHPA, and ESA) and would be required to incorporate measures to minimize adverse impacts.
- The RFFAs listed in Appendix F are regardless of landownership. Because the State of Nevada does not have an environmental quality act, how each RFFA on nonfederal lands would impact a resource is more uncertain because there are no documents available that are similar to an EIS under NEPA.
- Synergistic and non-synergistic impacts were not distinguished in the cumulative impacts analysis.

3.14.7 Cumulative Impacts on Resources

For this analysis, cumulative resource impacts for the CEAAs are the combined effects of the present actions and RFFAs, in addition to the impacts of the action alternatives and No Action Alternative.

Soils

Past, present, and RFFAs that have affected, and would continue to affect soils in the CEAA include ROWs for energy transmission, energy generation, minerals exploration and

development, livestock grazing, and vegetation management. There are approximately 1,169 acres of renewable energy RFFAs within the CEAA, which represents approximately 1.8 percent of the total CEAA. Construction and O&M activities associated with RFFAs remove vegetation, disturb biological soil crusts, and compact and displace soils. These impacts, which decrease soil stability and infiltration capacity, and increase the potential for soil erosion, would continue in the CEAA. Livestock grazing and vegetation treatments are also surface-disturbing activities that contribute to decreased soil stability and erosion. However, these actions can also promote the establishment of native vegetation and reduce invasive and noxious weeds and woody vegetation that are associated with frequent and high-severity wildfires. In turn, soils may be protected from wildfires that remove vegetation, cause waterproof soils, and increase the potential for wind erosion and water runoff.

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. Construction of the transmission line, temporary construction areas, access roads, and ancillary components of the GLNP would remove topsoil and compact mineral soils within the footprints of the facilities during land-clearing and land-grading operations. The primary potential impacts associated with these operations would be soil compaction and erosion. If site grading alters the surface drainage patterns, the site surface runoff and soil moisture characteristics would also change. This would result in areas that are more or less vulnerable to erosion, depending on existing site-specific conditions and inherent soil properties, including soil texture and slope.

When combined with these past and present actions, and the RFFAs listed in in Appendix F, the Proposed Action would contribute to soil displacement and sedimentation within the CEAA. Implementing the EMMs identified in Appendix D would minimize, but not completely avoid, the alternative's contribution to the cumulative effects. Soil conditions may be improved where livestock grazing and vegetation treatment projects overlap disturbed areas and reduce the potential for frequent and high-severity wildfires.

Water Resources

The CEAA for water resources consists of HUC 12 sub-watersheds crossed by the proposed project along the total length of the transmission line route for surface water and groundwater. Impacts from past, present, and RFFAs can be cumulative if they occur nearby in the same watershed or on the same waterbody, and there is a project-related impact in that same watershed or waterbody. Furthermore, cumulative impacts depend on the action and how the hydrologic system responds. Some cumulative effects could be long term if there are slow-moving contamination plumes throughout the area, or contamination goes deep into aquifers and then the surface expresses somewhere downgradient.

Impacts on water resources may result from past, present, and RFFAs that would require increased usage of groundwater or surface waters and impact wetlands and riparian areas. RFFAs that could contribute to cumulative effects on surface waters and groundwater resources within the water resources CEAA include solar and wind power, geothermal energy, oil and gas, mining, communications, utility, recreation and visitor services, and habitat restoration projects; a livestock grazing permit renewal; and a wild horse and burro gather. See Table F-1 in Appendix F for detailed descriptions of these projects. There are approximately

54,090 acres of renewable energy RFFAs within the CEAA, which represents approximately 2.0 percent of the total CEAA.

Cumulative impacts on runoff quantity and quality would be limited because the potential impacts on surface water quality would be controlled by implementing local, state, and federal regulations, or they are in areas where surface water runoff would likely be handled by a municipal stormwater control system.

Action Alternatives' Contribution to Cumulative Impacts

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. Cumulative impacts on surface and groundwater resources from the construction, O&M, and decommissioning of the GLNP would be associated with ground-disturbing activities, such as clearing, grubbing, and blading to remove vegetation for construction of the proposed new roads, the microwave radio facilities, substation sites, and transmission line structures; upgrades to existing roads; and installation of the amplifier. Impacts could be attributed to accidental spills of substances into surface water features and increases in erosion that increase sedimentation reaching known streams in the area from the proposed acres of disturbance.

The Proponent has committed to EMMs for proposed disturbances from the project. These measures include, but are not limited to, permanent erosion and sediment controls, spill prevention practices, requirements for refueling and equipment operation near waterbodies, procedures for emergency response and incident reporting, and training requirements (see EMMs WATER-1 through WATER-20 in Appendix D). The EMMs would help to minimize impacts on surface water, groundwater, floodplains, wetlands, and riparian areas. For example, EMM WATER-2 requires the Proponent to update the stormwater plan, as needed, to keep up with changes that could occur from increased storm intensity or major flooding events.

Projected data from the NDWR from the Nevada State Water Plan indicate approximately 88,930 acre-feet of water for the whole state's public supply was forecasted in 2015, with the forecast increasing to 94,582 acre-feet per year based on population increases and general increases in consumption in 2020 (NDWR 2023b). Cumulatively, the proposed project would potentially use 860 acre-feet of water over 3 years from local watersheds. This would be highly dependent on a number of factors; one factor is project need. As presented above in Section 3.3, Water Resources, the project would not use water continuously throughout the year, and the level of use would change once the Proponent moves from construction into O&M and then later into the decommissioning phase. The construction phase would require the most water, mainly for all the roads and pads needed for installation of the transmission line.

The Proponent would place new structures outside the floodplains, where possible. The structures would be designed to not impede flood dynamics. Micro-siting during the final design of GLNP facilities would take flood hazards into account to minimize flood damage risk to structures in the areas identified.

The GLNP's effects, when combined with past, present, and RFFAs, would result in cumulative effects on water resources. The GLNP would impact approximately 14 percent of the surface water and groundwater resources in the CEAA (30,000 acres) through temporary disturbances

and 10 percent from the permanent disturbance. However, these percentages represent the amount crossed by the Proposed Action and the other action alternatives. When comparing total watershed acres to the proposed acres of impact, the percentage of impact would be much lower. This is because the total watershed acres involved would be around 2.7 million acres. The temporary and permanent disturbances proposed would represent 1.3 percent of the total watershed area.

Similarly, the permanent disturbance for all watersheds affected would be 0.04 percent of the total acres of watersheds. The action alternatives would result in a negligible contribution to cumulative effects on water resources within the CEAA. The BLM Preferred Alternative would have the smallest contribution to cumulative impacts on water resources.

No Action Alternative's Contribution to Cumulative Impacts

The RFFAs, along with past and present projects, would contribute to cumulative impacts on water resources within the CEAA. However, under the No Action Alternative, the GLNP would not be constructed. Therefore, there would be no contribution by the GLNP to cumulative impacts on water resources within the associated CEAA.

