United States Department of the Interior

Bureau of Land Management

Analysis of the Management Situation

Section 368 Energy Corridor Revisions RMPA/EIS

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BLM

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Abbreviations and Acronyms

%g	percent of gravity
ac	acre(s)
ACEC	area of critical environmental concern
AIRFA	American Indian Religious Freedom Act
AMS	analysis of the management situation
AML	appropriate management level
APE	Area of Potential Effect
AQRV	air quality related values
AUM	animal unit month
BLM	Bureau of Land Management
BMP	best management practice
BP	uncalibrated years before present (defined as AD 1950)
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CBR	Central Basin and Range
CDCA	California Desert Conservation Area
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CHRIS	California Historic Resources Information System
cm	centimeter(s)
CMA	Conservation and Management Action
CO	carbon monoxide
CO_2	carbon dioxide
CNEL	community noise equivalent level
COC	corridor of concern
CRMA	Cultural Resource Management Area
CWA	Clean Water Act
Db	decibel(s)
dBA	A-weighted decibel(s)
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of Interior
DNL	day-night average sound level (or Ldn)
DRECP	Desert Renewable Energy Conservation Plan
EIS	environmental impact statement
EO	Executive Order

EPA	Environmental Protection Agency
EPAct	Energy Policy Act of 2005
ERMA	extensive recreation management area
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FERC	Federal Energy Regulatory Commission
FICUN	Federal Interagency Committee on Urban Noise
FLPMA	Federal Land Policy and Management Act
FO	field office
Forest Service	U.S. Department of Agriculture Forest Service
ft	foot/feet (measurement)
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gas
GHMA	general habitat management area
GIS	geographical information system
GRSG	Greater Sage-Grouse
H_2S	hydrogen sulfide
HA	herd area
HMA	herd management area
HQ	headquarters
IBA	Important Bird Area
IDT	interdisciplinary team
IM	instruction memorandum
in	inch(es)
IOP	interagency operating procedure
IPCC	Intergovernmental Panel on Climate Change
km	kilometer(s)
kV	kilovolt
Ldn	day-night average sound level (or DNL)
Leq	equivalent continuous sound level
LUP	land use plan
LUPA	land use plan amendment
$\mu g/m^3$	microgram per cubic meter
m	meter(s)
m/s	meters per second
MBR	Mojave Basin and Range
MBTA	Migratory Bird Treaty Act
MFP	management framework plan
mi	mile(s)

MOA	military operations area
MOU	memorandum of understanding
MP	milepost
mph	miles per hour
MTR	military training route
MTR-IR	military training route—instrument flight rules
MTR-VR	military training route—visual flight rules
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAGRPA	Native American Graves Protection and Repatriation Act
NAWMP	North American Waterfowl Management Plan
NCA	National Conservation Area
NCEI	National Centers for Environmental Information
NCL	National Conservation Lands
NDEP	Nevada Department of Environmental Protection
NECO	Northern and Eastern Colorado Desert
NEMO	Northern and Eastern Mojave
NEPA	National Environmental Policy Act
NGB	Northern Great Basin
NHPA	National Historic Preservation Act
NHT	National Historic Trail
NLCS	National Landscape Conservation System
NO_2	nitrogen dioxide
NOx	nitrogen oxide
NOI	Notice of Intent
NRHP	National Register of Historic Places
NSA	National Scenic Area
NST	National Scenic Trail
NTSA	National Trails System Act
O_3	ozone
OHV	off-highway vehicle
Pb	lead
PEIS	programmatic environmental impact statement
PFYC	Potential Fossil Yield Classification System
PGA	peak ground acceleration
PHMA	priority habitat management area
PM	particulate matter or presidential memorandum
PRIA	Public Rangelands Improvement Act
RCP	representative concentration pathway
RMP	resource management plan
RMPA	resource management plan amendment(s)
ROD	record of decision

ROI	region of influence
ROW	right-of-way
SAAQS	State Ambient Air Quality Standards
SCMA	Special Cultural Resource Management Area
SEZ	solar energy zone
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
SRMA	special recreation management area
SUA	special use authorization
TCP	traditional cultural property
U.S.	United States
VOC	volatile organic compound
VRI	visual resource inventory
VRM	visual resource management
WDEQ	Wyoming Department of Environmental Quality
W/m^2	watts per square meter
WSA	wilderness study area
WSR	wild and scenic river
WWEC	West-wide Energy Corridor

1 Introduction

The United States Department of the Interior, Bureau of Land Management (BLM) Headquarters Office has initiated a planning effort to prepare resource management plan amendments (RMPAs) for 19 land use plans to make land designation changes to seven existing Section 368 energy corridors across seven western states. The RMPAs will be supported by National Environmental Policy Act (NEPA) analysis in an environmental impact statement (EIS).

In April 2022, the BLM published the Section 368 Energy Corridors Regional Review Final Report (BLM 2022) that summarizes the results of regional reviews and describes recommended changes to Section 368 energy corridors[1] (see Section 2.1). Rather than considering planning amendments for all of the corridor recommendations identified in the Final Report, this planning effort prioritizes recommendations for corridors where changes to the corridors require interstate coordination and national-level planning to be implemented efficiently and effectively. If approved, these RMPAs will provide overarching objectives and management guidance for the revised land use designations across the 19 land use plans. The BLM will consider the impacts of the RMPAs on the greater landscape, but the decisions made through the planning effort would only apply to lands and activities administered by the BLM.

The planning effort will consider amending existing allocations, designations, and management direction to ensure changes to the seven Section 368 energy corridors do not result in conflicting decisions for the current and future management within these corridors. The Notice of Intent [NOI] to Amend Resource Management Plans for Section 368 Energy Corridor Revisions and Prepare an Associated EIS was published in the Federal Register on December 1, 2023 (88 FR 83960).

1.1 Purpose of the Analysis of the Management Situation and Planning Criteria

This analysis of the management situation (AMS) provides the foundation for the RMPA/EIS by presenting existing conditions and current management practices, as well as resource trends and forecasts within the decision area.[2] The AMS provides a brief description of the resource conditions within both the decision area and planning area and how these resources are currently being managed. The AMS also provides the basis for formulating reasonable alternatives and analysis of the environmental impacts of these alternatives, as required by NEPA. In general, the data included in this document are current as of October 2022, although some information has been updated to reflect data as recent as Fall 2023. The data are preliminary and will be updated or revised, as appropriate, in the draft RMPA/EIS. Through the publication of this AMS, the BLM is soliciting comments on data presented in the area profiles and the preliminary

[1] This document uses the terms West-wide Energy Corridors and Section 368 Energy Corridors interchangeably.

[2] BLM H-1601-1 Land Use Planning Handbook, Appendix F, page 6.

alternatives. The BLM is not soliciting comments on the purpose and need nor on Section 368 energy corridors not listed in this document.

Planning criteria were published by the BLM in the Notice of Intent (NOI) and will be used in the development of the RMPA/EIS to assess and analyze RMP amendments. The planning criteria lay the groundwork to guide effects analysis by identifying issues and their analytical frameworks. Additionally, planning criteria help ensure that the EIS process is consistent with applicable law, regulation, and policy, and provide the opportunity to describe the framework the BLM will use to analyze issues in the NEPA document. The planning criteria can be found on the Section 368 Energy Corridors Regional Review Revisions ePlanning website.

1.2 Planning Process and Schedule

The BLM planning process, explained in 43 CFR Part 1600 and the BLM Land Use Planning Handbook (H-1601-1), falls within the framework of the NEPA environmental analysis and decision-making process described in the Council on Environmental Quality (CEQ) regulations of 40 CFR Part 1500, the U.S. Department of the Interior (DOI) NEPA Departmental Manual (516 DM 1-7) and 43 CFR Part 46, and the BLM NEPA Handbook (H-1790-1). Table 1-1 shows an initial schedule of milestones of the NEPA planning process, starting with the publication of the NOI in the Federal Register.

Table 1-1. Milestone Schedule

Milestone	Tentative Date
Publication of the NOI in the Federal Register	Late 2023
Publication of the AMS on ePlanning	Late 2023
Public Scoping and Alternatives Development	Winter/Spring 2024
Cooperating Agency Coordination and Development of Draft RMPA/EIS	Spring 2024 – Fall 2024
Publication of Draft RMPA/EIS and Public Comment Period	Late 2024
Publication of Proposed RMPA/Final EIS	Summer 2025
Protest and Protest Resolution Period and concurrent Governors' Consistency Review	Fall 2025
Approved RMPAs (if approved) and Record of Decision	Fall/Winter 2025

2 Planning Area and Existing Management

2.1 Background Information on Section 368 Energy Corridors

Section 368 of the Energy Policy Act of 2005 (EPAct) directed the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate energy corridors on federal land in 11 Western States as preferred locations for development of oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities. The BLM and USDA Forest Service (Forest Service) prepared the West-wide Energy Corridor Programmatic Environmental Impact Statement (WWEC PEIS). Each agency signed a record of decision (ROD) in 2009, amending 92 BLM land use plans and designating approximately 5,000 miles of Section 368 energy corridors on BLM-administered lands and approximately 1,000 miles of Section 368 energy corridors on Forest Service-administered lands (BLM and Forest Service 2008, BLM 2009, Forest Service 2009). The designation of energy transport corridors in land and resource management plans identified the preferred locations for development of energy transport projects on lands administered by the Forest Service and BLM.

On July 7, 2009, several plaintiffs filed a lawsuit against the BLM, Forest Service, and Department of Energy (DOE) in United States District Court alleging that the WWEC PEIS and RODs violated the EPAct, NEPA, the Endangered Species Act (ESA), the Federal Land Policy and Management Act (FLPMA), and the Administrative Procedure Act. On July 3, 2012, the BLM, DOE, and Forest Service entered into a Settlement Agreement with the plaintiffs that established that the agencies would conduct a regional review of the Section 368 energy corridors (U.S. District Court, 2012). The regional review required the Agencies to evaluate the Section 368 energy corridors using new relevant information and public input and considering four siting principles identified in the Settlement Agreement.[3] The Section 368 Energy Corridors Regional Review Final Report was published in April 2022 and identifies potential revisions, deletions, and additions to the Section 368 energy corridors, providing recommendations for the Agencies to consider in future land use planning. The regional review did not change the designation of Section 368 energy corridors; an RMPA is required to modify an energy corridor. Typically, a plan amendment requires analysis and review under NEPA. The Section 368 energy corridors are managed under the applicable RMP(s). Although some corridors have been changed through land use plan amendments, the locations of the seven

[3] Siting principles include: 1) corridors are thoughtfully sited to provide maximum utility and minimum impact to the environment; 2) corridors promote efficient use of landscape for necessary development; 3) appropriate and acceptable uses are defined for specific corridors; and 4) corridors provide connectivity to renewable energy generation to the maximum extent possible, while also considering other generation, in order to balance the renewable sources and to ensure the safety and reliability of electricity transmission.

designated energy corridors included in this planning effort have not been changed since the 2009 WWEC PEIS RODs and ARMPAs.[4]

2.2 Planning Area and Decision Area

There are approximately 700 miles of Section 368 energy corridors considered in this planning effort; two of these corridors (spanning 241 miles) were identified as "corridors of concern" in the Settlement Agreement. The planning area for the seven corridors under review for this planning effort includes 22 field offices across seven states managed under nineteen land use plans. The term 'planning area' refers to the broader areas including and surrounding the seven corridors, which provide context for the potential decisions and which the plan decisions may directly or indirectly effect. The planning area could include other federal land, state land, and private land near the corridors.

The decision area is exclusive to BLM-administered lands where the BLM is considering a change to one of the seven corridors evaluated in this planning effort. In Chapter 6, the decision area is defined as the designated corridor(s) and the change(s) recommended in the regional review (preliminary action alternative). For the RMPA/EIS, the decision area could include additional BLM lands if other action alternatives are brought forward during the NEPA process. The seven Section 368 energy corridors considered in this planning effort are listed below and shown in Figure 2-1.

- Corridor 16-104 (California, Nevada)
- Corridor 18-23 (California, Nevada)
- Corridor 27-41 (California, Nevada)
- Corridor 30-52 (Arizona, California)
- Corridor 81-213 (Arizona, New Mexico)
- Corridor 113-114 (Nevada, Utah)
- Corridor 138-143/Wamsutter-Powder Rim Corridor Addition (Colorado, Wyoming)

Figures 2-2 through 2-8 depict the planning areas surrounding each energy corridor considered in this planning effort as well as the decision areas (shown in blue).

[4] A corridor, portions of a corridor, or a management decision for a corridor such as Visual Resource Management Class, corridor width, or allowable uses in a corridor can be changed by RMPAs. For example, the 2015 Sage-grouse EIS changed portions of four corridors and the Dominguez-Escalante NCA ARMP and Beaver Dam Wash NCA ARMP removed portions of 2 corridors. None of these changes affected the corridors that will be evaluated in this EIS effort.

Figure 2-1. Section 368 Energy Corridors to be Considered during RMPA/EIS Planning Effort (potential revision areas shown in red)

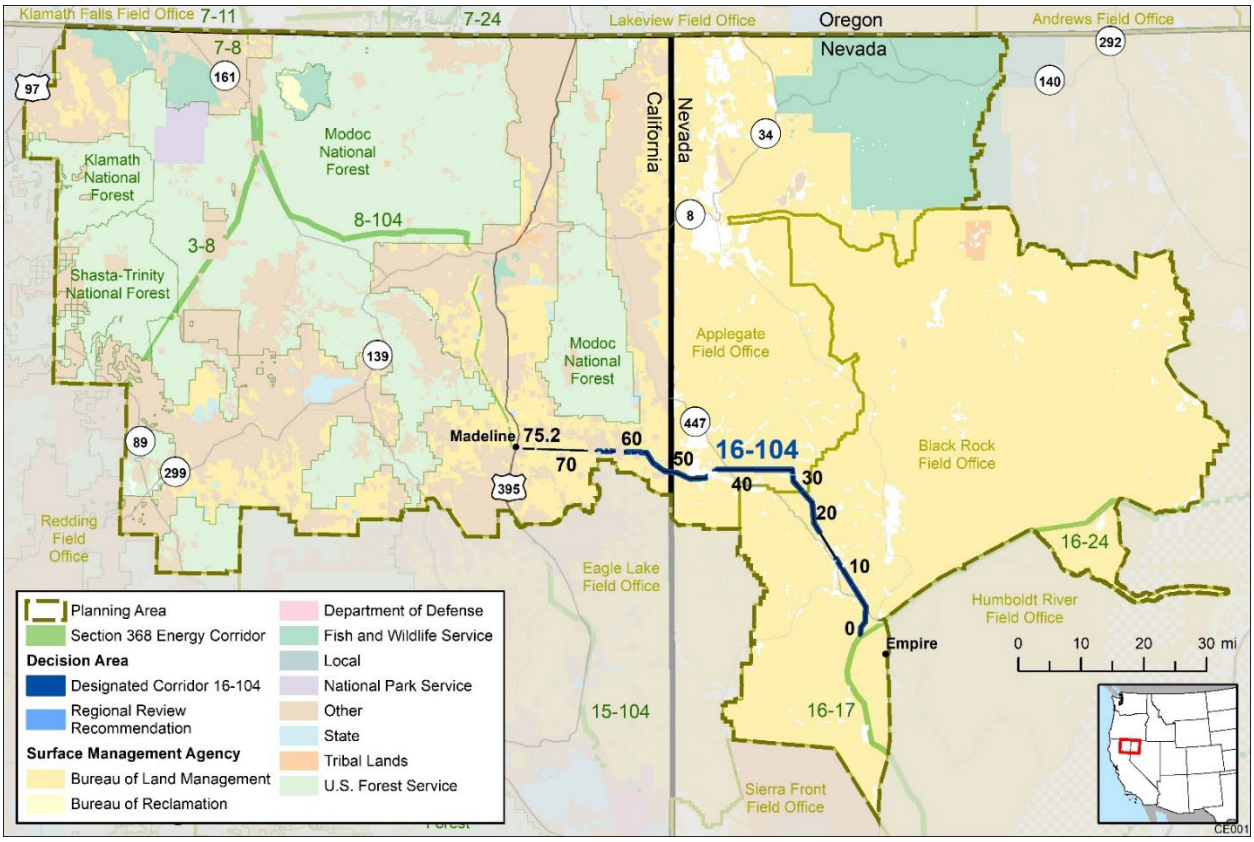

Figure 2-2. Corridor 16-104 Planning Area

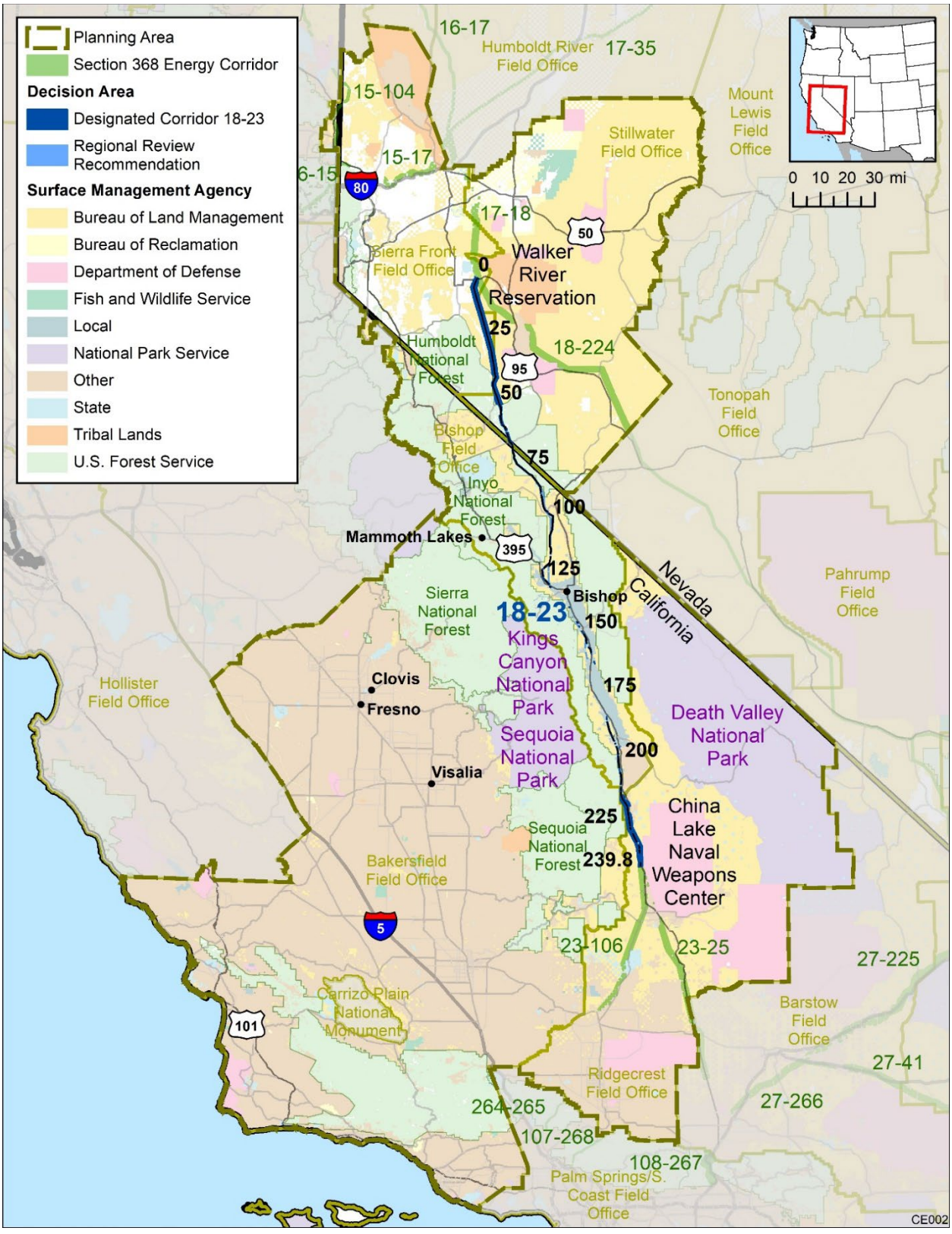

Figure 2-3. Corridor 18-23 Planning Area

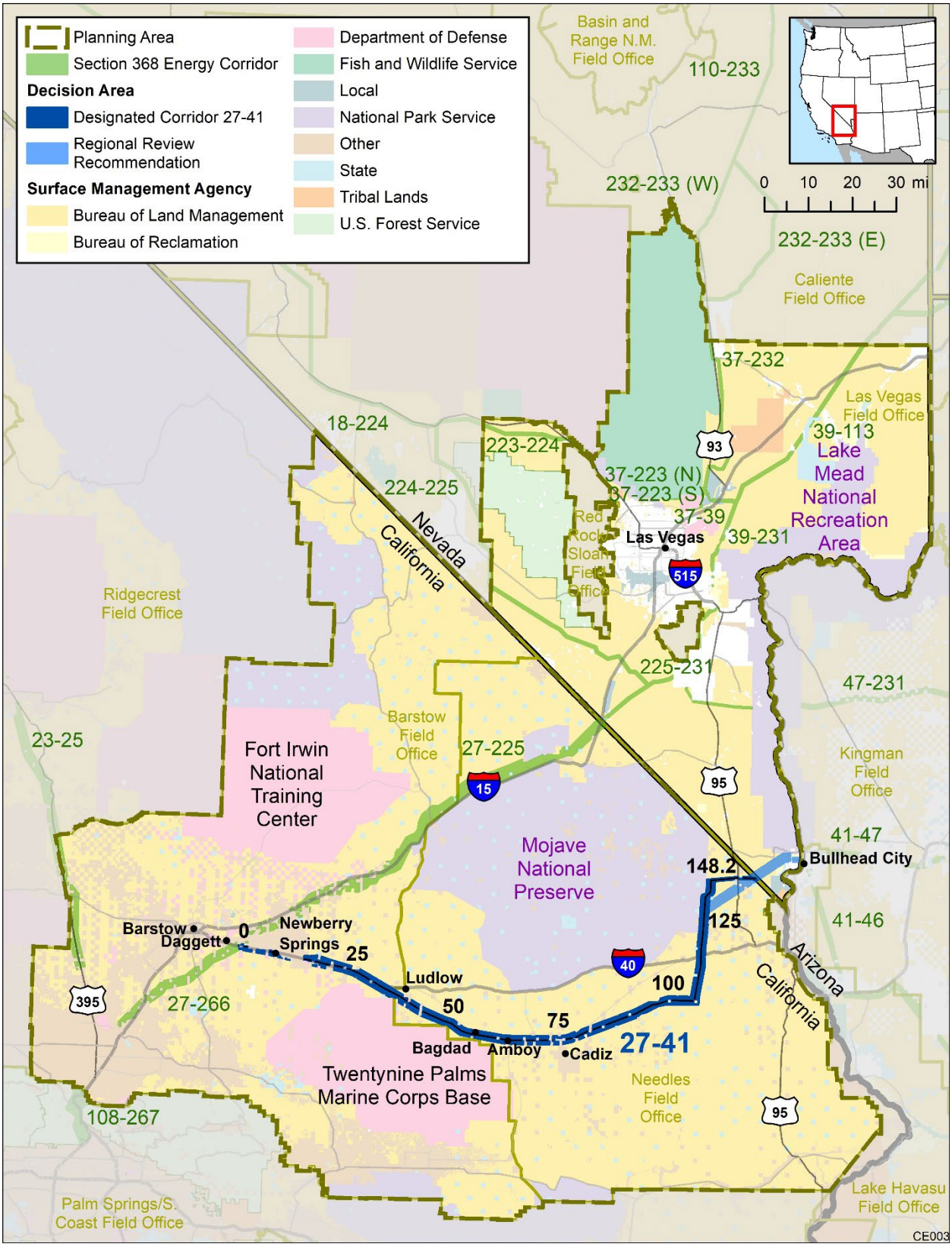

Figure 2-4. Corridor 27-41 Planning Area

Figure 2-5. Corridor 30-52 Planning Area

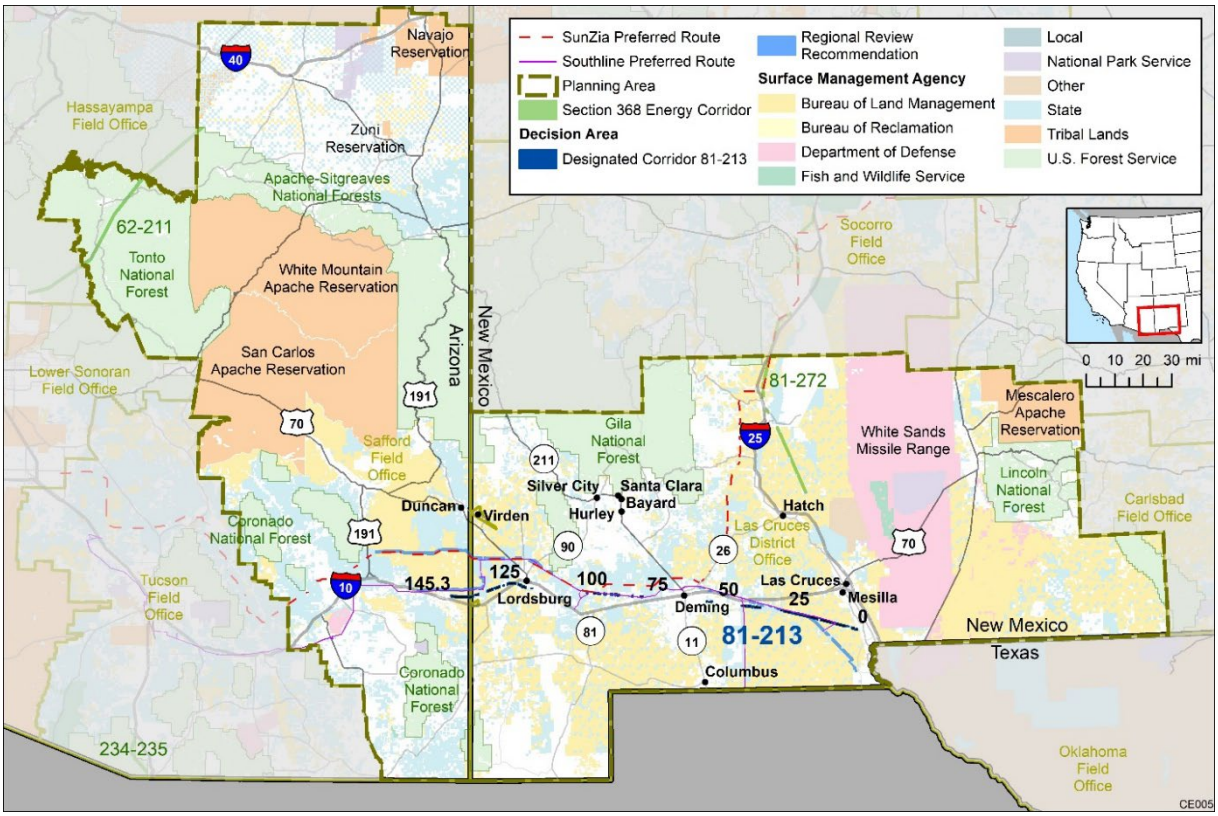

Figure 2-6. Corridor 81-213 Planning Area

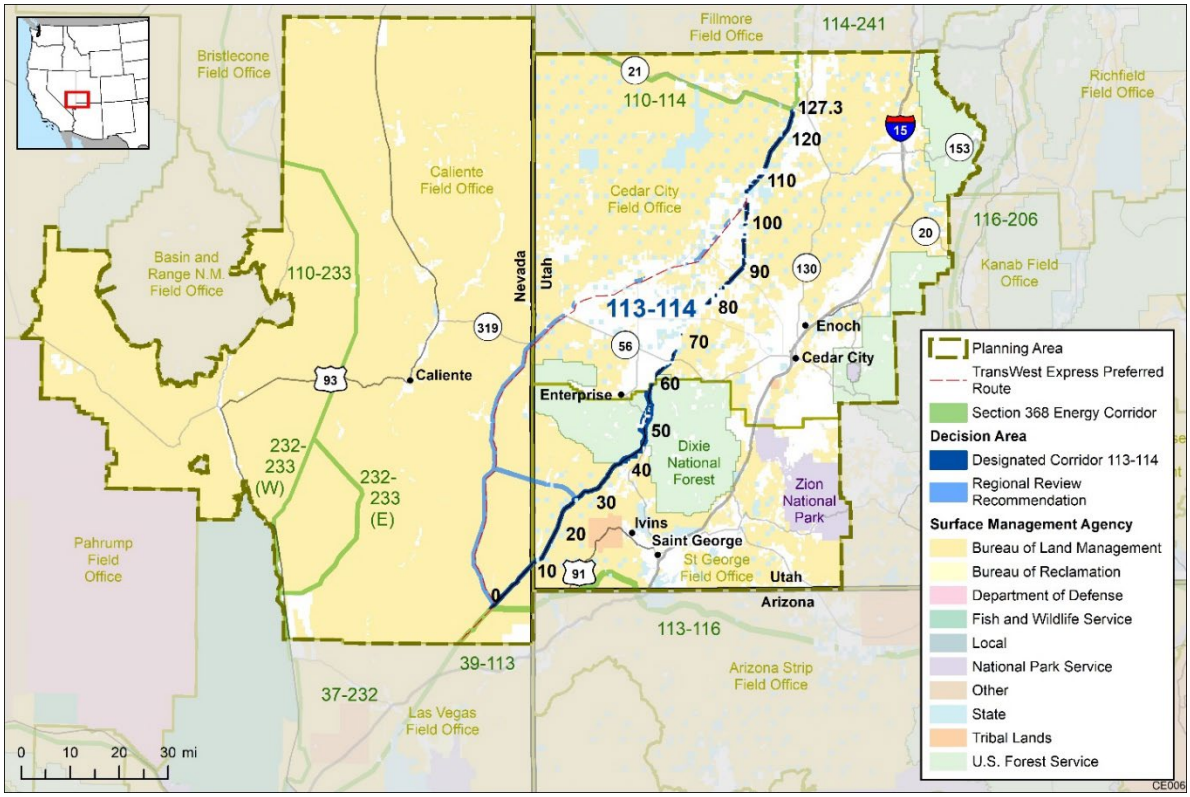

Figure 2-7. Corridor 113-114 Planning Area

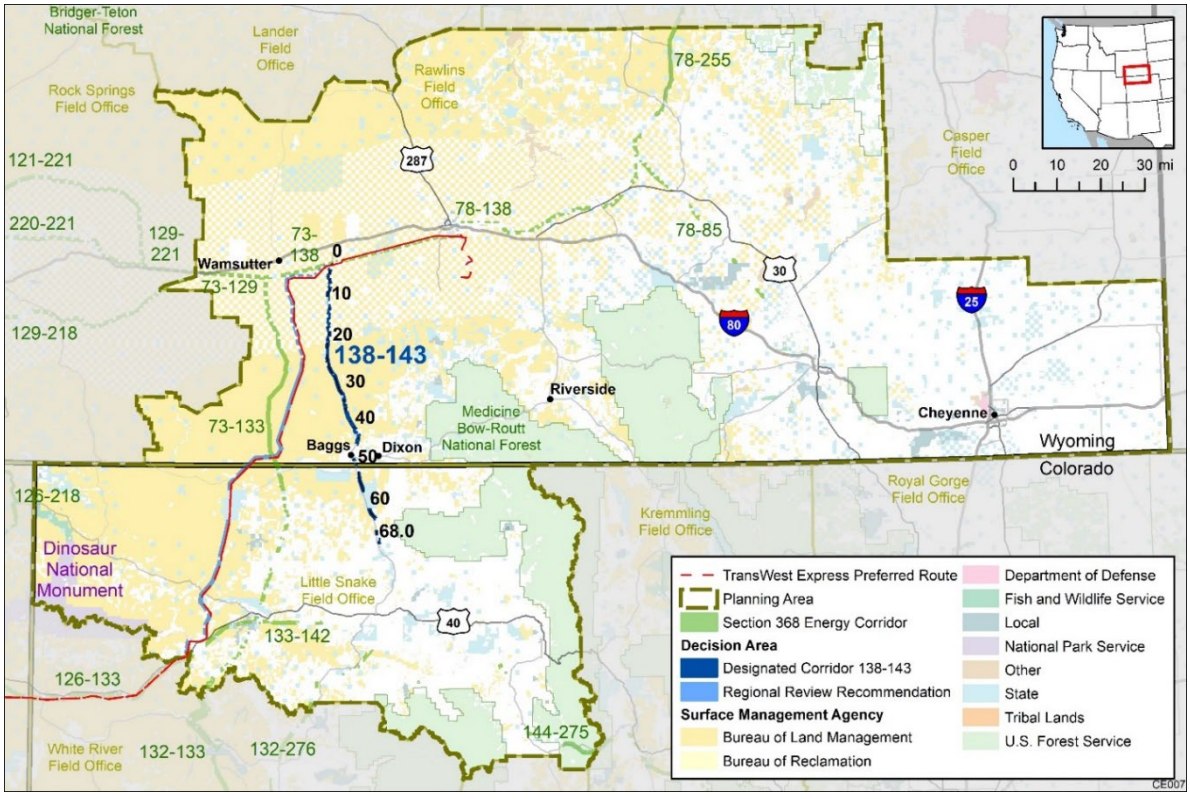

Figure 2-8. Corridor 138-143 and Potential Wamsutter-Powder Rim Corridor Addition Planning Area

2.3 Existing Management

The program established in the 2009 WWEC PEIS and adopted through the subsequent approved RMPAs and RODs guides the management of Section 368 energy corridors. Section 368 energy corridors are managed as the preferred locations for development of energy transport projects on lands managed by the BLM. Each corridor has a defined centerline, width, and compatible uses (underground-only, electric-only, or multi-modal). This planning effort will evaluate changes to energy corridor designation taking into account management considerations for corridor designations, the recommendations provided in the regional review (including consideration of the siting principles), and the management direction within the land use plans to be amended under the EIS/RMPAs. A list of the land use plans that may be amended through this planning effort are listed by corridor in Table 2-1.