Vegetation Communities and Resources

The major types of past, present, and RFFAs within the general vegetation CEAA that could contribute to cumulative impacts include mining projects, renewable energy development, transportation, transmission lines, and commercial, industrial, and residential development. There are approximately 26,863 acres of renewable energy RFFAs within the CEAA, which represents approximately 1.4 percent of the total CEAA. Effects from the RFFAs could result from permanent vegetation removal during construction activities and from the fragmentation of connected vegetation types. As vegetation communities become smaller and more fragmented, they become more susceptible to invasive species and noxious weeds. Habitat loss, degradation, and fragmentation have already occurred in the general vegetation CEAA by other transmission lines, roads, highways, and development.

The primary source of impacts on vegetation is surface disturbance during construction. Measures may include trimming and driving and crushing of vegetation rather than complete vegetation removal; these minimize the removal of vegetation resources, such as riparian vegetation, where possible, Measures may also include controlling the introduction and spread of invasive plant species and noxious weeds. In combination, past, present, and RFFAs would result in cumulative impacts on general vegetation.

Action Alternatives' Contribution to Cumulative Impacts

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. The implementation of the action alternatives would result in minimal loss of vegetation communities from construction of the transmission line, new substations, temporary work areas, and new access roads. There would be the potential for the introduction and spread of invasive plant species and noxious weeds. The implementation of EMMs BIO-17, OPS-4, and REC-18 in Appendix D, and the integrated weed management plan would decrease the impacts of the action alternatives on vegetation resources and the potential introduction of invasive plant species and noxious weeds.

The action alternatives' effects, when combined with past, present, and RFFAs, would result in cumulative impacts on local vegetation communities within the general vegetation CEAA. The action alternatives would result in a negligible contribution to cumulative effects on general vegetation within the associated CEAA. This is because of the size of the temporary and permanent ROW areas under the action alternatives in comparison to the general vegetation CEAA and implementation of the EMMs and integrated weed management plan, as noted above.

No Action Alternative's Contribution to Cumulative Impacts

The RFFAs would be implemented, and current uses and trends for the general vegetation resources would continue to occur under the No Action Alternative. As previously described, these actions, along with past and present projects, would result in cumulative impacts on general vegetation. However, the GLNP would not be constructed, and there would be no contribution by the GLNP to cumulative impacts on vegetation within the general vegetation CEAA.

Fish and Wildlife

The CEAA for aquatic fish and wildlife species, riparian areas, and wetlands is the 12-digit HUC sub-watersheds that overlap the GLNP. The CEAA for terrestrial wildlife, including migratory birds, and terrestrial vegetation is a 5-mile buffer around the GLNP. The CEAA for golden eagles is a 10-mile buffer around the GLNP.

Ongoing and planned actions in and near the CEAAs would influence conditions and habitat requirements for wildlife and management effectiveness across the GLNP. The major types of past, present, and RFFAs that have affected and will likely continue to affect fish and wildlife include mining and mineral exploration and development, such as fluid minerals (oil, gas, and geothermal). Other development, such as residential and industrial development, the associated roads, and ROWs (including pipelines, electrical transmission lines, infrastructure ROWs, and large renewable energy projects, such as solar and wind development projects); vegetation treatments; fire and fuels management; livestock grazing; wild horse and burro management; recreation; and travel management are also likely to continue to affect fish and wildlife species and habitats. Of the renewable energy RFFAs, approximately 54,090 acres overlap the aquatic fish and wildlife species CEAA; 26,863 acres overlap the terrestrial wildlife and vegetation resources CEAA; and 60,804 acres overlap the golden eagle CEAA. These acres represent approximately 2.0, 1.4, and 1.7 percent of the total CEAAs, respectively.

Many of the actions described above have and will likely continue to alter habitat conditions, which then will cause or favor other habitat changes. For example, wildland fire removes wildlife habitat features, and affected areas are more susceptible to weed invasion, soil erosion, and sedimentation of waterways; all these further degrade habitats. In general, resource use activities, such as energy, mineral, and other developments, have cumulatively impacted fish and wildlife by causing habitat removal, habitat fragmentation, weed spread, and disturbance from noise and increased human presence. Dispersed, organized, and concentrated recreation also promotes the spread of invasive species and pollutants into the environment, habitat degradation from off-highway vehicle use, and associated noise from an increase in visitors to public lands. Land planning efforts and vegetation, habitat, and fuels treatments have offset some of these impacts by improving habitat connectivity, resistance, and resilience.

Climate change could cause an increase or decrease in temperatures and precipitation, which would affect soil conditions, vegetation health, water flows, and temperature. Such changes would alter habitat conditions, potentially creating conditions that could favor certain species or communities, weeds, or pests.

Action Alternatives' Contribution to Cumulative Impacts

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. Implementing the action alternatives would contribute to vegetation removal and surface disturbance, the potential for weed establishment and spread, habitat loss and fragmentation, and wildlife disturbance due to construction and noise, from construction of the transmission lines, new substations, temporary work areas, and new access roads.

Construction of the new substations and access roads would remove vegetation during land-clearing and land-grading operations. The primary potential impacts associated with these operations would be temporary and permanent vegetation and wildlife habitat removal; soil disturbance, which would increase the potential for invasive plant establishment and spread; and water- and wind-driven soil erosion. Altering the surface drainage patterns or hydrology could change the volume or timing of surface runoff and soil moisture in downstream dry wash communities and intermittently flooded playa areas.

Noise would be temporarily generated from constructing and maintaining the proposed infrastructure. Noise generated would affect wildlife such as from disturbance and displacement from habitat.

The effects resulting from the action alternatives, when combined with past, present, and RFFAs, would increase the presence of infrastructure in the CEAAs. The resultant cumulative impact would be an increased potential for wildlife injury or mortality due to strike, entrapment, or electrocution; however, the contribution of the GLNP to these impacts would be reduced by incorporating the EMMs described in Appendix D.

No Action Alternative's Contribution to Cumulative Impacts

The RFFAs would be implemented, and current uses and trends for fish and wildlife would continue to occur under the No Action Alternative. As previously described, these actions, along with past projects, would result in cumulative impacts on fish and wildlife species. However, the GLNP would not be constructed under this alternative. Therefore, there would be no contribution by the GLNP to cumulative impacts on fish and wildlife species within the fish and wildlife CEAAs.

Special Status Species

The CEAAs for special status species would be the same as described above under *Fish and Wildlife*.

The major types of past, present, and RFFAs within the special status species' CEAAs that have affected and will likely continue to affect special status species include mining and mineral exploration and development, such as fluid minerals (oil, gas, and geothermal exploration and

development). Other development, such as residential and industrial development, the associated roads, and ROWs (including pipelines, electrical transmission lines, infrastructure ROWs, and large renewable energy projects, such as solar and wind development projects); vegetation treatments; fire and fuels management; livestock grazing; wild horse and burro management; recreation; and travel management are also likely to continue to affect special status species. Of the renewable energy RFFAs, approximately 54,090 acres overlap the aquatic fish and wildlife species CEAA; 26,863 acres overlap the terrestrial wildlife and vegetation resources CEAA; and 60,804 acres overlap the golden eagle CEAA. These acres represent approximately 2.0, 1.4, and 1.7 percent of the total CEAAs, respectively.

The contribution of past and present actions to cumulative impacts on special status plants within the CEAA will have differing effects than the effects on special status wildlife. Impacting factors, as described above, have resulted in current vegetation conditions that are departed from historical conditions. This has resulted in a landscape with increased pinyon-juniper densities and invasive annual grasses and a greater potential for uncharacteristically large, severe fires, as compared with historical conditions. In turn, these departed conditions have led to the loss of greater sage-grouse habitats and lek sites.

Ongoing climate trends, including more frequent extreme fire weather, combine with and exacerbate these conditions. In response, federal, state, and local land managers have carried out vegetation treatments to maintain and improve habitat conditions, including by reducing pinyon-juniper woodland density, moving sagebrush and other native shrubland toward historical conditions, and creating fuel breaks along existing corridors like roads and transmission lines to reduce the size of wildfires and further habitat departure from historical conditions.

Many of the actions described above have altered and will likely continue to alter habitat conditions, which then will cause or favor other habitat changes. For example, wildland fire removes wildlife habitat features, and affected areas are more susceptible to weed invasion, soil erosion, and sedimentation of waterways; all these further degrade habitats and decrease resistance to further weed invasion and resilience from disturbances. Further, management actions to maintain or improve habitat conditions for special status species may negatively affect another species. For example, pinyon-juniper woodland thinning to maintain or improve greater sage-grouse habitats can, in turn, reduce habitat suitability for pinyon jays by reducing the amount of pinyon pines of cone-bearing age.

In general, resource use activities, such as energy, mineral, and other developments, have impacted special status species through habitat removal, fragmentation, weed spread, and disturbance from noise and increased human presence. Dispersed, organized, and concentrated recreation has led to the spread of invasive species and pollutants into the environment, habitat degradation from off-highway vehicle use, and associated noise from an increase in visitors to public lands. Land planning efforts and vegetation, habitat, and fuels treatments have offset some of these impacts by improving habitat connectivity, resistance, and resilience.

Climate change could cause an increase or decrease in temperatures and precipitation, which would affect soil conditions, vegetation health, water flows, and temperature. Such changes

would alter habitat conditions, potentially creating conditions that could favor certain species or communities, weeds, or pests.

Action Alternatives' Contribution to Cumulative Impacts

Implementing the EMMs identified in Appendix D would minimize, but not completely avoid, the action alternatives' contribution to the cumulative effects.

The GLNP action alternatives would result in short- and long-term impacts on special status plants. These impacts would range from undetectable to impacts only to individuals, due to the potential for individuals to be removed or destroyed and because of localized habitat degradation. Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts on special status plants. When combined with past, present, and RFFAs, the action alternatives would result in short- and long-term cumulative impacts ranging from impacts only to individuals to impacts on local populations for most of these special status plants.

Additionally, the action alternatives would result in short- and long-term impacts on special status terrestrial wildlife species; these impacts would range from undetectable to impacts only to the individuals, due to localized habitat loss and degradation, general disturbance due to increased human and vehicular activity, and increased predation. Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts on most special status terrestrial wildlife; cumulative impacts on greater sage-grouse habitat are described below. When combined with past, present, and RFFAs, the action alternatives would result in short- and long-term cumulative impacts ranging from impacts only to individuals to impacts on local populations for the majority of these special status wildlife species.

Contributions to cumulative effects on special status species would be greater for those species that are less tolerant of fragmented or disturbed habitats. While some general wildlife can inhabit disturbed habitats and reoccupy temporarily disturbed and restored areas relatively quickly, some special status species, including kangaroo mice, may not have this ability. Temporarily disturbed suitable habitat, even if restored, can take a long time to regain suitability; also, restoration does not guarantee species' reoccupation.

The GLNP action alternatives, including activities such as geotechnical investigations, construction, operations and maintenance, and decommissioning, would also result in localized impacts on greater sage-grouse that would include habitat loss, the potential for introduction and spread of nonnative and invasive plant species that reduce native habitat, and an increased potential for predation by ravens foraging from transmission line structures. Proposed transmission infrastructure may increase predation pressure by providing new perching and hunting opportunities for avian predators, further threatening sage-grouse populations. These impacts, when combined with other stressors such as energy development, wildfire, grazing, and invasive species, could exacerbate the risks of population declines and local extirpations, particularly for already vulnerable populations. Past, present, and RFFAs would also impact greater sage-grouse, as discussed above.

Implementing the EMMs from Appendix D and the measures identified in the raven management plan (Appendix H) and bird and bat conservation strategy (Appendix I) would decrease, but not avoid, the GLNP's contribution to cumulative impacts on greater sage-grouse within the CEAA. Compensatory mitigation, as directed by Nevada Administrative Code 232.400–232.480 and as determined and implemented by the Sagebrush Ecosystem Technical Team, would compensate for residual adverse impacts on greater sage-grouse from the GLNP that could not otherwise be avoided or minimized, offsetting or mitigating cumulative effects on this species and its habitat within the CEAA.

No Action Alternative's Contribution to Cumulative Impacts

The RFFAs would be implemented, and current uses and trends for special status species would continue to occur under the No Action Alternative. As previously described, these actions, along with past and present projects, would result in cumulative impacts on special status species. However, the GLNP would not be constructed under this alternative. Therefore, there would be no contribution by the GLNP to cumulative impacts on special status species within the special status species CEAAs.

Paleontological Resources

Present and past actions considered in the cumulative effects analysis are ROWs for energy transmission, energy generation, and minerals exploration and development; livestock grazing; and vegetation management. There are approximately 1,169 acres of renewable energy RFFAs within the CEAA, which represents approximately 1.8 percent of the total CEAA. Construction and O&M activities for some of these actions have included excavation and other surface disturbance at depths or locations with the potential for impacting paleontological resources if they are present. Road grading, grazing, and vegetation treatments may have impacted paleontological resources through direct damage, unauthorized collecting, increased exposure, erosion, or weathering.

Construction of the GLNP action alternatives would involve near-surface disturbance grading, using augers, or boring, and trenching. The extent of any potential impacts has not been determined, but it is anticipated that impacts that could be reduced or eliminated through avoidance, recovery, or other mitigation measures, including EMMs listed in Appendix D. The action alternatives would also be subject to compliance with the Paleontological Resources Protection Act.

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. When combined with these past and present actions and the RFFAs listed in Appendix F, the construction, O&M, and decommissioning of the GLNP could contribute to potential direct effects on paleontological resources from construction activities and effects from erosion and access within the CEAA. Implementing the EMMs identified in Appendix D would minimize, but not completely avoid, the alternatives' contribution to the cumulative effects. The project-specific paleontological investigation for the GLNP will add to the knowledge base of the analysis area and potentially lead to the discovery of fossils for scientific research, education, display, and preservation.

Cultural Resources

Past, present, and RFFAs that have affected, and would continue to affect cultural resources in the CEAA include ROWs and other land use authorizations for projects such as energy transmission, energy generation facilities, and minerals exploration and development; livestock grazing; and vegetation management. There are approximately 26,863 acres of renewable energy RFFAs within the CEAA, which represents approximately 1.4 percent of the total CEAA. Construction and O&M activities undertaken for many of these actions disturb the ground, remove vegetation, and introduce the potential for visual impacts. These impacts would continue in the CEAA under all alternatives. Livestock grazing and vegetation treatments are surface-disturbing activities; however, these actions can also promote the establishment of native vegetation and reduce invasive and noxious weeds and woody vegetation that are associated with frequent and high-severity wildfires. In turn, cultural resources experience protections from severe wildfire that would remove vegetation and increase the potential for erosion around cultural sites.