This RMPA process will recognize ongoing programs, plans, and policies that other land managers and interested governments are implementing within the planning area. Throughout the planning effort, the BLM will attempt to be consistent with, or complementary to, the management approaches of its partners.

Table 2-1. Counties and Land Use Plans within the Planning Area

Counties	Land Use Plans
Corridor 16-104	
• Lassen County, California • Washoe County, Nevada	• Alturas RMP (2008) • Surprise RMP (2008) • Winnemucca District RMP (2015)
Corridor 18-23	
• Inyo County, California • Mono County, California • Lyon County, Nevada • Mineral County, Nevada	• Bishop RMP (1993) • California Desert Conservation Area Plan as amended • Carson City Field Office Consolidated RMP (2001)
Corridor 27-41	
• San Bernardino County, California • Clark County, Nevada	• California Desert Conservation Area Plan, as amended • Las Vegas RMP (1998)
Corridor 30-52	
• Maricopa County, Arizona • La Paz County, Arizona • Riverside County, California	• Bradshaw-Harquahala RMP (2010) • California Desert Conservation Area Plan, as amended • Lake Havasu RMP (2007) • Yuma RMP (2010) • Lower Sonoran RMP (2012)
Corridor 81-213	
• Cochise County, Arizona • Dona Ana County, New Mexico • Grant County, New Mexico • Hidalgo County, New Mexico • Luna County, New Mexico	• Safford District RMP (1991) • Mimbres RMP (1993)
Corridor 113-114	
• Lincoln County, Nevada • Beaver County, Utah • Iron County, Utah • Washington County, Utah	• Cedar Beaver Garfield Antimony RMP (1986) • Ely District RMP (2008) • Pinyon MFP (1983) • St. George Field Office RMP (1999, as amended 2016)
Corridor 138-143/ Wamsutter-Powder Rim Corridor Addition	
• Moffat County, Colorado • Carbon County, Wyoming • Sweetwater County, Wyoming	• Little Snake RMP (2011) • Rawlins RMP (2008)

3 Regulatory Framework

The basis for public land management are the mandates and authorities provided in laws and regulations. Executive Orders, instruction memoranda (IM), information bulletins, manuals, handbooks, and other policy interpret and implement the authorities provided under those laws and regulations. These sources of federal policy direct the BLM concerning management of public lands and resources.

The BLM's planning process (43 CFR Part 1600) is authorized and mandated through the Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701 et seq.) and the National Environmental Policy Act of 1969 (NEPA) (42 USC 4321 et seq.). FLPMA establishes the way in which the public lands administered by the BLM are managed. BLM lands are managed through land use plans (also called resource management plans [RMPs] or management framework plans [MFPs]) to ensure that the public lands are managed in accordance with the intent of Congress as stated in FLPMA under the principles of multiple use and sustained yield. Any BLM decisions regarding discretionary uses, including energy corridor designation, must conform to the BLM's approved land use plan, or the land use plan must be revised or amended to accommodate the use. FLPMA directs the BLM, when completing a planning process, to coordinate with other federal departments and agencies, state and local governments, and Tribal Nations, to seek to promote consistency among land use plans across jurisdictions. The BLM develops and updates its land use plans through a planning and NEPA process. NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. Elements of NEPA include a purpose and need for an action, alternatives to a proposed action, an assessment of the environmental impacts from a proposed action and alternatives, and public involvement. The BLM is preparing an EIS concurrent with the RMPAs, using the best available information. Other federal laws, regulations, and policies, as well as applicable state, local, and other regulatory frameworks, are identified below. The BLM plans to collaborate with other federal, state, and local agencies, Tribal Nations, and governmental entities throughout the RMPA process. Opportunities for coordination will be sought throughout the RMPA and EIS development process. Project phases where state and local governments, other federal agencies, and Native American tribal government involvement could prove most helpful include scoping, alternatives development, impacts analysis, and public and agency comment periods.

3.1 Federal Laws, Regulations, and Executive Orders

In addition to FLPMA and NEPA, the BLM planning decisions must comply with other federal laws, regulations, and Executive Orders:

- American Indian Religious Freedom Act (1978)

  Protects the rights of American Indians to exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.

- Antiquities Act (1906)

  Provides general protection for cultural or natural resource and authorizes the President of the United States to create national monuments to protect natural, cultural, or scientific features.

- Archaeological Data Preservation Act (1974)

  Authorizes all Federal agencies to fund archaeological investigations, reports, and other activities to mitigate the impacts of their projects on important archaeological sites.

- Archaeological Resource Protection Act (1979)

  Governs the excavation of archeological sites on federal and American Indian lands in the United States and the removal and disposition of archeological collections from those sites.

- Clean Air Act, as amended (1970; CAA)

  Authorizes regulations to limit emissions from both stationary (industrial) sources and mobile sources.

- Clean Water Act, as amended (1972)

  Establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.

- Endangered Species Act of 1973, as amended (ESA)

  Designed to protect critically imperiled species from extinction as a "consequence of economic growth and development untampered by adequate concern and conservation."

- Energy Policy Act of 2005 (EPAct)

  Section 368 of the Energy Policy Act of 2005, Public Law 109-58 (H.R. 6), directed the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate under their respective authorities corridors on federal land in 11 Western States (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming) for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities.

- Farm Bill of 2018

  Governs an array of agricultural and food programs, providing an opportunity for policymakers to comprehensively and periodically address agricultural and food issues; this bill typically is renewed about every 5 years.

- Historic Sites Act (1935)

  Established to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States. The Act authorizes the Secretary of the Interior to obtain information, survey, conduct research, maintain, and preserve sites with archaeological significance.

- International Migratory Bird Treaty Act of 1918 (MBTA)

  Implements four international conservation treaties that the United States entered into with Canada in 1916, Mexico in 1936, Japan in 1972, and Russia in 1976 to ensure the sustainability of populations of all protected migratory bird species.

- John D. Dingell, Jr., Conservation, Management, and Recreation Act (2019)

  Addresses, among other matters, land conveyances, exchanges, acquisitions, withdrawals, and transfers; national parks, monuments, and memorials; wilderness areas; wild and scenic rivers (WSRs), historic and heritage sites, and other conservation and recreation areas; wildlife conservation; the release of certain federal reversionary land interests; boundary adjustments; the Denali National Park and Preserve natural gas pipeline; fees for medical services in National Park System units; funding for the Land and Water Conservation Fund; recreational activities on federal or nonfederal lands; and federal reclamation projects.

- National Trails System Act of 1968 (Public Law [PL] No. 90-543), as amended (NTSA)

  Calls for establishing trails in both urban and rural settings for people of all ages, interests, skills, and physical abilities. Promotes the enjoyment and appreciation of trails while encouraging greater public access. It also establishes four classes of trails: national scenic trails, national historic trails, national recreation trails, and side and connecting trails.

- National Historic Preservation Act of 1966, as amended

  Intends to preserve U.S. historic and archeological sites and creates the *National Register of Historic Places*, the list of National Historic Landmarks, and the State Historic Preservation Offices (SHPOs)

- Native American Graves Protection and Repatriation Act (1990)

  Provides a process for federal agencies and museums that receive federal funds to repatriate or transfer from their collections certain Native American cultural items to lineal descendants, and to Indian tribes, Alaska Native Corporations, and Native Hawaiian organizations. The Act also provides a process for Federal agencies to address new discoveries of Native American human remains, funerary objects, sacred objects, and objects of cultural property intentionally excavated or inadvertently discovered on Federal or Tribal lands.

- Noise Control Act of 1972

  Establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. The Act also establishes a means for effective coordination of Federal research and activities in noise control, authorizes the establishment of Federal noise emission standards for products distributed in commerce, and provides information to the public respecting the noise emission and noise reduction characteristics of such products.

- Omnibus Public Land Management Act (2009)

  Established the National Landscape Conservation System (NLCS; now known as National Conservation Lands [NCLs]) to conserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations, including national monuments and requires that the lands within NCL units shall be managed "in a manner that protects the values for which the [units] were designated;" BLM policy states that "BLM will use the best available science in managing NLCS units;" that "science and the scientific process will inform and guide management decisions concerning NLCS units."

- Paleontological Resources Preservation Act Title VI, subtitle D of the 2009 Omnibus Public Land Management Act (16 USC 7202, et seq.)

  Important for fossil resource management as a stand-alone subtitle from the overall Omnibus Public Land Management Act

- Public Rangelands Improvement Act of 1978 (PRIA)

  Defines the current grazing fee formula and establishes rangeland monitoring and inventory procedures for BLM and Forest Service rangelands.

- Taylor Grazing Act of 1934

  Provides for the regulation of grazing on public lands (excluding Alaska) to improve rangeland conditions and regulate their use.

- Wild and Scenic Rivers Act of 1968, as amended

  Enacted to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.

- Wilderness Act of 1964, as amended

  Enacted to establish the National Wilderness Preservation System for the use and enjoyment of the American people in such manner as will leave the lands unimpaired for future use and enjoyment as wilderness.

- Wild Free-Roaming Horses and Burros Act (1971; 16 USC 1331 et seq.)

  Gave BLM the responsibility to protect, manage, and control wild horses and burros.

- Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (1994; 59 FR 7629)

  Requires Federal agencies to incorporate environmental justice as part of their missions.

- Executive Order 13007, "Indian Sacred Sites" (1996)

  Directs federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites.

- Executive Order 13186, "Responsibilities of Federal Agencies To Protect Migratory Birds" (2001)

  Directs each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding (MOU) with the U.S. Fish and Wildlife Service (FWS) that shall promote the conservation of migratory bird populations.

- Executive Order 13175 "Consultation and Coordination With Indian Tribal Governments" (2000)

  Ensures that all executive departments and agencies consult with Indian Tribes and respect tribal sovereignty as they develop policy on issues that impact Indian communities.

3.2 Relevant Resource Plans, Policies, and Programs

The direction provided by the various regulations, policies, and documents listed below is applied to specific resources and areas by developing RMPs. These plans apply federal law, regulation, and policy at a landscape level by identifying desired outcomes, allowable uses, and management actions anticipated to achieve desired outcomes. Other state and federal agencies are responsible for managing or providing support for resource management within the decision area. Plans related to management of these resources are usually site-specific or resource specific in nature.

Upon approval of an RMP, subsequent implementation decisions are put into effect by developing implementation (activity-level or project-specific) plans. Implementation decisions generally constitute the BLM's final approval, allowing on-the-ground actions to proceed. These types of decisions require appropriate site-specific planning and NEPA analysis.

The following lists identify some of the RMPs, implementation plans, and other planning or policy documents (i.e., DOI manuals and BLM manuals, handbooks, and IMs) that may pertain to the decision area and the planning process. These are not meant to be exhaustive lists.

3.2.1 Relevant Resource Management Plans

- Alturas Resource Management Plan (2008)
- Bishop Resource Management Plan (1993)
- Bradshaw-Harquahala Resource Management Plan (2010)
- California Desert Conservation Plan
- Carson City Field Office Consolidated Resource Management Plan (2001)
- Cedar Beaver Garfield Antimony Resource Management Plan (1986)
- Ely District Resource Management Plan (2008)

- Lake Havasu Resource Management Plan (2007)
- Las Vegas Resource Management Plan (1998)
- Little Snake Resource Management Plan (2011)
- Lower Sonoran Resource Management Plan, Arizona (2012)
- Mimbres Resource Management Plan (1993)
- Pinyon Management Framework Plan (1983)
- Rawlins Resource Management Plan (2008)
- Safford Resource Management Plan (1991)
- St. George Resource Management Plan (1999)
- Surprise Resource Management Plan (2008)
- Winnemucca District Planning Area Resource Management Plan (2015)
- Yuma Resource Management Plan (2010)

3.2.2 Relevant and/or Major Amendments

- Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (2016)
- Energy Gateway South Transmission Project Utility Right-of-Way and Resource Management Plan Amendments and Record of Decision (2016)
- Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment and Records of Decision (2015)
- Restoration Design Energy Project Approved Resource Management Plan Amendments and Records of Decision (2013)
- Solar Energy Development in Six Southwestern States Approved Resource Management Plan Amendments and Records of Decision (2012)
- Southline Transmission Line Project Approved Resource Management Plan Amendments and Records of Decision (2016)
- SunZia Southwest Transmission Line Project Approved Resource Management Plan Amendment and Records of Decision
- Sunzia (2023)
- Ten West Link 500 kV Transmission Line Project Approved Resource Management Plan Amendment and Records of Decision (2019)
- TransWest Express Transmission Project Approved Resource Management Plan Amendments and Records of Decision (2016)
- Utah Greater Sage-Grouse Approved Resource Management Plan Amendment (2015)

- West-wide Energy Corridor Approved Resource Management Plan Amendments and Records of Decision (2009)
- Wyoming Greater Sage-Grouse Approved Resource Management Plan Amendment (2015)

3.2.3 Selected DOI and BLM Policies

- BLM PIM 2022-009 – Implementing the Paleontological Resources Preservation Act of 2009 (PRPA).

  Revises the BLM paleontology permitting system to establish a single paleontology permit and application process, establishes a BLM-wide standard for releasing paleontological locality data to the public and clarifies what is common for purposes of casual collection. The policy supplements 43 CFR Part 49 and updates guidance in BLM Manual 8270 (Paleontological Resource Management; release 8-68) and Handbook H-8270-1 (General Procedural Guidance for Paleontological Resource Management; release 8-69).
- BLM Manual 1112-1, Chapter 27 - Off-Highway Vehicles

  Provides policy and procedural guidance for the selection and safe use of off-highway vehicles (OHV's), including all-terrain vehicles, utility terrain vehicles, and snowmobiles.
- BLM Manual 1613 - Areas of Critical Environmental Concern

  Provides policy and procedural guidance on the identification, evaluation, and designation of areas of critical environmental concern (ACECs) in the development, revision, and amendment of RMPs.
- BLM Manual 1626 - Travel and Transportation Management Manual

  Provides policy and procedural guidance for the comprehensive management of travel and transportation on BLM-administered lands and related waters.
- BLM Manual 2930 - Recreation Permits and Fees

  Provides policy and procedural guidance for administering recreation permits on the public lands and associated waters under the administration of the BLM.
- BLM Manual 4100 - Grazing Administration

  Provides objectives, responsibilities and policies for the management and administration of livestock grazing on BLM public lands, exclusive of Alaska.
- BLM Manual 4180 - Land Health

  Establishes policy, provides guidelines, and assigns management structure and responsibilities for conducting land health evaluations.
- BLM Manual 4720 – Removal

  Describes the authorities, objectives, and policies that guide the removal of excess wild horses and burros from the public lands and other lands that are adjacent to or intermingled with public land.

- BLM Manual 6100 - NLCS Management Manual

  Provides general policy for all units of the BLM's NCLS.

- BLM Manual 6220 - National Monuments, National Conservation Areas, and Similar Designations

  Provides guidance on managing BLM public lands that are a part of the NLCS, have been designated by Congress or the President as National Monuments, National Conservation Areas, and similar designations such as Outstanding Natural Areas.

- BLM Manual 6250 – National Scenic and Historic Trail Administration

  Provides BLM policy and program guidance on administering congressionally designated National Trails as assigned by the Department of the Interior within the NLCS. Describes the BLM's roles, responsibilities, agency interrelationships, and policy requirements for National Trail Administrators.