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. Like past, present, and RFFAs, the construction, O&M, and decommissioning of the GLNP would disturb the ground, remove vegetation, and introduce the potential for visual impacts. These GLNP-related impacts would not occur under the No Action Alternative.

While the GLNP is being designed to avoid impacts on cultural resources, it is anticipated that some mitigation would be necessary to resolve potential adverse effects on historic properties under the NHPA. Implementing the measures identified in Section 3.8.8, Cultural Resources, Design Features and Mitigation and Appendix D would greatly minimize, though not completely avoid, the action alternatives' contribution to cumulative effects on cultural resources in the CEAA. Impacts on cultural resources are anticipated to be highly similar among the action alternatives.

When combined with these past and present actions and the RFFAs listed in Appendix F, the BLM Preferred Alternative would have the greatest potential to contribute to cumulative effects on cultural resources within the CEAA among the action alternatives, while the Other Resource Consideration Alternative would have the least potential to contribute to cumulative effects. This is due to the overall number of known or potential historic properties (Table 3-72) and tribally identified cultural resources (Table 3-71) within the VAPE and DAPE of each action alternative.

Native American Religious Concerns

Past, present, and RFFAs that have affected and would continue to affect Native American religious concerns in the CEAA include ROWs and other land use authorizations for projects such as energy transmission and energy generation facilities. There are approximately 26,863 acres of renewable energy RFFAs within the CEAA, which represents approximately 1.4 percent of the total CEAA. Specifically, there is the potential for the GLNP to impact locations of religious importance or sensitivity for Native American tribes. Other RFFAs, such as the pending solar and wind projects, could similarly impact Native American religious concerns by changing or restricting access to important locations, creating short- and long-term impacts on

views, and increasing human presence and activity in areas that were previously remote. Additionally, transmitting power from these solar and wind projects could require ROWs through BLM-administered lands. Depending on the location and size of new transmission lines, these may be collocated within the ROW corridor considered for designation in the action alternatives.

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. When combined with the past, present, and RFFAs listed in Appendix F, the construction, O&M, and decommissioning of the GLNP could contribute to cumulative impacts on Native American religious concerns, particularly where the GLNP and the GLWP intersect and infrastructure and activity related to proposed solar projects are concentrated. Measures to avoid, minimize, or mitigate these impacts would include micro-siting of and final designs that minimize physical or visual intrusions on important locations. Additionally, tribal monitoring and cultural sensitivity training would reduce some project-specific impacts by assisting in avoidance and minimizing human activity, where applicable. Implementing the EMMs identified in Appendix D would minimize, but not completely avoid, the alternatives' contribution to the cumulative effects identified.

Consultation with federally recognized tribes has indicated that the current transmission line route under the Proposed Action from Hickison Summit through the Toiyabe Range, similar to the closely aligned BLM Preferred Alternative, would cause a greater level of impacts on tribal interests than the transmission line route under the Other Resource Consideration Alternative.

Visual Resources

The major types of past, present, and RFFAs within the general visual resources CEAA that could contribute to cumulative impacts include mining projects, renewable energy development, transportation infrastructure, transmission lines, and commercial, industrial, and residential development. There are approximately 46,793 acres of renewable energy RFFAs within the CEAA, which represents approximately 1.8 percent of the total CEAA. Effects from the RFFAs could result from adding artificial features to undisturbed areas that detract from viewing the natural landscape.

Action Alternatives' Contribution to Cumulative Impacts

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. The effects resulting from the construction, O&M, and decommissioning of the GLNP would contribute to cumulative impacts on visual resources. This is because the action alternatives and mining projects, renewable energy development, transportation infrastructure, transmission lines, and commercial, industrial, and residential development add features to the landscape that would contrast with the existing landscape. These cumulative impacts are exacerbated when they occur in undeveloped areas. The action alternatives' project components would be collocated along an existing ROW that is already disturbed. The Other Resource Consideration Alternative would have the greatest disturbance to undeveloped areas. The contributions of the GLNP action alternatives to cumulative impacts would be reduced by incorporating the EMMs described in Appendix D.

No Action Alternative's Contribution to Cumulative Impacts

The RFFAs would be implemented, and current uses and trends for the visual resources would continue to occur under the No Action Alternative. As previously described, these actions, along with past and present projects, would result in cumulative impacts on visual resources. However, the GLNP would not be constructed under this alternative. Therefore, there would be no contribution by the GLNP to cumulative impacts on visual resources within the CEAA.

Lands, Realty, and Cadastral Survey

Under the No Action Alternative, the GLNP would not be constructed. Therefore, there would be no contribution by the GLNP to cumulative impacts on lands, realty, and cadastral survey within the associated CEAA.

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. The implementation of the action alternatives would result in long-term impacts on land use allocations through management actions that would designate ROW exclusion, avoidance, and open areas, as well as the designation of a utility corridor under two of the action alternatives. Existing ROWs would be temporarily impacted during construction; however, the BLM would coordinate with permit holders prior to construction to minimize impacts. The designation of a utility corridor under the Proposed Action and the BLM Preferred Alternative could increase future ROW applications for renewable energy, energy and communication infrastructure, and access roads in the utility corridor.

The action alternatives would not conflict with existing uses, such as commercial, residential, military, agricultural, utility, transportation, or communication facilities, in the CEAA. During construction, other existing land use patterns or adjacent areas that are used by other ROW/permit holders may be temporarily impacted; however, the BLM would coordinate with land users prior to construction. However, the Other Resource Consideration Alternative transmission line would go through Austin, Nevada, to bypass the National Forest System lands.

The proposed transmission line under the action alternatives would comply with existing county plans, with some exceptions for Eureka County. However, the Proposed Action would be inconsistent and cannot be made consistent with the standards and guidelines in the 1986 Toiyabe Forest Plan (Forest Service 1986), as amended, and the Greater Sage-grouse Record of Decision for Nevada and Land Management Plan Amendment (Forest Service 2015b).

Past, present, and RFFAs and conditions within the CEAA that have affected and will likely continue to affect lands, realty, and cadastral survey include climate change, energy and minerals development, vegetation management, recreation and visitor services, and lands and realty actions. There are approximately 1,169 acres of renewable energy RFFAs within the CEAA, which represents approximately 1.8 percent of the total CEAA. Future ROW applications could be submitted to the BLM in ROW avoidance areas; however, a project proposed in these areas may be subject to additional requirements, such as resource surveys and reports, standards for boundary evidence and other cadastral survey services, and construction and reclamation engineering in accordance with DOI and BLM policies and guidance, 600 Departmental Manual 5, and H-9600-1. Such requirements could restrict project location, delay availability of energy

supply (by delaying or restricting pipelines or transmission lines), or delay or restrict communications service's availability.

Land use impacts from reasonably foreseeable environmental trends and planned actions would include increased conversion of agricultural and grazing lands to other uses. Adverse cumulative impacts on existing land uses may result from construction of the GLNP, in addition to other planned infrastructure projects, including transmission lines, substations, solar farms, wind projects, and energy and mineral development. Renewable energy development would place a demand on the lands, realty, and cadastral survey program, both in the form of new site ROWs for generation facilities and in the form of power lines, roads, and other supporting infrastructure (e.g., Public Land Survey System in accordance with DOI and BLM policies and guidance, 600 Departmental Manual 5, and Handbook H-9600-1).

Proponents of RFFA projects would be expected to resolve and prevent land use conflicts through land surveys, landowner agreements, and permissions in accordance with DOI and BLM policies and guidance, 600 Departmental Manual 5, and Handbook H-9600-1. Therefore, adverse impacts on land use would be minimized. Existing and future federally owned lands, conservation areas, grazing allotments, and open space designations could limit development in certain areas where the RFFA projects are proposed. Adverse impacts on existing and future land use could be minimized by appropriate planning and evaluation to consider and address impacts and ensure that projects are compatible with ongoing activities and land uses in the CEAA.

Special Designations (National Historic Trails, Special Management Areas, Wild and Scenic Rivers, Wilderness, and Wilderness Study Areas)

Past, present, and RFFAs that could impact special designations within the CEAA would continue to occur under the No Action Alternative. However, the GLNP would not be constructed. Therefore, there would be no contribution by the GLNP to cumulative impacts on special designations within the CEAA.

The BLM manages two NHTs, two eligible WSR segments, and the Numu Newe SMA within the CEAA. Portions of wilderness areas and WSAs are within 5 miles of the GLNP. Adverse impacts on special designations may result from construction and O&M activities associated with the proposed project components, in addition to other planned infrastructure and resource development projects. These actions and activities could create temporary and permanent impacts on special designation areas through noise and visual disturbances. Work and staging areas could impact the scenic and visual qualities of special designations by introducing components not similar to common built features into the existing landscape. New transmission lines and access roads would reduce the historic integrity of less developed settings and increase visual impairment. Direct ground disturbances from work and staging areas would overlap the Pony Express NHT and the Numu Newe SMA, which would affect the historic, cultural, archaeological, natural, and educational resources associated with these areas. Impacts on the NHTs under the Other Resource Consideration Alternative would be less in magnitude, compared with the other action alternatives, due to fewer miles of the trails overlapping lands managed as open to ROW development.

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. Cumulative impacts on special designation areas during the construction and O&M phases of RFFAs would be on a case-by-case basis, based on the type of designation, the proximity of construction, and potential measures implemented to reduce these impacts. For example, access roads could be minimized if facilities were to share infrastructure, resulting in fewer disturbances near or within a specially designated area. Additionally, the special designation areas include specific management prescriptions, which include the avoidance or exclusion of some activities or uses (that is, ROW leases or grants) within their boundaries. As a result, cumulative impacts would occur where construction and O&M activities associated with past, present, and RFFAs, such as transmission lines, substations, solar farms, wind projects, and energy and mineral development would occur within the immediate foreground (0.5 miles) of the special designation areas. The proximity of these activities would attract attention, reduce the level of naturalness, and create cumulative visual impacts.

The effects resulting from the action alternatives would contribute to cumulative impacts on special designation areas. The combined past, present, and RFFAs would result in negligible cumulative impacts on special designation areas within the CEAA; this is because the respective agencies' management plans and policies would be adhered to prior to project approval.

Socioeconomics

Past, present, and RFFAs that have affected and will continue to affect socioeconomic resources within the CEAA include development projects, such as renewable energy, electric transmission, mining operations, transportation, commercial and residential development, and oil and gas projects, as well as projects and actions that impact livestock grazing, such as water and fencing developments and maintenance. These actions would be expected to continue to impact socioeconomic resources through changes in economic conditions, such as employment, labor income, economic output, and tax revenue, as well as nonmarket and social conditions, such as way of life, quality of life, social cohesion and sense of place, viewer enjoyment, and health and safety.

Appendix F lists RFFAs that could impact social and economic conditions. There are approximately 205,925 acres of renewable energy RFFAs within the CEAA, which represents approximately 1.3 percent of the total CEAA. These include development projects, such as transmission line developments and solar ROWs. These projects could support additional jobs and spending, which would increase labor income and economic output. There would likely be additional tax revenue from the purchases of land for these projects, which could support county and local governments and school districts. Depending on the construction time frames and durations, the additional workers in the area could strain the surrounding community services, such as fire, police, and emergency response services.

Some RFFAs may overlap in time, which could impact demands on temporary housing. This could result in a strain on the community to house the nonlocal workers, or it could put limits on seasonal tourism and recreation for visitors. Development of solar projects could impose restrictions on dispersed recreation, such as hunting, off-highway vehicle use, and hiking, due to the required fences around facilities. These restrictions could result in cumulative impacts on

nonmarket values associated with recreation. Cumulative impacts are anticipated to be greater during construction of the RFFAs due to the large workforce required during construction of transmission lines and renewable energy projects. The timing of these impacts is uncertain, so the cumulative impacts could vary. However, if projects are developed simultaneously, cumulative impacts could be large.

Additionally, changes in the communities' population throughout the CEAA, especially a sharp or sudden increase in population, could lead to cumulative impacts on economic and social conditions through reduced access or quality of public services and reduced quality of life, social cohesion, and sense of place.

No Action Alternative Contribution to Cumulative Impacts

Under the No Action Alternative, the GLNP would not be constructed, so current trends and conditions are likely to continue. The RFFAs could impact social and economic conditions, but there would be no contribution to cumulative impacts on social and economic conditions from the GLNP.

Action Alternatives Contribution to Cumulative Impacts

Any impacts from geotechnical investigations would be localized and short-term and would not measurably contribute to cumulative impacts. Under the action alternatives, the GLNP would be constructed and would likely result in cumulative impacts on social and economic conditions when combined with past, present, and RFFAs. The impacts from the GLNP on the socioeconomic resources would vary depending on many factors including the length of the transmission line segment and the number of ancillary facilities in a certain area/region as it relates to the number of construction workers necessary, and the length of time construction workers spend in an area. The magnitude of impact would likely be similar across the action alternatives, although there may be slight differences in impacts due to the differences in alignment or location of transmission line and structures, which could result in closer proximity to communities or residents. Cumulative impacts would be greatest during the construction and decommissioning phases due to the size of the workforce required for the GLNP combined with the development of the RFFAs.

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Chapter 4. Consultation and Coordination

4.1 Introduction

In addition to the planning, analysis, and review activities performed in preparation for this Final EIS/Proposed RMPA, the BLM and Forest Service are conducting consultation, coordination, and public participation efforts. These efforts began with public input workshops prior to the start of the official NEPA process, continued with public scoping after the start of the NEPA process, and will continue throughout the EIS/RMPA process. The purpose of the consultation and coordination program is to encourage interaction between the BLM and other federal, state, and local agencies; Native American tribes; and the public. The BLM's role is to inform the public about the project and solicit input to assist in analysis and decision-making. The BLM has made formal and informal efforts to involve, consult with, and coordinate with these entities to ensure the most appropriate data have been gathered and analyzed and to ensure agency policy and the public's sentiment and values are considered and incorporated.

4.2 Consultation and Coordination

Agencies and organizations that have jurisdiction or special expertise for the GLNP were contacted prior to scoping, at the start of scoping, during resource inventory, and before the publication of the 2024 Draft EIS/RMPA. This section describes the consultation and coordination activities with tribes, agencies, stakeholders, and the public that occurred throughout the EIS process, including the scoping process and public review of the 2024 Draft EIS/RMPA.