- BLM Manual 6280 - Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation

  Provides the line manager and program staff professionals with policies for the management of National Scenic and Historic Trails. Specifically, this manual identifies requirements for the management of trails undergoing National Trail Feasibility Study; trails that are recommended as suitable for National Trail designation through the National Trail Feasibility Study; inventory, planning, management, and monitoring of designated National Scenic and Historic Trails; and data and records management requirements for National Scenic and Historic Trails.

- BLM Manual 6310 - Conducting Wilderness Characteristics Inventory on BLM Lands

  Contains the BLM policy and guidance for conducting wilderness characteristics inventories under Section 201 of FLPMA.

- BLM Manual 6320 - Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process

  Contains the BLM policy and guidance for considering wilderness characteristics in BLM's land use planning process under FLPMA.

- BLM Manual 6330 – Management of Wilderness Study Areas (WSAs)

  Provides guidance on the management of WSAs; WSAs must be managed in a manner that would not impair the suitability of the area for preservation as wilderness and to prevent unnecessary or undue degradation.

- BLM Manual 6340 - Management of Designated Wilderness Areas

  Provides guidance on the management of wilderness areas; wilderness areas are to be managed and administered to preserve the wilderness character of the area and shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.

- BLM Manual 6400 - Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management

  Provides policy, direction and guidance for the identification, evaluation, planning, and management of eligible and suitable wild and scenic rivers and the management of designated components of the National Wild and Scenic Rivers System.

- BLM Manual 8100-Cultural resources

  Provides guidance for managing cultural resources.

- BLM Manual 8353 - Trail Management Areas – Secretarially Designated National Recreation, Water, and Connecting and Side Trails

  Addresses secretarially designated National Recreation Trails (including the National Water Trails) and connecting and side trails, including requirements for cooperative relationships; trail marking; identifying, evaluating and recommending trails; nominating trails through the submission of application packages; and data and records management.

- BLM Handbook H-1601-1 Land Use Planning

  Provides specific guidance for preparing, amending, revising, maintaining, implementing, monitoring, and evaluating BLM land use plans.

- BLM Handbook H-1790-1 National Environmental Policy Act

  Provides guidance to comply with the National Environmental Policy Act (NEPA), the Council on Environmental Quality's (CEQ) NEPA regulations (40 CFR Parts 1500–1508), and the Department of the Interior NEPA manual.

- BLM Handbook H-2100-1 Acquisition

  Describes the procedures for acquisition of lands and interests in lands.

- BLM Handbook H-4180-1 Rangeland Health Standards

  Describes the authorities, objectives, and policies that guide the implementation of the Healthy Rangeland Initiative.

- BLM Handbook H-4700-1 Wild Horses and Burros Management Handbook

  Describes the authorities, objectives, and policies that guide the management of wild horses and burros on the public lands administered by the BLM.

- BLM Handbook H-8320-1 Planning for Recreation and Visitor Services

  Provides planning guidance at the land use plan and implementation level to assist in the planning and management of recreation and visitor services on public lands and adjacent waters.

- BLM Handbook H-8357-1 Byways

  Provides how-to guidelines for implementing the BLM byway program.

3.3 Relevant State Laws and Regulations

The following state laws and regulations establish requirements, permits, approvals, or consultations that may apply to the designation of Section 368 energy corridors evaluated in this planning effort. Tables 3-1 through 3-7 are organized by state and general resource area.

Table 3-1. Laws and Regulations Potentially Applicable to Energy Corridor Designation in Arizona

Resource Area	Law or Regulation
Air Resources	ARS 49-401 et seq.
Cultural Resources	Duties; Board; Partnership Fund; State Historic Preservation Officer (ARS 41-511.04)
	Arizona Historical Society (ARS 41-821 et seq.)
	Archeological Discoveries (ARS 41-841 et seq.)
	Historic Preservation (ARS 41-861 et seq.)
Hydrology	Floodplain Delineation, Regulation of Use (ARS 48-3609)
	Water Quality Control (ARS 49-201 et seq.)
	Groundwater Code (ARS 45-401 et seq.)
	Appropriation of Water (ARS 45-151 et seq.)
	Aquifer Protection Permits (ARS 49-241 et seq.)
	Arizona Water Quality Control (ARS 49-201 et seq.)
Human Health and Safety	Transporting Hazardous Material; Violation; Classification (ARS 28-1523)
	Emergency Planning and Community Right-to-Know Act (ARS 26-341 et seq.)
Land Use	Public Lands (ARS 37-101 et seq.)
	Administration of State and Other Public Lands (ARS 37-201 et seq.)
	Acts of Congress Relating to State and Federal Lands (ARS 37-701 et seq.)
	Natural Resource Conservation District (ARS 37-1001)
	State Claims to Streambeds (ARS 37-1101)
	Arizona Agricultural Protection Act (ARS 3-3301)
Paleontology	Archeological Discoveries (ARS 41-841 et seq.)
	State Museum Responsibilities include Paleontological Resources (ARS 15-1631)
	Paleontological Resources Are Heritage Resources (M06-388) (ARS 41-821 et seq.)
	State Lands: Fossils Belong to the Mineral Estate (ARS 37-231, AAC R12-5-1807)
Wildlife, Vegetation, Special Status Species	Pesticides (ARS 3-341 et seq.)
	Pesticide Control (ARS 3-361 et seq.)
	Pesticide Contamination Prevention (ARS 49-301 et seq.)
	Powers and Duties (ARS 17-231 et seq.)
	Taking and Handling of Wildlife (ARS 17-301 et seq.)
	Wildlife Habitat Protection (ARS 17-451)

Table 3-2. Laws and Regulations Potentially Applicable to Energy Corridor Designation in California

Resource Area	Law or Regulation
Air Resources	Health and Safety Code, Section 39000 et seq.
Cultural Resources	Historical Resources (Public Resources Code, Section 5020 et seq.)
Hydrology	Wetlands Preservation (Keene-Nejedly California Wetlands Preservation Act) (Public Resources Code, Section 5810 et seq.)
	Cobey-Alquist Flood Plain Management Act (Water Code, Section 8400 et seq.)

Resource Area	Law or Regulation
	California Safe Drinking Water Act (Health and Safety Code, Section 116270 et seq.)
	Water (Water Code, Section 1000 et seq.)
	Water Wells and Cathodic Protection Wells (Water Code, Section 13700 et seq.)
	Water Supply Provisions (Public Resources Code, Section 116975 et seq.)
	Water Quality (Water Code, Section 13000 et seq.)
Human Health and Safety	Unified Hazardous Waste and Hazardous Materials Management and Regulatory Program (Health and Safety Code, Section 25404 et seq.)
	Hazardous Materials Release Response Plans and Inventory (Health and Safety Code, Section 25500 et seq.)
	Safe Drinking Water and Toxics and Enforcement Act of 1986, Section 25249.5
Land Use	California Wild and Scenic Rivers Act (Public Resources Code, Section 5093.50 et seq.)
	Coastal Resources and Energy Assistance (Public Resources Code, Section 35000 et seq.)
Noise	Noise Control Act (Health and Safety Code, Section 46000 et seq.)
Paleontology	Archeological, Paleontological, and Historical Sites (Public Resources Code, 5097.1 et seq.)
	State Lands: Fossils Belong to the Mineral Estate (PRC 6407)
	Protection of Paleontological Resources (PRC 5097-5097.6, PRC 30244)
Wildlife, Vegetation, Special Status Species	Agricultural Chemicals, Livestock Remedies, and Commercial Feeds (Food and Agriculture Code, Section 12500 et seq.)
	Weeds (Food and Agriculture Code, Section 7201 et seq.)
	Migratory Birds (Fish and Game Code, Section 355 et seq.)
	Wildlife Conservation Law of 1947 (Fish and Game Code, Section 1300 et seq.)
	Fish and Game Management (Fish and Game Code, Section 1500 et seq.)
	Fish and Wildlife Protection and Conservation (Fish and Game Code, Section 1600 et seq.)
	Native Species Conservation and Enhancement (Fish and Game Code, Section 1750 et seq.)
	Conservation of Wildlife Resources (Fish and Game Code, Section 1800 et seq.)
	Endangered Species (Fish and Game Code, Section 2050 et seq.)
	Protected Reptiles and Turtles (Fish and Game Code, Section 5000 et seq.)
	California Wilderness Preservation System (Public Resources Code, Section 5093.30 et seq.)

Table 3-3. Laws and Regulations Potentially Applicable to Energy Corridor Designation in Colorado

Resource Area	Law or Regulation
Air Resources	CS 25-7-101 et seq.
Cultural Resources	Historical, Prehistorical, and Archeological Resources (CRS 24-80-401 et seq.)
	Unmarked Human Graves (CRS 24-80-1301 et seq.)
Hydrology	Drainage of State Lands (CRS 37-30-101 et seq.)
	Marsh Land (CRS 37-33-101 et seq.)
	Colorado Water Right Determination and Administration (CRS-37-92-101 et seq.)
	Water Quality Control (CRS 25-8-101 et seq.)
	Water and Wastewater Treatment Plant Operations (CRS 25-9-101 et seq.)
Human Health and Safety	Implementation of Title III of Superfund Act (CRS 24-32-2601 et seq.)

Resource Area	Law or Regulation
	Hazardous Substances (CRS 25-5-501 et seq.)
	Pollution Prevention (CRS 25-16.5-101 et seq.)
Land Use	Areas and Activities of State Interest (CRS 24-65.1-101 et seq.)
	Local Government Land Use Control Enabling Act (CRS 29-20-101 et seq.)
	County Planning (CRS 30-28-101 et seq.)
	(Municipal) Planning and Zoning (CRS 31-23-101 et seq.)
Noise	Noise Abatement (CRS 25-12-101 et seq.)
Paleontology	Historical, Prehistorical, and Archeological Resources (CRS 24-80-401 et seq.)
	Paleontological Resources Are Prehistorical Resources Reserved to the State (CRS 24 80 401)
Wildlife, Vegetation, Special Status Species	Pesticide Act (CRS 35-9-101 et seq.)
	Nongame and Endangered Species Conservation (CRS 33-2-101 et seq.)
	Migratory Birds – Possession of Raptors – Reciprocal Agreements (CRS 33-1-115)
	Protection of Fishing Streams (CRS 33-5-101 et seq.)
	Colorado Natural Areas CRS 33-33-101 et seq.)

Table 3-4. Laws and Regulations Potentially Applicable to Energy Corridor Designation in Nevada

Resource Area	Law or Regulation
Air Resources	NRS 445B.100 et seq.
Cultural Resources	Historic Preservation and Archeology (NRS 383.011 et seq.)
Hydrology	Establishment, Use and Operation of Wetland Mitigation Bank (NRS 244.388)
	Contents of Regional Plans (NRS 278.0274)
	Underground Water and Wells (NRS 534.010 et seq.)
	Public Water Systems (NRS 445A.800 et seq.)
	Water Pollution Control (NRS 445A.300 et seq.)
Human Health and Safety	Regulation of Highly Hazardous Substances and Explosives (NRS 459.380 et seq.)
	Handling of Hazardous Materials (NRS 459.700 et seq.)
Land Use	Regulations for Use of Land (NRS 548.410 et seq.)
	Planning and Zoning (NRS 278.010 et seq.)
Noise	Prevention of Excessive Noise (NRS 244.363)
Paleontology	Preservation of Prehistoric and Historic Sites (NRS 381.195 et seq.)
	Paleontological Sites Belong to the State and Are Protected (NRS 381.195-381.227, NRS 321.5977)
Wildlife, Vegetation, Special Status Species	Control of Insects, Pests, and Noxious Weeds (NRS 555.005 et seq.)
	Wildlife (NRS 501.003 et seq.)
	Preservation of Endangered Species or Subspecies in County Whose Population Is 400,000 or More (NRS 244.386)

Table 3-5. Laws and Regulations Potentially Applicable to Energy Corridor Designation in New Mexico

Resource Area	Law or Regulation
Air Resources	NMSA 74-2-1 et seq.
Cultural Resources	Cultural Properties (NMSA 18-6-1 et seq.)
Hydrology	Additional County and Municipal Powers; Flood and Mudslide Hazard Areas; Floodplain Permits; Land Use Control; Jurisdiction; Agreement (NMSA 3-18-7(C))

Resource Area	Law or Regulation
	Compliance with Federal Safe Drinking Water Act (NMSA 74-1-12)
	Water Rights in General (NMSA 72-1-1 et seq.)
	Appropriation and Use of Surface Water (NMSA 72-5-1 et seq.)
	Ground Water Storage and Recovery (NMSA 72-5A-1 et seq.)
	Underground Waters (NMSA 72-12-1 et seq.)
	Ground Water Protection (NMSA 74-6B-1 et seq.)
	Water Quality (NMSA 74-6-1 et seq.)
Human Health and Safety	Hazardous Chemicals Information Act (NMSA 74-4E-1 et seq.)
	Hazardous Material Transportation (NMSA 74-4F-1 et seq.)
Land Use	Land Development Fees and Rights (NMSA 5-8-1 et seq.)
	Land Use Easements (NMSA 47-12-1 et seq.)
	Natural Lands Protection (NMSA 75-5-1 et seq.)
	Rangeland Protection (NMSA 76-7B-1 et seq.)
	Range Management Plans (NMSA 76-7C-1)
	Zoning Regulations (NMSA 3-21-1 et seq.)
Noise	Nuisances and Offenses; Regulations and Prohibitions (NMSA 3-18-17)
	Board; duties (NMSA 74-1-8(6))
Paleontology	Cultural Properties (NMSA 18-6-1 et seq.)
	Theft and Destruction of Paleontological Sites (NMAC 19.2.19.16)
Wildlife, Vegetation, Special Status Species	Pesticide Control (NMSA 76-4-1 et seq.)
	Noxious Weed Control (NMSA 76-7-1 et seq.)
	Wildlife Conservation Act (NMSA 17-2-37 et seq.)
	Endangered Plant Species (NMSA 75-6-1 et seq.)
	Protection of Native New Mexico Plants (NMSA 76-8-1 et seq.)
	Habitat Protection (NMSA 17-6-1 et seq.)

Table 3-6. Laws and Regulations Potentially Applicable to Energy Corridor Designation in Utah

Resource Area	Law or Regulation
Air Resources	Air Conservation Act UCA 19-2-101 et seq.
Cultural Resources	History Development (UCA 9-8-102 et seq.)
	Native American Graves Protection and Repatriation Act (UCA 9-9-102 et seq.)
Hydrology	Siting Criteria (UCA 19-3-307)
	Safe Drinking Water Act (UCA 19-4-101 et seq.)
	Ground Water Recharge and Recovery Act (UCA 73-3b-101 et seq.)
	Appropriation (UCA 73-3-1 et seq.)
	Determination of Water Rights (UCA 73-4-1 et seq.)
	Withdrawal of Unappropriated Water (UCA 73-6-1 et seq.)
	Water Quality Act (UCA 19-5-101 et seq.)
Human Health and Safety	Hazardous Materials – Transportation Regulations (UCA 41-6a-1639)
	Hazardous Materials Emergency – Recovery of Expenses (UCA 53-2-105)
Land Use	Quality Growth Act (UCA 11-38-101 et seq.)
	Environmental Institutional Control Act (UCA 19-10-101 et seq.)
	Municipal Land Use, Development, and Management (UCA 10-9a-101 et seq.)
	County Land Use, Development, and Management (UCA 17-27a-101 et seq.)

Resource Area	Law or Regulation
	Critical Land Near State Prison – Definitions – Preservation as Open Land – Management and Use of Land – Restrictions on Transfer – Wetlands Development – Conservation Easement (UCA 23A-5-222)
Paleontology	Permit Required to Excavate Critical Paleontological Resources (UCA 63-73-12 and 13)
	Paleontological Resources (UC 63-73 et seq.)
Wildlife, Vegetation, Special Status Species	Utah Pesticide Control Act (UCA 4-14-1 et seq.)
	Wildlife Resources Code of Utah (UCA 23-13-1 et seq.)