4.2.1 Government-to-Government Consultation

The US has an important legal relationship with Native American tribes, as established by the US Constitution, treaties, executive orders, federal statutes, and federal and tribal policies. As sovereign nations, Native American tribes are conferred with legal rights and benefits with respect to their relationship with the US government. This relationship is founded on the US government's trust responsibilities to safeguard tribal sovereignty and self-determination, as well as tribal lands, assets, and resources reserved by treaty and other federally recognized rights.

Federal agencies are required by statute, regulation, and policy to consult with Native American tribes on a government-to-government basis on federal actions or undertakings that may affect trust assets and other resources, including cultural and natural resources of concern to tribes. Government-to-government consultation involves the process of seeking, discussing, and considering tribes' views on policies, undertakings, and decisions. For the proposed GLNP, the BLM and Forest Service have consulted with the tribes through letters, telephone calls, email contact, and a virtual meeting.

In May 2021, the BLM formally initiated consultation with Native American tribes that previously expressed claims to cultural affiliation with the GLNP area to inform them of the project and to inquire about their interest in continuing government-to-government consultation. The BLM continued consultation on March 12, 2022, and September 30, 2022, via letters notifying the tribes of the GLNP and inviting them to participate in the NEPA process as

cooperating agencies and to be consulting parties to the Section 106 process. The government-to-government consultation process will continue throughout the NEPA analysis.

To date, two formal government-to-government meetings regarding this project have taken place. One was a virtual meeting with BLM Nevada State Director Jon K. Raby and Regional Forester Lance Brown, conducted on July 16, 2024, with representatives from seven tribes. The BLM State Director also attended a government-to-government meeting with the Fallon Paiute-Shoshone Tribe that addressed the GLNP, among other topics of interest to the tribe. The BLM will continue to consult and coordinate with the tribes listed in Table 4-1 and any additional Native American tribes who request government-to-government consultation for the GLNP.

Both the BLM and Forest Service remain open to additional government-to-government meetings prior to signing of the RODs and BLM Approved RMPA. Individual government-to-government consultation will take place at the request of tribal governments. See Table 4-1 for a list of tribes and the representatives invited to consult on the project.

Table 4-1. Invited Tribes and Representatives

Tribe	Representative(s)
Confederated Tribes of the Goshute Reservation	Rupert Steele
Duckwater Shoshone Tribe	Warren Graham
Ely Shoshone Tribe of Nevada	Diane Buckner
Fallon Paiute-Shoshone Tribe	Cathi Tuni
Fort McDermitt Paiute and Shoshone Tribe	Maxine Redstar
Lovelock Paiute Tribe	Debbie George
Moapa Band of Paiute Indians	Laura Parry Darren Daboda
Pahrump Paiute Tribe	Richard Arnold
Pyramid Lake Paiute Tribe	Janet Davis Betty Aleck
Reno-Sparks Indian Colony	Arlan Melendez
Shoshone-Bannock Tribes	Devon Boyer
Shoshone-Paiute Tribes of Duck Valley	Brian Thomas
Summit Lake Paiute Tribe	Randi Lone Eagle
Susanville Indian Rancheria	Arian Hart Joe Strang
Te-Moak Tribe, Battle Mountain Band	Not provided
Te-Moak Tribe, Elko Band	Not provided
Te-Moak Tribe, South Fork Band	Not provided
Te-Moak Tribe, Wells Band	Not provided
Te-Moak Tribe of Western Shoshone	Not provided
Timbisha Shoshone Tribe	Jimmy John Thompson Barbara Durham
Walker River Paiute Tribe	Amber Torres
Washoe Tribe of Nevada and California	Serrell Smokey Darrel Cruz
Winnemucca Indian Colony	Judy Rojo
Yerington Paiute Tribe	Ginny Hatch
Yomba Shoshone Tribe	Ginny Hatch

4.2.2 Other Tribal Coordination

As part of the BLM's effort to incorporate tribal perspectives and knowledge in the analysis, and to include tribes early in the decision-making process, the BLM also coordinated with tribal monitors for the archaeological fieldwork and facilitated field visits to archaeological sites with tribes. Tribes that have participated in field surveys include the Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Walker River Paiute Tribe, Fallon Paiute-Shoshone Tribe, and Pyramid Lake Paiute Tribe. Federally recognized tribes can request to participate at any stage of the process, including tribes that did not receive formal notification and an invitation to participate.

Tribal representatives received email invitations to the virtual cooperating agency meetings and were notified of the opportunity to review and comment on the Draft EIS/RMPA during the public comment period. The dates of cooperating agency meetings hosted by the BLM are listed in Section 4.2.5, Cooperating Agencies, below.

4.2.3 Section 106 Consultation

The BLM is required to prepare the EIS/RMPA in coordination with studies or analyses required by the NHPA, as amended (54 USC 300101 et seq.). In accordance with Section 106 (54 USC 306108) of the NHPA, federal agencies are required to consider the effects of the agencies' undertakings on historic properties listed on, or eligible for listing on, the NRHP. The regulations also specify the need for meaningful consultation with SHPOs, THPOs, Native American tribes, and other interested parties during all phases of Section 106 compliance. Pursuant to 36 CFR 800, and as the lead federal agency for the undertaking (36 CFR 800.2(a)(2)), the BLM initiated Section 106 consultation. On February 8, 2023, the BLM sent the Nevada SHPO, the ACHP, and Native American tribes initial notification of the BLM's intent to use the substitution process to comply with Section 106 for the GLNP, pursuant to the regulations at 36 CFR 800.8(c). Additional details about the Section 106 consultation and NEPA substitution processes can be found in Section 3.8, Cultural Resources, and Section 1.6.1, NEPA Substitution.

Along with the publication of NEPA draft and final documents, the Nevada SHPO, the ACHP, and tribes in Table 4-1 were provided draft copies of the Class I and III Cultural Resource Inventory reports, as well as the draft HPTP, to consult on these documents. Through correspondence requesting consultation on the Class I report (provided to consulting parties on September 24, 2024), the Class III report (provided on January 28, 2025), the HPTP (provided on February 11, 2025), and an NHPA Section 106 consultation meeting held by the BLM on March 12, 2025, the identified consulting parties were given the opportunity to contribute to and comment on preliminary APEs, the identification effort, resource eligibility, effects on historic properties, and mitigation of adverse effects until April 28, 2025. The Nevada SHPO met with the BLM on April 23, 2025, and confirmed that the SHPO would not be providing comment on eligibility or effect.

Because the BLM and Forest Service cannot determine the significance of certain resources without consulting with knowledgeable tribal representatives, the agencies have incorporated and will continue to consult with tribes throughout the Section 106 and NEPA processes.

The BLM has conducted and will continue to conduct field visits to sites and areas at the request of tribes, and for resources for which the BLM requires tribal assistance to evaluate. Additional Section 106 consultation will continue to take place with individual consulting parties if the need is identified.