Table 3-7. Laws and Regulations Potentially Applicable to Energy Corridor Designation in Wyoming

Resource Area	Law or Regulation
Air Resources	WS 35-11-201 et seq.
Cultural Resources	Protection of Prehistoric Ruins (WS 36-1-114 et seq.)
Hydrology	Wyoming Wetlands Act (WS 35-11-308 et seq.)
	Wyoming Water Quality (WS 35-11-301 et seq.)
	Groundwater Code (ARS 45-401 et seq.)
	Appropriation of Water (ARS 45-151 et seq.)
	Water Rights; Administration and Control (WS 41-3-101)
	Board of Control; Adjudication of Water Rights (WS 41-4-101)
	Protection of Public Water Supply (WS 35-4-201 et seq.)
Human Health and Safety	Authority of Department to Adopt Rules and Regulations Governing…Hazardous Materials (WS 31-18-303)
Land Use	Land Quality (WS 35-11-401 et seq.)
	Mineral Leases (WS 36-6-101 et seq.)
	Carey Act Lands (WS 36-7-101 et seq.)
	Sale of State Lands (WS 36-9-101 et seq.)
	United States Lands (WS 36-10-101 et seq.)
	State Control of Certain Land (WS 36-12-101 et seq.)
	(Counties) Planning and Zoning (WS 18-5-101 et seq.)
Paleontology	Protection of Prehistoric Ruins (WS 36-1-114 et seq.)
	Paleontological Deposits Are Protected (WS 36-1-114-116; WS 36-2-107; WSLCR Ch. 11)
Wildlife, Vegetation, Special Status Species	Weed and Pest Control (WS 11-5-101 et seq.)
	Wyoming Bird and Animal Provisions (WS 23-3-101 et seq.)
	Predatory Animals – Control Generally (WS 11-6-101 et seq.)

3.3.2 County Plans

A list of counties within the decision area are listed in Table 3-8. Each county's comprehensive plan would be reviewed to ensure conformance with any proposed plan amendments.

Table 3-8. Counties within the Decision Area

Corridor	State	County
16-104	California	Lassen County
	Nevada	Washoe County

Corridor	State	County
18-23	California	Inyo County
		Mono County
	Nevada	Lyon County
		Mineral County
27-41	California	San Bernardino County
	Nevada	Clark County
30-52	Arizona	La Paz County
		Maricopa County
	California	Riverside County
81-213	Arizona	Cochise County
	New Mexico	Dona Ana County
		Grant County
		Hidalgo County
		Luna County
113-114	Nevada	Lincoln County
	Utah	Iron County
		Washington County
138-143	Colorado	Moffat County
	Wyoming	Sweetwater County

4 Purpose and Need

In 2009, the BLM designated over 5,000 miles of Section 368 energy corridors across public lands through land use plan amendments for 92 RMPs in 11 western states. The BLM is proposing to amend 19 BLM RMPs in seven states (Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming) to modify the RMP decisions associated with seven designated interstate Section 368 energy corridors. This planning effort is being addressed at national level to prioritize recommendations for corridors that require multi-state coordination to be implemented efficiently and effectively, rather than considering planning amendments for all of the corridor recommendations identified in the regional review final report. The proposed amendments would consider the identification of compatible allocations and changes to existing designations, objectives, and management direction responsive to the purpose and need below.

4.1 Need

The need for the action is to reduce barriers or conflicts that impede the efficient and effective use of Section 368 energy corridors on BLM-administered lands.

The BLM completed a regional review of all the designated Section 368 energy corridors in 2022 and identified the need for revisions to some corridor designations to promote the siting, permitting, and review of energy right-of-way projects and to designate new corridors, as appropriate. Changes to the seven designated corridors identified in this planning effort would require interstate coordination to be implemented efficiently and effectively. Specifically, the BLM has found that portions of these corridors are not situated to meet changing demand from new energy sources, including wind and solar, and that changes to the presence of sensitive resources and/or recently designated avoidance areas have inhibited the ability for Section 368 energy corridors to be used as intended. The BLM has further found that non-BLM managed lands as well as physical pinch points present limitations on potential future development. The regional review found that the changes to the corridors would provide effective connectivity for energy transmission across the western United States.

4.2 Purpose

The purpose for the action is to identify Section 368 energy corridor designations that address the need identified above in a manner that fulfills the BLM's responsibilities under Section 368 of the EPAct (42 U.S.C. § 15926), Section 503 of FLPMA (43 U.S.C. § 1763), and the 2013 Presidential Memorandum "Transforming Our Nation's Electric Grid Through Improved Siting, Permitting, and Review," in a manner that considers the siting principles listed below. These modifications may amend existing allocations, designations, objectives, and management direction to ensure changes do not result in conflicting decisions for the current and future management within the corridors.

Section 368 of the EPAct

Section 368 of the EPAct directs the BLM to consider "the need for upgraded and new electricity transmission and facilities to (1) improve reliability; (2) relieve congestion; and (3) enhance the capability of the national grid to deliver electricity." 42 U.S.C. § 15926(d). Through this RMPA, the BLM would designate Section 368 energy corridors responsive to the known needs and capabilities of BLM-administered lands in providing for a reliable and efficient electricity grid and pipeline network.

Section 503 of FLPMA

Section 503 (43 U.S.C. § 1763) of FLPMA requires the BLM to consider the use and designation of right-of-way corridors to "minimize environmental impacts and the proliferation of separate rights-of-way." The BLM designates right-of-way corridors through the land use planning process, which requires the BLM to identify resource-related issues, concerns, and needs associated with such designations (43 C.F.R. § 2802.11). Through this RMPA, the BLM would designate Section 368 energy corridors responsive to the minimization of environmental impacts in relation to the concentration or the proliferation of separate rights-of -way designations.

2012 Settlement Agreement Siting Principles

The 2012 Settlement Agreement in Wilderness Society v. United States Department of the Interior, No. 3:09-cv-03048-JW (N.D. Cal) outlined the following siting principles intended to guide BLM considerations for "revisions, deletions, or additions" of designated corridors: "Corridors are thoughtfully sited to provide maximum utility and minimum impact to the environment; corridors promote efficient use of the landscape for necessary development; appropriate and acceptable uses are defined for specific corridors; and corridors provide connectivity to renewable energy generation to the maximum extent possible while also considering other sources of generation, in order to balance the renewable sources and to ensure the safety and reliability of electricity transmission." Through this RMPA, the BLM would designate Section 368 energy corridors responsive to these siting principles.

2013 Presidential Memorandum

On June 7, 2013, President Obama issued a Presidential Memorandum on "Transforming Our Nation's Electric Grid through Improved Siting, Permitting, and Review" ("Corridor PM"). It acknowledged the importance of energy corridors on federal lands to improve efficient, effective, and expeditious siting, permitting, and review of transmission projects; minimize regulatory conflicts and impacts on environmental and cultural resources; and address concerns of local communities. When establishing energy corridors, **the Corridor PM requires the BLM to focus on facilitating renewable energy resources, improving grid resiliency, and complying with the requirements of Section 368 (Section 1(a)(ii)), while also minimizing the proliferation of dispersed and duplicative rights-of-way across federal lands (Section 1(a)(v)).** The Corridor PM further requires designation of electric energy corridors to minimize environmental and cultural resource impacts, including impacts occurring outside the boundaries of

federal lands, and to minimize impacts on aviation systems and the mission of the Armed Forces (Section 1(a)(vi)). Through this RMPA, the BLM would designate Section 368 electric energy corridors responsive to these requirements.

5 Area Profile

The Analysis of the Management Situation (AMS) area profiles document the current conditions and trends and forecasts for resources, existing designations, and social and economic conditions that are relevant to the planning issues and purpose and need identified by the Bureau of Land Management (BLM) and that are present in the each of the planning and decision areas for the seven designated energy corridors. Unless otherwise noted, allocations are based on the existing resource management plans (RMPs) listed in Chapter 2. Appendix A of this document provides information by resource (where applicable) that is relevant to all Section 368 energy corridors evaluated in this planning effort.

Designated Corridor:
Section 368 Energy Corridor as designated in the *Approved Resource Management Plan Amendments/Record of Decision (ROD) for Designation of Energy Corridors on BLM-administered Lands in the 11 Western States* (BLM 2009)

Recommendation in Regional Review:
Revision, deletion, or addition recommended in the 2022 *Energy Policy Act of 2005 Section 368 Energy Corridor Review Final Report: Regions 1–6* (BLM, Forest Service, and DOE 2022)

Decision Area:
For this AMS, the decision area includes BLM-administered lands where the BLM is considering a change to one of the seven corridors evaluated in this planning effort, including both the *designated corridor* and the *recommendation in the regional review.* The decision area for the regional management plan amendment (RMPA)/environmental impact statement (EIS) could change based on alternatives developed during the scoping process.

Planning Area:
The BLM-administered lands within the *planning boundaries* where the decision area is located

5.1 Corridor 16-104

Corridor 16-104 is located within the BLM California Applegate Field Office and Nevada Black Rock Field Office (Table 5.1-1). The 75-mile (mi; 120-kilometer [km]) designated energy corridor provides a southeast–northwest pathway for energy transport from western Nevada into northern California. Corridor 16-104 connects Section 368 energy corridors to the east and south, creating a continuous corridor network across BLM- and Forest Service-administered lands through western Nevada and south to Los Angeles, California. Corridor 16-104 contains existing infrastructure—60- and 1,000-kilovolt (kV) transmission lines—for the first 30 mi of the corridor in Nevada; there is no infrastructure within the corridor from milepost (MP) 30 to MP 75. The designated energy corridor has a variable width, ranging from 500 feet (ft) at the western end of the corridor in California to 3,500 ft for the remaining corridor length. Corridor 16-104 is designated multi-modal to accommodate both transmission lines and pipeline infrastructure.

Corridor 16-104

Designated Corridor:
Section 368 Energy Corridor 16-104 as designated in the 2009 ARMPA/ROD for Designation of Energy Corridors on BLM-Administered Lands in the 11 Western States (BLM 2009)

Regional Review Recommendation:
Delete the corridor designation

Decision Area:
The BLM-administered lands within the entire length of the designated energy corridor

Planning Area:
The BLM-administered lands managed under the Alturas RMP, the Surprise RMP, and the Winnemucca District Planning Area RMP and lands under other administration within the vicinity of the decision area

The regional review recommended removing the Section 368 energy corridor designation for Corridor 16-104 (BLM, Forest Service, and DOE 2022). Although there is an existing 1,000 kV transmission line within the corridor from MP 0 to MP 30, priority habitat management areas (PHMAs) for the Greater Sage-Grouse (GRSG) intersect the corridor where there is no existing infrastructure (MP 43 to MP 75). The regional review also found that there are other designated energy corridors in the area that may be able to meet future energy needs.

The decision area includes the actual parcels under BLM management that could be affected by the change in corridor designation for Corridor 16-104. The planning area (that is, the wider area that could be impacted by a change in the corridor designation, including both BLM-managed lands and lands under other administration) includes the BLM-administered lands managed under the Alturas RMP, the Surprise RMP, and the Winnemucca District Planning Area RMP (Figure 5.1-1).

Table 5.1-1. BLM Administration Boundaries for Corridor 16-104 Decision Area

State	District/Field Office	Milepost (MP)
Nevada	BLM Nevada, Black Rock Field Office	MP 0 to MP 26
California	BLM California, Applegate Field Office	MP 27 to MP 75

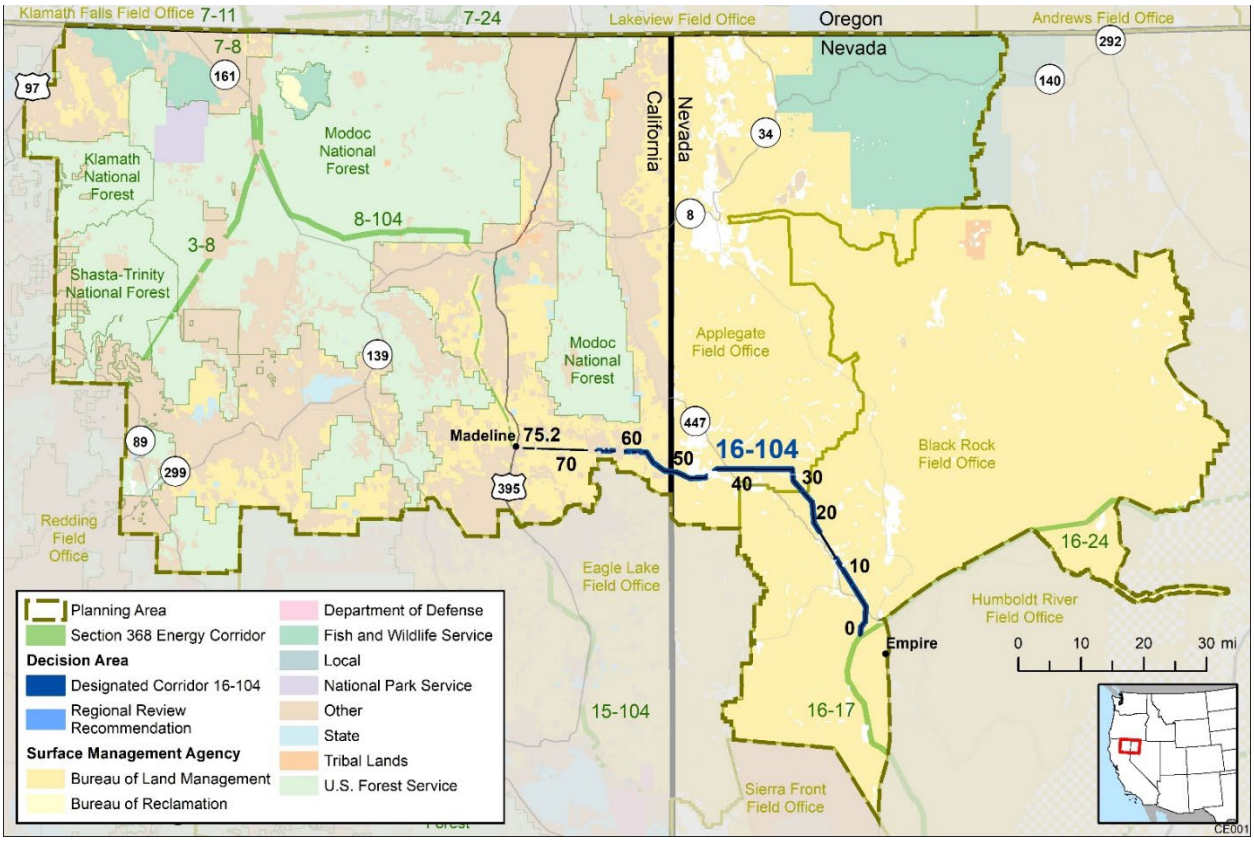

Figure 5.1-1. Corridor 16-104 Planning Area

Key Findings

Table 5.1-2 highlights the potentially affected resources that warrant analysis and summarizes the most important conclusions (key findings) drawn from each of the Area Profile resource sections within the Corridor 16-104 decision area. In general, these resources could be impacted by removing the designation of Corridor 16-104 resulting from this planning effort.

Table 5.1-2. Key Findings for Corridor 16-104 Decision Area

Resource	*Key Finding*
Air Quality	Federal Class I areas within a range of 100 km (62 mi) of the decision area include South Warner Wilderness Area, Caribou Wilderness Area, Lassen Volcanic National Park, and Thousand Lakes Wilderness Area. There are no Tribal Class I areas within 100 km (62 mi) of the decision area. Lassen and Washoe counties are in unclassifiable/attainment areas for all criteria pollutants, but southern Washoe County is in maintenance areas for 24-hr PM_{10} (Reno area) and 8-hr CO (Lake Tahoe and Reno areas). Between 2019 and 2021, NAAQSs for O_3, $PM_{2.5}$, and PM_{10} were frequently exceeded due to numerous prolonged wildfires.
Climate	The decision area is characterized by mild temperatures but significant diurnal variations, scarce precipitation, and low relative humidity. Wide variations in elevation and topographic features within the decision area have an impact on wind patterns, temperatures, precipitations, and other meteorological parameters.