4.2.4 USFWS Consultation

Consultation with the USFWS is required under Section 7(c) of the ESA of 1973 (16 USC 1531–1544) before a federal agency begins a project that may affect federally listed threatened or endangered species or their critical habitat. The BLM submitted a biological assessment to the USFWS on October 24, 2024. Pursuant to ESA Section 7, the BLM requested informal consultation with the USFWS and sought the USFWS's concurrence with the determination that the project may affect, but is not likely to adversely affect, the Lahontan cutthroat trout and western yellow-billed cuckoo. The BLM also requested concurrence with its determination that the project would not affect the Dixie Valley toad or critical habitat for the western yellow-billed cuckoo. On December 19, 2024, the USFWS concurred that GLNP construction and O&M may affect, but are not likely to adversely affect, the Lahontan cutthroat trout and western yellow-billed cuckoo (USFWS File No. 2025-0020510; USFWS 2024).

4.2.5 Cooperating Agencies

As stated in Chapter 1, the BLM is the lead federal agency responsible for the preparation of the EIS/RMPA under NEPA. The BLM has decision-making authority to permit construction on affected BLM-administered lands. The BLM has contacted key federal, state, county, and local agencies, as well as Native American tribes, to initiate coordination throughout the NEPA process as cooperating agencies. Cooperating agency means any federal agency, other than a lead agency, which has jurisdiction by law or special expertise with respect to any environmental impact. A cooperating agency also can be a state or local agency of similar qualifications. When the effects are on a reservation, an Indian tribe may, by agreement with the lead agency, become a cooperating agency (BLM 2012).

For the 17 agencies that participated in the GLNP as cooperating agencies and 7 tribes that participated as consulting parties, as defined under 36 CFR 800.2(c) (see Table 1-2 in Chapter 1), the BLM hosted virtual cooperating agency meetings on the following dates to solicit baseline data:

- June 16, 2022
- August 18, 2022
- September 15, 2022
- October 20, 2022
- November 17, 2022
- April 20, 2023
- September 21, 2023
- November 16, 2023
- February 15, 2024
- May 16, 2024

- June 5, 2024
- June 14, 2024
- July 7, 2024
- July 9, 2024
- August 22, 2024
- November 14, 2024
- January 30, 2025
- May 22, 2025

In addition to the project cooperating agency meetings, the BLM invited federal and state wildlife agencies to attend monthly project calls to coordinate biological survey protocols and requirements.

4.3 Public Involvement

As stated in Chapter 1, the BLM coordinated with the public throughout the project, including hosting pre-scoping and public scoping meetings. Publication of the NOI on May 26, 2023, officially started the NEPA process, which gave the public 45 days to comment on the project. The BLM published a second NOI on March 11, 2024, to address the potential BLM plan amendments; the NOI gave the public 30 days to comment on the project. The BLM published the Notice of Availability for the Draft EIS/RMPA on September 10, 2024; the Notice of Availability gave the public 90 days to comment on the project. Substantive comments received during the 2024 Draft EIS/RMPA review period and the BLM's responses to the substantive comments are provided in Appendix C.

4.4 Preparers and Contributors

The BLM NVSO, with support of a contracting team, developed this Final EIS/Proposed RMPA in compliance with NEPA (see Table 4-2 through Table 4-4, below). Tribal governments and cooperating agencies also contributed to the development of the EIS/RMPA (see Chapter 1).

Table 4-2. BLM

Name	Role/Responsibility
Management Team	
Jon Raby	Nevada State Director
Greg Helseth	Branch Chief Renewable Energy Division of Energy and Minerals
Brian Buttazoni	NVSO Project Manager
Tim Van der Voort	NVSO Archaeologist
Jim Priest	NVSO Biologist
Interdisciplinary Team	
Tim Bowden	Biologist
Matt Fockler	Socioeconomic Specialist
Christine McCollum	Archaeologist
Andrew Monastero	Archaeologist
Elizabeth Nash	Archaeologist

Name	Role/Responsibility
Nate Rasner	Land Law Examiner
Elizabeth Seymour	Archaeologist

Table 4-3. Forest Service

Name	Role/Responsibility
Management Team	
Marnie Bonesteel	Project Manager
Lance Brown	District Ranger, Austin-Tonopah Ranger District
Conni DeMasi	District NEPA Planner
Jon M. Stansfield	Forest Supervisor
Jim Winfrey	Forest NEPA Planner (retired)
Interdisciplinary Team	
Carrie Adams	Water Rights Specialist
Kris Boatner	Biologist
Patrick Browning	Realty Specialist
Anthony Bush	Wildlife Biologist
Megan Carter	Climate Change and Greenhouse Gas Emissions Specialist
Anne Dixon	Rangeland Program Manager
Teresa Dixon	Heritage Program Manager
Shannon Gallagher	Archaeologist
Carolyn Helm	Geologist (retired)
Melissa Navis	Tribal Liaison
Dirk Netz	Botanist
William Panagopoulos	Fire Management Officer
Doug Powell	Geologist (retired)
Kayla Smith	Fisheries/Aquatics Specialist
Joseph Vorderbruggen	Hydrology and Soils Specialist

Table 4-4. AECOM (Formerly Environmental Management and Planning Solutions)

Name	Role/Responsibility
Management Team	
Holly Prohaska	Project Manager and Wild Horses and Burros Lead
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Sean Cottle	Special Designations Lead
Noelle Crowley	Recreation Lead
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Sarah Flaherty	Field Biologist
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Name	Role/Responsibility
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Erin Hudson	Archaeological Resources Lead; Tribal Interests
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Perry Lown	Archaeologist and Subcontractor Liaison
Cortney Luxford	Geology and Mineral Materials
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Eddie Sanchez	Livestock Grazing
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Bryan Larson (JRP)	Historian
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Chapter 6. Glossary

Alluvium—General term for sediments of gravel, sand, silt, clay, or other particulate rock material deposited by flowing water, usually in the beds of rivers and streams, on a floodplain, on a delta, or at the base of a mountain.

Analysis area—The area analyzed for impacts on resources and resource uses. The analysis area encompasses lands within the GLNP area.

Aquifer—A geological formation, group of formations, or part of a formation that contains sufficient saturated, permeable material to yield significant quantities of water to springs and wells.

Authorized/authorized use—Typically, a commercial activity, facility placement, or event occurring on public lands that is either explicitly or implicitly recognized and legalized by law or regulation. This term may refer to those activities occurring on public lands for which the BLM or other appropriate authority has issued a formal authorization document. These formally authorized uses are often spatially or temporally limited, unless constrained or bounded by statute, regulation, or an approved land use plan decision.

Basin and Range physiography—A region characterized by a series of generally north-trending mountain ranges separated by alluvial valleys.

Climate change—Any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer). Climate change may result from the following:

- Natural factors, such as changes in the sun's intensity or slow changes in the earth's orbit around the sun
- Natural processes in the climate system, such as changes in ocean circulation
- Human activities that change the atmosphere's composition, such as driving motor vehicles, and the land surface, such as deforestation, reforestation, urbanization, and desertification.

Contamination—Degradation of water quality compared with original or natural conditions due to human activity.

Corona—Noise produced by electrical ionization of the air near the surface of energized conductor and suspension hardware.

Cumulative effects—The effects of a proposed project alternative's incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action.

Downgradient—The position down along a gradient from a starting position, or location that receives water from another location, similar to downstream.

Ephemeral stream—A stream or part of a stream that flows only in direct response to precipitation; it receives little or no water from springs, melting snow, or other sources; its channel is at all times above the water table.

Erosion—The process whereby materials of the earth's crust or soils are loosened, dissolved, or worn away and simultaneously moved from one place to another.

Evapotranspiration—The process by which water is discharged to the atmosphere as a result of evaporation from the soil and surface waterbodies, and transpiration by plants.

Floodplain—A strip of relatively flat land bordering a stream channel that is inundated at times of high water.

Groundwater—In the broadest sense, all subsurface water; more commonly that part of the subsurface water in the saturated zone.

Historic properties—Cultural resources determined to be eligible for listing on the National Register of Historic Places.

Incompatible vegetation—Plants under, above, and near power lines that could disrupt the safe, reliable, and continuous delivery of electricity.

Indigenous knowledge (IK)—As defined in the current Department of the Interior Manual, IK is a body of observations, oral and written knowledge, innovations, technologies, practices, and beliefs developed by Indigenous peoples through interaction and experience with the environment (DOI 2023). This may include the "special expertise" of Indigenous peoples recognized in relation to cultural resources under federal regulations at 36 CFR 800.4 (ACHP 2021).

Indigenous peoples—People of Native American descent or any others whose ancestors have occupied what is now known as the United States and its territories since time immemorial, including members of tribal nations (DOI 2023).

Intermittent stream—A stream that flows only when it receives water from rainfall runoff or springs, or from some surface source such as melting snow.

National Wild and Scenic River System—A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geological, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams: (1) recreation—rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundments or diversion in the past; (2) scenic—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads; and (3) wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

Naturalness—Closely resembling unaltered land. Lands and resources exhibit a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable. The BLM has authority to inventory, assess, and monitor the attributes of the lands and resources on BLM-administered lands, which, taken together, are an indication of an area's naturalness. These attributes may include the presence or absence of roads and trails, fences, and other improvements; the nature; and the extent of landscape modifications.

Nonpoint source—A source (of any water-carried material) from a broad area, rather than from discrete points.

Nonpoint source contaminant—A substance that pollutes or degrades water that comes from lawn or cropland runoff, the atmosphere, roadways, and other diffuse sources.

Outstandingly remarkable values—Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act; these are scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values. Other similar values that may be considered include ecological, biological or botanical, paleontological, hydrological, scientific, or research values (from BLM Manual 8351, BLM Wild and Scenic Rivers Policy and Program).

Perennial stream—A stream that normally has water in its channel at all times.

Point source—Originating at any discrete source.

Point source contaminant—Any substance that degrades water quality and originates from discrete locations such as discharge pipes, drainage ditches, wells, concentrated livestock operations, or floating craft.

Primitive and unconfined recreation—Types of recreation when the sights, sounds, and evidence of other people are rare or infrequent; where the use of the area is through nonmotorized, nonmechanical means; and where no or minimal developed recreation facilities are encountered (from BLM Instruction Memorandum 2003-275, Change 1, Considerations of Wilderness Characteristics in Land Use Plans, Attachment 1).

Public Land Survey System—The system to survey, mark, and identify federal interest lands related to the administration of laws that have been passed by Congress concerning their orderly settlement and management.

Recharge (groundwater)—The process involved in the absorption and addition of water to the zone of saturation; also, the amount of water added.

Redundancy—Having multiple channels or backup systems in place to ensure continuous operation even if one component fails. Where the loss of a single path or component does not disrupt the overall functionality of the system.

Reliability—The ability of a power system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components.

Resiliency—The optimizing and future proofing capital investment strategy, with technology that harnesses "what if" scenario planning, and predictive analytics to facilitate strategic decision-making (such as using steel poles for fire protection and/or public safety outage management programs during extreme fire danger).

Right-of-way (ROW)—BLM-administered lands authorized to be used or occupied for the construction, operation, maintenance, and termination of a project, pursuant to a ROW authorization. Examples are roads, pipelines, power lines, and fiber-optic lines.

Right-of-way avoidance area—An area identified through resource management planning to be avoided but may be available for ROW location with special stipulations.

Right-of-way exclusion area—An area identified through resource management planning that is not available for ROW location under any conditions.

Riparian buffer—A 300-foot distance extending from the outer edge of the riparian zone to the uplands.

Riparian zone—A transition area from the aquatic zone (wetter) to the upland zone (drier) composed of hydrophilic vegetation supported by the presence of surface or subsurface water.

Riverine wetlands—Wetlands within river and stream channels; the ocean-derived salinity is less than 0.5 part per thousand.

Scour—Erosion by flowing water and sediment on a stream channel; results in removal of mud, silt, and sand on the outside curve of a stream bend and the bed material of a stream channel.

Soil moisture regime—Taxonomic classification based on NRCS-defined climate regions and the degree of water saturation.

Soil temperature regime—Taxonomic classification based on the mean annual soil temperature.

Solitude—When the sights, sounds, and evidence of other people are rare or infrequent; where visitors can be isolated, alone, or secluded from others; where the use of the area is through nonmotorized, nonmechanical means; and where no or minimal developed recreation facilities are encountered (from BLM Instruction Memorandum 2003-275, Change 1, Considerations of Wilderness Characteristics in Land Use Plans, Attachment 1).

Standards for boundary evidence (SBE)— The standards identify two modes of boundary evidence. The primary source is a land survey executed by skilled and trained professional surveyors. The standards concentrate on the secondary mode of boundary evidence. The standards include: (1) a land description review/chain of surveys review, and (2) a physical inspection of the land, including inquiries as to possible unrecorded possessory and other off-record interests. SBE certificates are the following: (1) Land Survey Services Request, (2) Land Surveyor Report, (3) Certificate of Inspection and Possession, and (4) Boundary Assurance Certificate. Execution of the SBE process is intended to identify defects in the boundary evidence and provide guidance to managers, so they can manage the risks associated with significant transactions or projects.

Substitution—A mechanism outlined in 36 CFR 800.8 that allows federal agency officials to use the process and documentation required for the preparation of an EA/finding of no significant impact or an EIS/ROD to comply with Section 106 of the NHPA instead of an additional, more traditional process.

Surface runoff—Runoff that travels over the land surface to the nearest stream channel.

Surface water—An open body of water such as a lake, river, or stream.

Upgradient—Of or pertaining to the place(s) from which groundwater originated or traveled through before reaching a given point in an aquifer.

Utility corridor—Tract of land varying in width and forming a passageway through which various commodities, such as oil, gas, and electricity, are transported.

Water quality standards—State-adopted and US Environmental Protection Agency-approved ambient standards for waterbodies. Standards include the use of the waterbody and the water quality criteria that must be met to protect the designated use or uses.

Water rights—Legal rights to the use of water.

Wetlands—Ecosystems where the soil is saturated for long periods seasonally or continuously, including marshes, swamps, and ephemeral ponds.

Wild and Scenic River (WSR)—See *National Wild and Scenic River System*.

Wilderness characteristics—Features of the land associated with the concept of wilderness that specifically deal with naturalness and opportunities for solitude and primitive unconfined recreation.

Wilderness study area (WSA)—An area that has been inventoried and found to have wilderness characteristics, as described in Section 603 of the Federal Land Policy and Management Act and Section 2(c) of the Wilderness Act of 1964. These areas are under study for possible inclusion as a wilderness area in the National Wilderness Preservation System.

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