Resource	Key Finding
Cultural Resources	Specific prehistoric and historic resources in the decision area are indeterminate, although both are well represented in the region. Known sites date from ca. 10,000 BP through late historic settlement. BLM sensitivity model predicts 5.8 to 88.7 sites per sq. mi.
Ecology	
Vegetation	The decision area is located primarily within the Central Basin and Range and Northern Basin and Range Ecoregions. Vegetation communities along the corridor are primarily sagebrush scrub and salt desert scrub.
Invasive Species	Invasive vegetation species spread due to excessive grazing, drought, and wildfires, as well as along transportation corridors, carried by vehicles or maintenance equipment.
Fire and Fuels	Primary fuel sources for wildfires in the planning area are live and dead vegetation. In the California portion of the corridor, 2,500 acres (ac) are burned per year on average, although most fires are small.
Terrestrial Wildlife	Ranges of mule deer, pronghorn, Rocky Mountain elk, California bighorn sheep, and mountain lion are within the decision area, as well as those of upland game birds and waterfowl. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways.
Fish and Aquatic Species	Aquatic habitat in the region includes perennial and intermittent streams, rivers, and creeks, which contain mollusks, fish, amphibians, and aquatic insects. Lahontan cutthroat trout, springsnail species, and Warner sucker are federally listed native fish species with critical habitat along or near the decision area.
Special Status Species	The decision area intersects PHMAs and general habitat management areas (GHMAs) for the Greater Sage-Grouse Nevada/Northeastern California population where there is no existing energy infrastructure.
Environmental Justice	The minority population in the 2 mi buffer does not exceed 50% and is not meaningfully greater than the countywide averages. The number of persons at or below twice the poverty rate within the buffer in each county does not exceed 50% but exceeds the countywide percentage in the buffer in Washoe County.
Geology, Soils, and Minerals	The decision area is located in rugged, mountainous terrain of mixed lithologies and several alluvial plains.
Human Health and Safety	There is relatively high earthquake potential within the decision area.
Hydrology	Water resources in the region are limited. There are numerous ephemeral washes and several perennial streams, portions of an ephemeral lake, a named spring, and alluvial basin-fill aquifers within the decision area.
Lands and Realty	No existing energy infrastructure, pending rights-of-way (ROWs) for transmission lines or pipeline projects, and no transportation routes are sited within the western half of the decision area. Within the eastern half of the decision area, there is an existing 1,000 kV transmission line and a 60 kV transmission line. There are scattered areas with medium to high potential wind energy development near the designated corridor (MP 52 to MP 62). Military Training Routes (MTR) visual routes and Special Use Authorization (SUA) routes are located within the decision area.
Lands with Wilderness Characteristics	There are no managed lands with wilderness characteristics units within the decision area.
Livestock Grazing and Wild Horse and Burro	
Livestock Grazing	Within the decision area, there are ten livestock grazing allotments.
Wild Horse and Burro	Within the decision area, there are five herd management areas.
Noise	On the basis of the population density, the day-night average sound level (Ldn or DNL) is estimated to be 30 A-weighted decibels (dBA) for Lassen County, California and 41 dBA for Washoe County, Nevada, which corresponds to wilderness natural background and rural residential areas, respectively.

Resource	*Key Finding*
Paleontology	Portions of the designated corridor are of unknown potential for paleontological resources, or data is unavailable; however, areas that have been characterized for potential fossil yield are classified as very low and low potential (Classes 1 and 2).
Recreation	Dispersed recreation within the planning area includes hiking, biking, horseback riding, climbing, and camping, particularly within the Poodle Mountains Wilderness Study Area (WSA) area. The decision area is designated as limited or open OHV access.
Socioeconomics	In 2020, the population of the two-county region of influence (ROI) (Lassen County, California and Washoe County, Nevada) was 519,222 people, and median income ranged from $56,971 to $68,272. The unemployment rate was 4.4% in 2021, with the largest share of workers employed in the services and wholesale and retail trade industries.
Special Designations	The decision area crosses the California National Historic Trail (NHT) and is in close proximity to the Poodle Mountain WSA. The designated corridor is narrowed to 500 ft between MP 13 and MP 21 due to proximity to the Poodle Mountains WSA.
Tribal Interests	There are 32 Federally recognized Tribes with cultural affiliation and an interest in the decision area. There are two Federal Indian Reservations in Washoe County and one Indian Rancheria in Lassen County near the decision area: Pyramid Lake Paiute Reservation, Reno Sparks Indian Colony, and Susanville Indian Rancheria. There are three Indian Reservations just outside of Lassen and Washoe counties: Summit Lake Reservation, Fort McDermit Indian Reservation, and Fallon Paiute-Shoshone Reservation. The Tuledad/Duck Flat Cultural Resource Management Area (CRMA) intersects the decision area.
Visual Resources	The decision area is in close proximity to Visual Resource Management (VRM) Class I area: Poodle Mountains WSA and Tule Mountains WSA. A significant portion of BLM-administered land along the corridor is classified as VRM Class II.

5.1.1 Air Quality

General information for air quality resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.1.

Current Conditions and Context

National parks and wilderness areas designated as mandatory Federal Class I areas under the Clean Air Act (CAA), as well as other areas re-designated as Class I at the request of a state or Indian Tribe, have special air quality protections under federal law. Federal Class I areas within a range of 100 km (62 mi)[5] of the Corridor 16-104 decision area include, in order of distance from the corridor: South Warner Wilderness Area, Caribou Wilderness Area, Lassen Volcanic National Park, and Thousand Lakes Wilderness Area. There are no Tribal Class I areas in the 100 km (62 mi) range.

Each state can have its own State Ambient Air Quality Standards (SAAQS). The California Air Resources Board (CARB), the clean air agency of the State of California, has established separate ambient air quality standards (California Ambient Air Quality

[5] EPA has noted that a 100 km range is generally acceptable for AQRVs impact modeling, but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Emissions from future development within the corridor would be relatively small, and their release heights are at ground- or near-ground-level, so potential impacts likely would be limited locally.

Standards, CAAQS) (CARB 2022a). The CAAQS include the same six criteria pollutants as in the National Ambient Air Quality Standards (NAAQS) but also include standards for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. In general, the CAAQS are the same as or more stringent than the NAAQS, except for 1-hr NO_2 and 1-hr SO_2 standards. Nevada has its own SAAQS (Nevada Administrative Code [NAC] 445B.22097) and has a standard for 1-hr O_3 (for Lake Tahoe Basin, #90), for 8-hr CO (≥5,000 ft above mean sea level), for 24-hr and annual SO_2, and for 1-hr H_2S, in addition to those included in NAAQS, but excludes an annual (secondary) $PM_{2.5}$ standard.

The CARB and the Nevada Division of Environmental Protection (NDEP) are responsible for monitoring ambient air quality and for ensuring that ambient air quality levels are maintained in accordance with federal and state standards. As with Environmental Protection Agency (EPA) designations based on the NAAQS, the CARB designates areas as attainment or nonattainment based on the CAAQS. Ambient air quality monitoring refers to collecting and measuring samples of ambient air to evaluate the status of the air pollutants in the atmosphere as compared to clean air standards and historical information.

The decision area is located in Lassen County, California and in Washoe County, Nevada. No air monitoring stations are located in Lassen County in California (EPA 2022a). Lassen County is in unclassifiable/attainment areas for all criteria pollutants and for all air pollutants for which CAAQS were established (CARB 2022b). In Nevada, air monitoring stations for all criteria pollutants except lead are located in southern Washoe County, Nevada around the Reno area, which is more than 75 mi south of the decision area. Washoe County is in unclassifiable/attainment areas for all criteria pollutants, but southern Washoe County is in maintenance areas for 24-hr PM_{10} (Reno area) and for 8-hr CO (Lake Tahoe and Reno areas) (EPA 2022b). Based on 2019–2021 monitoring data, NAAQSs for O_3, $PM_{2.5}$, and PM_{10} are frequently exceeded due to numerous prolonged wildfires in 2020 and 2021 (WCHD 2022).

Trends and Forecasts

Since 1970, implementation of the CAA and technological advances have drastically lowered combined emissions of the criteria and precursor pollutants, and thus have improved air quality in the United States (U.S.).

Air monitoring data is available for Washoe County, Nevada, but there are no air monitoring stations in Lassen County, California. Therefore, the following is the description only for Washoe County, Nevada. In Washoe County, ten-year trends of air quality between 2012 and 2021 show that "design values" for annual $PM_{2.5}$, CO, NO_2, and SO_2 have been well below the NAAQS (WCHD 2022). The 8-hr O_3 concentrations have been below the NAAQS until 2017, but exceeded the NAAQS more frequently in 2020 and 2021, since 8-hr O_3 NAAQS strengthened from 0.075 to 0.070 ppm in 2015. In general, both 24-hr PM_{10} and $PM_{2.5}$ concentrations exceeded the NAAQS rarely between 2012 and 2019 but frequently in 2020 and 2021. July and August 2021 had numerous fires, resulting in the worst air quality ever recorded in Reno and Sparks. The record-

highest 24-hr averages for $PM_{2.5}$ and PM_{10} during the summer were 241.6 and 319 $\mu g/m^3$, respectively, on August 23 at the monitor in southern Reno. Many exceedances of PM_{10} and $PM_{2.5}$ in both 2020 and 2021 are associated with the wildfires. Most elevated ozone caused by wildfire smoke occurred around the same period, although unusual ozone episodes occurred in springtime (WCHD 2022).

The decision area extends across an area that is generally remote and unpopulated. New activities in the area near the designated corridor could trigger air pollution issues are not yet identified. Emissions from future activities would be controlled under required permits designed to ensure that they are consistent with applicable regulations, along with mitigation measures.

Due in part to air regulations driven by the CAA, NO_X and VOC emissions from human sources should continue to decline over the next few decades (Nolte et al. 2018). However, climate change will also influence future levels of ozone in the U.S. by altering weather conditions and by impacting emissions from human and natural sources. The prevailing evidence strongly suggests that climate change alone introduces a climate penalty for ozone over most of the U.S, from warmer temperatures and increases in natural emissions. In other words, air quality and climate change are interconnected, so changes in one inevitably cause changes in the other. For example, fossil fuel emissions will cause increases in ozone, the third most important greenhouse gas (GHG) after carbon dioxide (CO_2) and methane (CH_4), that likely will trigger heat waves, which in turn will amplify air pollution. Therefore, more frequent and longer droughts might lengthen the wildfire season and result in large wildfires, as evidenced from higher $PM_{2.5}$ levels observed in Washoe County in 2020 and 2021, and increased windblown dust emissions from disturbed soils. Accordingly, air quality around the decision area would be degraded by wildland fires (including prescribed burning) and/or windblown dust that mostly occurs in upwind areas, rather than by local emissions.

5.1.2 Climate

General information for climate that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.2.

Current Conditions and Context

Wide variations in elevation and topographic features within the decision area have an impact on wind patterns, temperatures, precipitation, and other meteorological parameters. The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. The prevailing wind direction aloft over the region is from the west (the westerlies), as it is in most of the U.S.; however, complex terrain in the area is responsible for deflecting these winds. Accordingly, wind patterns are sometimes dissimilar even over short distances.

According to Local Climatological Data for Reno, Nevada, the decision area is in a semi-arid plateau lying in the northern edge of the Sierra Nevada mountain range. The area is characterized by mild temperatures but significant diurnal variations, scarce

precipitation, and low relative humidity (NCEI 2022a). There are no meteorological stations in the immediate vicinity of the designated energy corridor, so meteorological data at stations closely representing the decision area in terms of proximity and topography are presented here.

Wind: Two of the closest meteorological stations upwind of the decision area are at Susanville and Alturas, California. Average wind speeds were about 5.4 miles per hour (mph; 2.4 meters per second [m/s]) and 4.9 mph (2.2 m/s), respectively (NCEI 2022b). Westerly winds (including winds from southwest through northwest) prevail at both stations: about 50% and 26% of the time, respectively. Wind speeds categorized as calm (less than 1 mph [0.5 m/s]) occurred more frequently—about 24% and 43% of the time, respectively—because of the stable conditions caused by strong radiative cooling in the arid environment. Wind patterns at other stations in Nevada downwind of the corridor are more affected by local topography.

Temperature: For the 1948 to 2012 time period, the annual average temperature at Gerlach, Nevada, near the east end of the corridor, was 52.1 °F (11.2 °C) (WRCC 2022). December was the coldest month, with an average minimum temperature of 20.9 °F (−6.2 °C), and July was the warmest month, with an average maximum of 92.5 °F (33.6 °C). Each year, more than 57 days had a maximum temperature of ≥90 °F (32.2 °C), while about 137 days had minimum temperatures at or below freezing (32 °F [0 °C]), with about 2 days below 0 °F (-17.8 °C) (Table 5.1-3).

For the same period, the annual average temperature at Jess Valley, California, near the west end of the corridor and about 1,350 ft (411 m) higher than Gerlach, Nevada, was 46.0 °F (7.8 °C) (WRCC 2022). January was the coldest month, with an average minimum temperature of 19.6 °F (−6.9 °C), and July was the warmest month, with an average maximum of 83.3 °F (28.5 °C). Each year, more than 11 days had a maximum temperature of ≥90 °F (32.2 °C), while about 191 days had minimum temperatures at or below freezing (32 °F [0 °C]), with more than 4 days below 0 °F (-17.8 °C).

Precipitation: The decision area lies on the eastern, lee side of the Sierra Nevada Range, a massive mountain barrier that markedly influences the climate of the area (WRCC 2022). One of the greatest contrasts in precipitation found within a short distance in the U.S. occurs between the western slopes of the Sierras in California and the valleys just to the east of this range. Along with prevailing westerly winds, as the warm moist air from the Pacific Ocean ascends the western slopes of the Sierra Range, the air cools, condensation takes place, and most of the moisture falls as precipitation. As the air descends the eastern slope, it is warmed by compression, and very little precipitation occurs. The effects of this mountain barrier are felt not only in the west but throughout the state, with the result that the lowlands of Nevada are largely desert or steppes.

For the 1948–2012 time period, annual precipitation ranged from about 7.46 inches (in; 18.9 centimeters [cm]) in Gerlach, Nevada to 18.36 in (46.6 cm) in Jess Valley, California (WRCC 2022). Precipitation is more frequent during winter in Gerlach, Nevada (about 34%) and during spring in Jess Valley, California (about 34%), and less frequent

during summer at both sites (15% and 14%, respectively). Snowfall varies by location (ranging on average from about 11.5 in [29 cm] in Gerlach, Nevada to about 73.2 in [186 cm] in Jess Valley, California), with the snowiest months being December through February and November through April, respectively. In general, both precipitation and snowfall tend to increase with increasing elevation.

Table 5.1-3. Temperature and Precipitation Summaries at Selected Stations in the Vicinity of the Decision Area[a]

Station	Temperature						Precipitation	
	Monthly Averages[b]			Number of Days with:				
	Min.	Max.	Mean	Max. ≥90°F	Min. ≤32°F	Min. ≤0°F	Water Equivalent	Snowfall
Gerlach, Nevada	20.9°F (6.2°C)	92.5°F (33.6°C)	52.1°F (11.2°C)	57.3	136.6	2.0	7.46 in (18.9 cm)	11.5 in (29 cm)
Jess Valley, California	19.6°F (–6.9°C)	83.3°F (28.5°C)	46.0°F (7.8°C)	11.0	191.1	4.4	18.36 in (46.6 cm)	73.2 in (186 cm)

[a] Summary data presented in the table are based on the period of record from 1948 to 2012.

[b] "Minimum Monthly Average" denotes the lowest monthly average of daily minimum during the period of record, which normally occurs in either January (Jess Valley) or December (Gerlach). "Maximum Monthly Average" denotes the highest monthly average of daily maximum during the period of record, which normally occurs in July (both Gerlach and Jess Valley).

Source: WRCC 2022.

Trends and Forecasts

In the last century, southern California has experienced one of the largest increases in temperature in the continental U.S. (about 3 °F [1.7 °C]), although all of California is becoming warmer. Temperatures in Nevada have risen about 2 °F (1.1 °C). In the decision area, annual average temperature has increased about 1.5 to 2 °F (0.8 to 1.1 °C) (EPA 2016a, 2016b). In the 126-year period of record (1895–2020), the six warmest years have all occurred since 2014 (2014 through 2018, and 2020) in California. Over the last 26 years, the annual number of very hot days has been above average, with the highest 5-year average occurring during the 2015–2020 period, partly because of very high annual values in 2017, 2018, and 2020 (NCEI 2022c).

Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others. The changing climate is likely to increase the need for water but reduce the supply. Rising temperatures increase the rate at which water evaporates into the air from soils and surface waters along with transpiration from plants. However, less water is likely to be available because precipitation is unlikely to increase as much as evaporation. Soils are likely to be drier, and periods without rain are likely to become longer, making droughts more severe (EPA 2016a, 2016b). Precipitation is highly variable from location to location and from year to year. In California and Nevada, after wet conditions in the late 1990s, total annual precipitation has been near or below average since 2000 but shows no overall trend across the 126-year period of record. Seasonal precipitation patterns vary across the state, with most locations receiving the majority of their precipitation during the winter months (NCEI 2022c).

As the climate warms, less precipitation falls as snow, and more snow melts during the winter. That decreases snowpack—the amount of snow that accumulates over the winter. Snowpack melts during spring and summer, which provides water supply for cities and farms. Since the 1950s, the snowpack that drains into the Colorado River has declined in both California and Nevada. Higher temperatures and drought due to global warming are likely to increase the severity, frequency, and extent of wildfires, which reduce air quality and harm human health and ecosystems. On average, about 4% and 5% of the land in California and Nevada, respectively, have burned per decade since 1984 (EPA 2016a, 2016b).

Over the next few decades, annual average temperature over the contiguous U.S. is projected to increase by about 2.2 °F (1.2 °C) relative to the period 1986 from 2015, regardless of future scenario (USGCRP 2018). As a result, recent record-setting hot years are projected to become common in the near future. Much larger increases in California and Nevada are projected by the late twenty-first century. Temperature is expected to increase 3 to 5 °F (1.7 to 2.8 °C) under a lower scenario representative concentration pathway (RCP), or RCP4.5, and 5 to 8°F (2.8 to 4.4°C) under a higher scenario (RCP8.5), relative to 1986–2015.[6]

In the late twenty-first century, the greatest precipitation changes are projected to occur in winter and spring, with similar geographic patterns to observed changes: increases across the Northern Great Plains, the Midwest, and the Northeast (USGCRP 2018). In California and Nevada, precipitation projections decrease in spring through fall but increase in winter. Note that changes in average precipitation are much more difficult for climate models to predict than temperature. Surface soil moisture over most of the U.S. is likely to decrease, accompanied by large declines in snowpack in the western U.S. and shifts to more winter precipitation falling as rain rather than snow, which is conducive to more wildfires. In addition, California snowpack plays a critical role in water supply and flood risk. Projected earlier melting of the snowpack due to rising temperatures could have substantial negative impacts on water-dependent sectors and ecosystems (NCEI 2022c).

5.1.3 Cultural Resources

General information for cultural resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.3.

Current Conditions and Context

Prehistoric populations in the area were primarily nomadic; land use involved several sub-environments based on seasonal needs. This cultural-ecological relationship extended well into the historic period and is typical of the Great Basin in general. The

[6] For climate projections, the international scientific community developed four RCPs, i.e., RCP2.6, RCP4.5, RCP6.0, and RCP8.5, in which radiative forcing is stabilized at 2.6, 4.5, 6.0, and 8.5 watts per square meter (W/m^2) in the year 2100, respectively. RCP4.5, referred to as a lower scenario, is generally associated with lower population growth, more technological innovation, and lower carbon intensity of the global energy mix, while the reverse is true for RCP8.5, referred to as a higher scenario.

Surprise Valley exhibits an early phase of habitation sites (6450–3950 BP) characterized by large semi-subterranean earthen lodges. These structures were followed by smaller brush enclosures. Overall, the pattern of habitation and subsistence remained relatively stable. Earlier occupation traditions are found elsewhere in the Surprise Field Office planning area, possibly extending back as far as 11,000 BP.

Ethnographic data indicate that the area was occupied by the Surprise Valley Paiute, whose presence is evidenced by nuclear villages, seasonal base camps, and upland plant and animal exploitation. Eastern and southern portions of the field office planning area were occupied by the Kamodokado, who were related to the Northern Paiute. The more arid conditions in this area likely required more adaptive approaches to subsistence.

Between 1832 and 1849, early exploration, particularly as a conduit of emigration from the east to California, brought Euro-American people to the area. After 1863, activity in the Surprise Valley area included increased cattle and sheep ranching, a lumber industry, and the establishment of Fort Bidwell just north of Cedarville. Several trails cross the area, established before the turn of the century: The Lyons Sheep Trail, The Ardizzi and Olcese Sheep Trail, and the Madeline-Duck Flat Stagecoach Road. The latter trail is part of a CRMA that is crossed by the designated corridor between MP 40 and MP 50 and that retains a high density of cultural resources. A military trail joins the Lyons Sheep Trail and Madeline-Duck Flat Trail at Tuledad Canyon. Numerous homesteads appear in the southern Surprise Valley between 1865 and 1923, including the settlement of Reiderville, which also supplied Duck Flat residents with goods and services (BLM 2007a, 2008a).

Cultural resources listed in this section are generally representative of the region within the decision area. They characterize prehistoric and historic site types that may reasonably be expected to be affected in the absence of specific resource location data. In some cases—e.g., sites listed on the *National Register of Historic Places* (National Register)—resources would not be affected but are included as part of this regional characterization.

The Winnemucca District planning area lies to the northeast of the designated corridor. Under Objective Cultural Resource (CR) 3, Action CR 3.8 known and unknown sites are allocated to the six use-category classifications adopted by the BLM Land Use Planning Handbook (BLM 2005a). A total of 11,955 sites eligible for listing on the National Register are listed by use category, although site types are not indicated:

a. Scientific use: 7,045
b. Conservation for future use: 1,194
c. Traditional use: 238
d. Public use: 119
e. Experimental use: 238
f. Discharged from management: 3,121

Other subregional site types are indirectly highlighted for the Winnemucca administrative area via conservation actions: Lovelock Cave, Aspen Art Trees, and National Historic Trails (NHTs) (BLM 2015).

Prior to ca. 10,000 BP, the decision area experienced the recession of the post-glacial Lake Lahonton. As the lake receded, inhabitants of the area utilized grasslands and marshes, and under the driest conditions, mountains and available perennial water sources. By Euro-American arrival, the region was widely utilized in all local eco-zones (Smith et al. 1983). There are a wide variety of site types in the area, including rock shelters, habitation sites (probably multi-component), temporary camps, petroglyphs, pictographs, hunting blinds, quarry sites, and lithic surface scatters (BLM 2013). For prehistoric resources, the BLM GIS sensitivity model for Winnemucca predicts 5.8 to 88.7 sites per square mile. Percentages of low to high ranking are also given for modeled landforms.

Historic site types in the management area include:

1. Mining and related features/structures: this category includes prospects, shafts, adits, mechanical equipment, and small structures/foundations of related towns and camps.
2. Transportation: the California Trail, established in 1841, facilitated emigration into California and Oregon. The California Trail was designated an NHT in 1992. The California NHT crosses the designated energy corridor between MP 4 and MP 5. Additionally, numerous staging and freight roads from the mid-1860s are found in the Winnemucca District planning area.
3. Homesteads and Ranches: rapid increase in cattle and sheep ranches after 1870; this category includes wood and stone houses, dugouts, irrigation systems, and fences, some of which are still in use.

Although military sites and culturally modified trees have not been specifically identified within the area, it is expected that such features could reasonably be expected to exist.

Ethnographic resources in the Winnemucca District planning area relate to the traditional territory of the Northern Paiute and Western Shoshone tribes. Places of significance to the contemporaries of these groups relate to locations associated with cultural traditions, past or present. These traditions may include ceremonial, ideological, or resource-based practices in particular locations, paths, or areas and can include habitation sites, trails, burial grounds, and areas of natural resource procurement for subsistence or ritual purposes (BLM 2013). Approximately 110 locations or areas within the Winnemucca District planning area have been identified as culturally significant to the Northern Paiutes and Western Shoshones (Bengston 2006).

The Surprise Field Office planning area covers a substantial amount of the decision area and spans portions of the designated energy corridor in Nevada and California. Archaeological sensitivity in the Surprise Field Office planning area is considered high, although it is estimated that only 7% of the Field Office planning area has been surveyed and documented dating back to 1977. A total of 946 sites within 35,137 ac were

documented at that time, some of which are eligible for listing on the National Register. A Class I overview consolidated all available cultural resources. Prehistoric site types in the area include large obsidian and chert quarries, temporary and sedentary camps, hunting blinds, petroglyphs, and pictographs. Historic resources are related to early exploration trails and mining, with subsequent settlement, mining support, transportation, and military development, including Fort Bidwell in the northern Surprise Valley (BLM 2007a).

The Alturas Field Office planning area covers BLM-administered lands within the counties of Lassen, Modoc, Shasta, and Siskiyou, California (BLM 2007b). The designated corridor passes through part of Lassen County in the southern portion of the planning area, in the easternmost extent of the Great Basin physiographic zone. General prehistoric site types found in the planning area include semi-permanent camps, temporary camps, hunting-related sites, plant processing locations, rock features, rock art, and quarry sites. Historic site types relate primarily to ranching, logging, and transportation (e.g., trails and roads). A total of 1,700 sites, one of which is listed on the National Register, have been documented in the area: 85% are prehistoric and 15% are historic. Three Areas of Critical Environmental Concern (ACECs) with cultural components have been recommended but did not have this designation in 2007. Most required surveys for the field office planning area are documented; however, very little Section 110 survey data from before 1999 is available. Assessment for eligibility is lacking, although some sites are identified as eligible for listing on the National Register.

Trends and Forecasts

Both natural and anthropogenic factors will continue to have variable impacts on cultural resources within the decision area. Several ongoing trends contribute to these impacts across the area. Natural effects such as wind erosion contribute to sediment deflation, which can obfuscate surface and subsurface cultural deposits. A reduction of vegetation, whether natural (e.g., wildfires) or intentional, may accelerate erosional activity in areas where soil stability is dependent on root presence. Water erosion on low to moderate slopes can contribute to surficial artifact displacement/transposition, and in the case of high intensity erosion, the destruction of partial or entire sites. Water erosion where land-bearing cultural resources have been denuded of vegetation can accelerate resource damage/destruction. Livestock overgrazing and trampling in some areas continues to be problematic in maintaining site integrity due to soil destabilization and mixing.

Authorized or unauthorized recreational activities such as hiking, horseback riding, and Off-Highway Vehicle (OHV) use can also lead to soil destabilization and mixing, as well as destruction of features. Looting and vandalism are cited by all field offices as continuing illicit activities in their respective districts. Surface collection of artifacts and excavation on open sites in cave shelters (e.g., one major village site on Duck Flat) have obliterated substantial remains, rendering many otherwise eligible sites not eligible (BLM 2007a).

5.1.4 Ecology

General information for ecological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.4.

5.1.4.1 Vegetation, Invasive Species, and Fire

Current Conditions and Context

The decision area is primarily in the Central Basin and Range (CBR) and Northern Basin and Range Ecoregions. Vegetation communities along the corridor are primarily sagebrush scrub and salt desert scrub, which includes species such as hop-sage (*Grayia spinosa*), and mixed saltbush (*Atriplex* spp.), greasewood (*Sarcobatus vermiculatus*), iodine bush (*Allenrolfea occidentalis*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), and big sagebrush (*Artemisia tridentate* spp.) (Figure 5.1-2) (BLM 2013a).

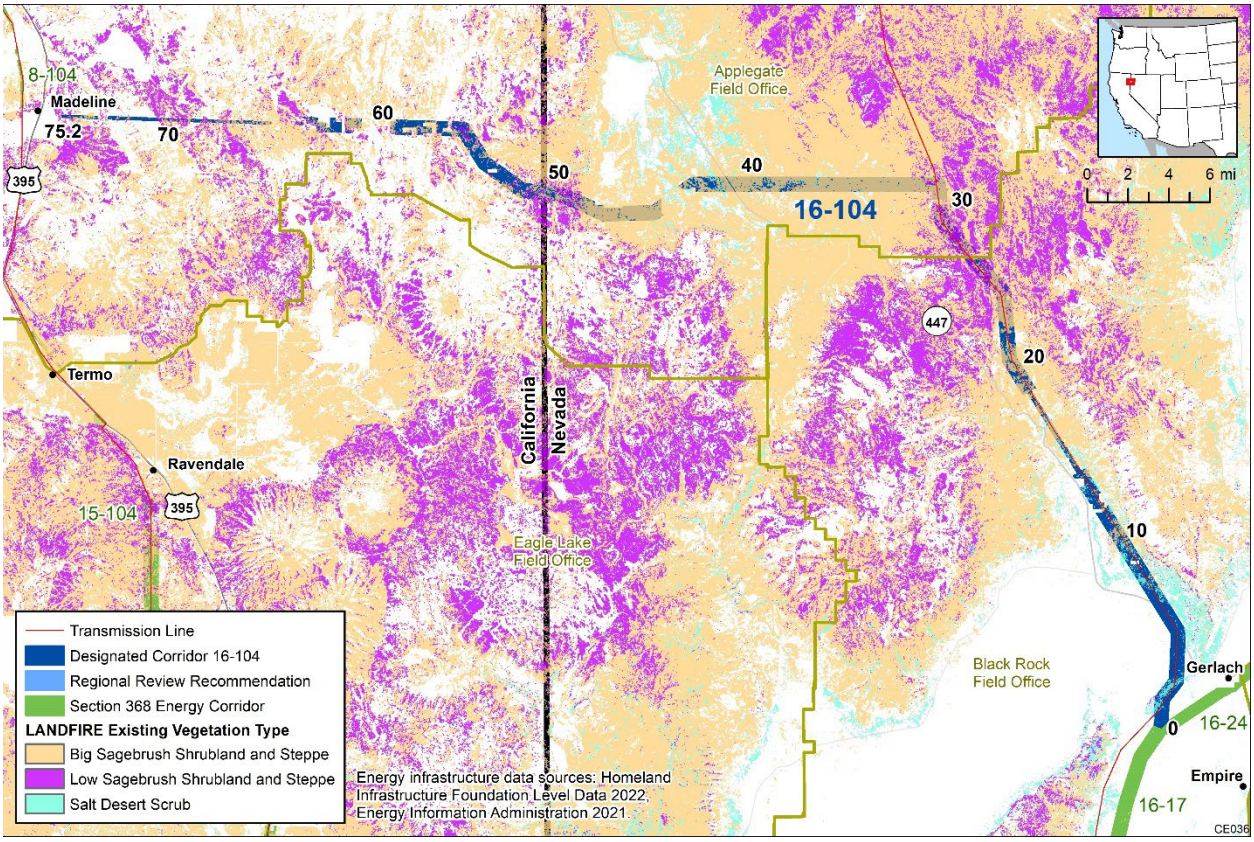

Figure 5.1-2. Vegetation Communities in the Vicinity of the Decision Area (Landfire 2020).

Riparian and wetland vegetation communities are relatively rare because they are associated with scarce surface water. Riparian vegetation serves a critical role providing habitat for wildlife and livestock. Riparian communities are structurally complex and are dominated by cottonwood, aspen, and willow species in the canopy, with shrubs, grasses, forbs, sedges, and rushes in the understory (BLM 2013a). Wetland vegetation is also found around meadows, lentic habitat, and springs. Vegetation associated with waterbodies includes inland saltgrass (*Distichlis spicata var. stricta*),

Baltic rush (*Juncus balticus*), spikerush (*Eleocharis* spp.), alkali bulrush (*Scirpus robustus*), and cattail (*Typha angustifoliae*) (BLM 2013a). Riparian habitat conditions in the Surprise Field Office and Winnemucca District planning areas were rated as being in fair condition, with many showing no improvement over time (BLM 2013a; Comer et al. 2013a).

Invasive Species

Current threats to vegetation communities in all management districts include degradation by livestock and the persistent spread of invasive species. In the Surprise Field Office planning area, 28 nonnative species have been designated as "noxious," species that pose economic or ecological threats to agriculture, fish and wildlife, public health, or navigation (BLM 2007a). Historically, dry sagebrush scrub or saltbush scrub communities have converted to invasive annual grasslands dominated by cheatgrass (*Bromus tectorum*) due to excessive grazing, drought, and wildfires. Invasive plants also appear to spread along transportation corridors by vehicles or maintenance equipment. Mustard and Russian thistle species (*Salsola* L.) are other common invasives found in grasslands. Invasive plants have significantly altered not just community composition but also ecosystem function and generated increased fire frequency and severity (BLM 2013a). Integrated Pest Management is currently used to control invasive plants. However, invasive species are expected to continue to spread in many places because they are too widespread to eradicate (BLM 2013a).

Trends and Forecasts

Climate projections for the western U.S. indicate hotter conditions and seasonal changes in rainfall. The effects of these changes are uncertain: they may increase fire frequency in forest and shrubland systems due to drier conditions, or, alternatively, drier conditions may limit the growth of annual grasses, thereby reducing fuel loading and fire frequency, especially in mixed salt desert scrub, xeric sagebrush, and big sagebrush shrubland communities (Comer et al. 2013b). Future climate change could also promote the expansion of invasive annual grasses and forbs into higher elevations as temperatures rise. Finally, a shift in vegetation communities to drought tolerant, shallow-rooted species may occur.

Fire and Fuels

Live and dead vegetation acts as primary fuel sources for wildfires in the region. The natural fire regime is also determined by local and regional vegetation communities, precipitation, temperature, and soils (BLM 2007a). In the Surprise Field Office, the number of fires larger than 100 ac has ranged from zero to five per year over the last 24 years. An average of 2,500 ac per year of the planning area burns annually, although most fires that occur are smaller (BLM 2007a).

In addition, humans have altered the natural fire regime by fire suppression and by the introduction of exotic weeds that have significantly altered vegetation structure and composition and increased wildfire frequency (Comer et al. 2013a). For example, the change in fire regimes since the 1800s is a primary reason for the loss of sagebrush

scrub in the Winnemucca District planning area. The spread of non-native species is a primary reason for changes in fire regime. Invasive cheatgrass has reduced historic fire frequency to less than one in five years in some regions. Following fire, sagebrush take years to re-establish. Consequently, cheatgrass and other exotic species have altered vast acres previously containing sagebrush scrub (BLM 2013b). Current patterns of altered fire regimes are expected to continue into the future (Comer et al. 2013b). Factors associated with ongoing climate change—namely, increased wildfire frequency, fire duration, and fire season length—have increased substantially in the western U.S. in recent decades and are projected to increase, especially in the Southwest (USGCRP 2018). This is due primarily to earlier spring snowmelt and warmer temperatures that increase evaporation rates, thus reducing moisture availability and drying out vegetation that provides fuel for fires.

Vegetation community rehabilitation following fires includes the following measures: installation of erosion control structures (e.g., culverts), installation of cattle guards, soil stabilization treatments, seeding, planting, mulching, invasive plant control, and burned area closures (BLM 2013b).

5.1.4.2 Terrestrial Wildlife

Current Conditions and Context

The decision area crosses the border of California and Nevada. One challenge to wildlife management is the conflicting management goals across jurisdictions. California ranks first among the 50 states in overall biological diversity, and Nevada ranks eleventh. A major threat to terrestrial wildlife in California is its rapidly growing human population and the resulting loss of suitable habitat (CDFW 2015). Nevada's arid climate and limited water resources present challenges for conservation. The most critical problems facing terrestrial wildlife in Nevada are the alteration of aquatic habitats due to the extraction and consumption of water; invasive, exotic, and feral species; and the impacts of wildfire and fire suppression (Wildlife Action Plan Team 2012). The authorization of construction of large- and small-capacity wildlife water developments in the Surprise Field Office may help alleviate some of the water-resource conflicts within the decision area. These water developments were authorized through a 2013 ROD to benefit big game species, upland game birds, and non-game species in the Surprise Field Office planning area by providing dependable, evenly distributed sources of water (BLM 2013b).

The decision area is in the Eastern Cascades Slopes and Foothills, Northern Great Basin (NGB), and Central Basin and Range (CBR) ecoregions. The Eastern Cascades Slopes and Foothills Ecoregion is dominated by forests (Ponderosa pine and lodgepole pine) at higher elevations where there is more precipitation, but one-third of the ecoregion consists of grassland/shrubland in the drier valley bottoms (Sorenson 2012). The NGB is comprised of mostly sagebrush steppe ecosystems, but also includes juniper, mountain mahogany, aspen, and riparian habitats, depending on the elevation (BLM 2016). The CBR is comprised of shrub and steppe (36%), desert scrub (22%), and subalpine/montane forests and woodlands (19.5%) (Comer et al. 2013a). In the CBR,

the current landscape condition tends to be moderate to high across most wildlife species distributions. There are concentrated areas of low landscape condition, reflecting the effects of roads and other development. The impacts of roads and other development become most evident when wildlife species tend to occur at lower elevations in all or part of their habitat range (Comer et al. 2013a). In the NGB, the two main drivers of low landscape integrity are developed/agricultural areas and major roads (BLM 2016). The decision area contains landscapes impacted by existing energy infrastructure.

The following section focuses on game species (big game species, upland game birds, and waterfowl) and migratory birds. Other species may inhabit the decision area but are not directly discussed. Any management direction that affects the recovery, maintenance, or improvement of wildlife populations discussed in this section would also indirectly support other native species. Table 5.1-4 lists the managed big game species with habitat in the decision area.

Game species

Big Game Species

There are six big games species in California (CDFW 2022a) but only three species have ranges intersecting the decision area: mule deer, pronghorn, and Rocky Mountain elk. There are nine big game species in Nevada (NDOW 2022), but only four species have occupied habitat within the decision area: California bighorn sheep, mountain lion, mule deer, and pronghorn. Population numbers for these big game species fluctuate annually and depend on conditions such as weather, hunting, forage quality, water availability, and cover (WAPA and BLM 2015). The decision area contains numerous big game habitats, including crucial winter habitat, crucial summer habitat, and year-round habitat. Big game migration corridors and crucial winter ranges are typically considered the most important habitats for big game species, especially during harsh winters (WAPA and BLM 2015).

Table 5.1-4. Managed Big Game Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Habitat Association and Life History	State
California bighorn sheep (*Ovis canadensis californiana*)	The decision area intersects the year-round range of California bighorn sheep in both California and Nevada. California bighorn sheep prefer rugged, open areas with vegetation and grasses. They migrate across their range throughout the seasons (NDOW 2022). Threats to bighorn sheep include habitat changes due to fire suppression, interactions with feral and domestic animals, and human encroachment. Bighorn sheep are very vulnerable to viral and bacterial diseases carried by livestock, particularly domestic sheep (BLM and DOE 2008).	California Nevada

Common Name *Scientific Name*	Habitat Association and Life History	State
Mountain lion (*Puma concolor*)	Roughly 45% of the state of Nevada is suitable mountain lion habitat. In Nevada, mountain lions are most likely found in areas of pinion pine, juniper, mountain mahogany, ponderosa pine and mountain brush (MLF 2022). Suitable habitat may be found within the decision area. Mountain lions mostly occupy remote and inaccessible areas. Their annual home range can be more than 560 square miles, while densities are usually not more than 10 adults per 100 square miles. The cougar is generally found where its prey species (especially mule deer) are located. In addition to deer, they prey upon most other mammals (which sometimes include domestic livestock) and some insects, birds, fishes, and berries. They are active year-round. Their peak periods of activity are within two hours of sunset and sunrise, although their activity peaks after sunset when they are near humans. They are hunted on a limited basis and are closely monitored in some states (BLM and DOE 2008).	Nevada
Mule deer *(Odocoileus hemionus)*	The decision area intersects crucial summer habitat and limited-use habitat for the mule deer in Nevada, as well as the yearlong range of the mule deer in California. Mule deer attain their highest densities in shrublands characterized by rough, broken terrain with abundant browse and cover. Some populations of mule deer are resident (particularly those that inhabit plains), but those in mountainous areas are generally migratory between their summer and winter ranges. They have a high fidelity to specific winter ranges where they congregate within a small area at a high density. Their winter range occurs at lower elevations within sagebrush and pinyon-juniper vegetation. Winter forage is primarily sagebrush, and true mountain mahogany, fourwing saltbush, and antelope bitterbrush are also important. Prolonged drought and other factors can limit mule deer populations. Mule deer are also susceptible to chronic wasting disease. When present, up to 3% of a herd's population can be affected by this disease (BLM and DOE 2008).	California & Nevada
Pronghorn antelope (Antilocapra americana)	The decision area intersects the summer range and crucial winter habitat of the pronghorn in Nevada and the yearlong range of the pronghorn in California. Pronghorn inhabit non-forested areas such as desert, grassland, and sagebrush habitats. Herd size can commonly exceed 100 individuals, especially during winter. They consume a variety of forbs, shrubs, and grasses, with shrubs of greatest importance. Fawning occurs throughout the species range. However, some seasonal movement within their range occurs in response to factors such as extreme winter conditions and water or forage availability. Pronghorn populations have been adversely impacted in some areas by historic range degradation and habitat loss and by periodic drought conditions (BLM and DOE 2008).	California & Nevada
Rocky Mountain elk *(Cervus canadensis)*	The yearlong range of Rocky Mountain elk intersects the decision area in California. Rocky Mountain elk inhabit portions of northeastern California. Elk are generally migratory between their summer and winter ranges (up to 60 mi annually), although some herds do not migrate. Their summer range occurs at higher elevations. Aspen and conifer woodlands provide security and thermal cover, while upland meadows, sagebrush/mixed grass, and mountain shrub habitats are used for forage. The winter range occurs at mid-to-lower elevations, where elk forage in sagebrush/mixed grass, big sagebrush/rabbitbrush, and mountain shrub habitats. They are highly mobile within both summer and winter ranges in order to find the best forage conditions. In winter, they congregate into large herds ranging from 50 to more than 200 individuals. Elk are susceptible to chronic wasting disease (BLM and DOE 2008).	California

* Intersections with the decision area were determined using GIS data or habitat range maps from NDOW (NDOW 2017) and CDFW (CDFW 2022c) when possible.

Upland Game Birds

Upland game bird species that may occur in the decision area include American crow, chukar, California quail, Eurasian collared dove, Hungarian, partridge, mourning dove, and Wilson's snipe. American crows are found throughout most of the lower 48 states in many different habitats, but they are most often seen in open woodlands (NDOW 2022). Chukar are not native to California and Nevada but are found as year-round residents in both states (BLM and DOE 2008). Chukar are found in dry, rocky terrain with abundant cheatgrass and can often be found near water sources in drainages that have sufficient escape cover (WAPA and BLM 2015). California quail are common throughout the low and middle elevations of California and northern Nevada in areas with a shrub, scrub, and brush with grass/forb openings, open woodlands, valleys where water is present, and edges of croplands (CWHR 2016a and NDOW 2022). Eurasian-collared doves can be found in various habitats including neighborhoods, grasslands, agricultural fields, woodland edges, and roadsides (NDOW 2022). Hungarian partridges can be found in northern Nevada throughout the year in agricultural lands and grasslands (NDOW 2022). Mourning doves occur in a wide range of habitats from deciduous forests to shrubland and grassland communities (WAPA and BLM 2015). Wilson's snipes are year-round residents in the decision area in California. They are found in wet pastures, canals and ditches, and other fresh emergent wetlands. Breeding occurs in wet areas adjacent to ponds and rivers (CWHR 2016b). Most upland game species exhibit annual population fluctuations depending on weather and habitat conditions (WAPA and BLM 2015).

Waterfowl

Waterfowl are also popular game birds in California and Nevada. Some common waterfowl in California and Nevada include American coot, American wigeon, Canada goose, green-winged teal, ross's goose, snow goose, canvasbacks, gadwall, greater white-fronted goose, mallard, northern pintail, redhead, ring-necked duck, northern shoveler, wood duck, tundra swan, greater scaup and lesser scaup (CDFW 2022b and NDOW 2022). Species distributions are limited to the rivers, streams, lakes, reservoirs, ponds, and wetlands found within the decision area. Population numbers for these species vary annually depending on weather and habitat conditions (WAPA and BLM 2015).

Various conservation and management plans exist for waterfowl, including the 2018 North American Waterfowl Management Plan (NAWMP), signed by the U.S., Canada, and Mexico. The NAWMP is adapted through reviews and updates in response to changing science and conservation goals (NAWMP 2018). While waterfowl species are considered game birds, they also are protected under the Migratory Bird Treaty Act (MBTA).

Migratory Birds

Many bird species occurring in California and Nevada are seasonal residents and exhibit seasonal migrations. These birds include waterfowl, shorebirds, raptors, and

neotropical songbirds. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways (BLM and DOE 2008).

The Pacific Flyway includes the Pacific Coast Route, which occurs between the eastern base of the Rocky Mountains and the Pacific coast of the U.S. This flyway encompasses the states of California, Nevada, Oregon, and Washington, and portions of Montana, Idaho, Utah, Wyoming, and Arizona. Birds migrating from the Alaskan Peninsula follow the coastline to near the mouth of the Columbia River, then travel inland to the Willamette River Valley before continuing southward through interior California. Birds migrating south from Canada pass through portions of Montana and Idaho and then migrate either eastward to enter the Central Flyway, or turn southwest along the Snake and Columbia River valleys and then continue south across central Oregon and the interior valleys of California. This route is not as heavily used as some of the other migratory routes in North America (BLM and DOE 2008).

Migratory birds encompass a variety of passerine and raptor species, most of which are protected under the MBTA of 1918 (16 USC 703-711) and Executive Order 13186.

Migratory birds include neotropical migrant species, raptors, waterfowl, shorebirds, and wading birds. A wide range of migratory birds occur within the decision area. Approximately 150 species of birds (the majority of which are neotropical migrants) are known to occur in the Surprise Field Office planning area, and 240 species of neotropical migrant birds are found in the Winnemucca District planning area (BLM 2007a; BLM 2013a). These migratory birds have variable habitat requirements and can be found in most habitat types (BLM 2013b). Many raptor species commonly breed within the Winnemucca District planning area, including golden eagle, prairie falcon, American kestrel, red-tailed hawk, northern harrier, great-horned owl, and long-eared owl (BLM 2013b). Approximately 70 bird species use the wetlands in the Winnemucca District planning area during migration and as breeding habitat. Representative species associated with these wetlands include killdeer, American avocet, Canada goose, cinnamon teal, gadwall, mallard, spotted sandpiper, and Wilson’s phalarope (BLM 2013a).

Trends and Forecasts

Climate forecasts indicate the potential for profound transformation in many ecosystems across the CBR during the next two to five decades. Climate change modeling for the CBR to 2060 suggest significant increases in maximum monthly temperatures forecasted for the decision area. Looking out to 2060, there is potential for considerable changes to the current distributions of many wildlife species. Lowest-elevation basins throughout the CBR could transition from cool semi-desert into very warm and sparsely vegetated desert landscapes more typical of the Mojave Basin and Range (Comer et al. 2013a). Similarly, the annual average maximum daily temperature and annual mean precipitation are expected to increase significantly by mid-century in the NGB. The largest temperature increase will occur in the summer months (BLM 2016).

Climate change has the potential to impact wildlife communities by changes in temperature and precipitation and therefore in changes in their seasonal habitats. Some examples of potential climate change related impacts include:

- Both winter-only and summer-only ranges (the elevational extremes) of ungulates such as mule deer are forecasted to contract substantially within the CBR (Comer et al. 2013a).
- Higher than normal summer temperatures are forecasted across most grazing allotments (Comer et al. 2013a).
- A reduction of snowpack in March should slightly increase available pronghorn habitat in the higher elevation mountainous regions in the NGB (BLM 2016).
- In the NGB, a reduction of snowpack in March and a slight increase in summer precipitation should have a favorable impact on the mule deer populations, but increasingly severe droughts will likely have a periodic negative impact on mule deer populations (BLM 2016).

5.1.4.3 Fish and Aquatic Species

Current Conditions and Context

Aquatic habitat in the region encompasses perennial and intermittent streams, rivers, and creeks, which contain mollusks, fish, amphibians, and aquatic insects (BLM 2013). Native fish species include Warner sucker (*Catostomus warnerensis*), Wall Canyon sucker (*Catostomus murivallis*), Cow Head Lake tui chub (*Gila bicolor vaccaceps*), Sheldon tui chub (*Gila bicolor eurysoma*), speckled dace (*Rhinichthys osculus*), redside shiner (*Richardsonius balteatus*), and redband trout (*Oncorhynchus mykiss* spp.). Thermal springs are also present, often supporting rare specialized species, such as springsnails (*Pyrgulopsis* spp.). Little data is available on aquatic invasive species in the vicinity of the corridor (Comer et al. 2013a). Reservoirs containing a variety of sport fish, many of which are introduced species, are also found in streams and reservoirs in the ecoregion (BLM 2013). There are several BLM sensitive springsnail species in the vicinity of the designated corridor, as well as the Lahontan cutthroat trout (*Oncorhyncus clarkii henshawi*) and the Warner sucker (*Catostomus warnerensis*), which are federally listed native fish species with critical habitat along or near the corridor (BLM 2013; BLM 2007a).

Rapid Ecoregional Assessments indicate that riparian corridors are relatively high quality for the ecoregion, and there is moderate surface water use relative to the rest of the CBR ecoregion (Comer et al. 2013). Aquatic habitat in the region is generally high quality, as indicated by the low atmospheric nitrate and mercury inputs, low sediment loading, and minimal water quality impairment (Comer et al. 2013). However, an assessment of stream habitat conditions in the Surprise Field Office planning area indicates that most streams lacked sufficient qualities to be rated as good-quality stream habitat for coldwater fish (Comer et al. 2013).

Trends and Forecasts

Rapid Ecoregional Assessments indicate that surface water is not expected to decrease in the decision area region due to withdrawals for public water supply. Future climate projects are not available for the region; however, climate conditions are generally expected to become hotter and drier in the western states, potentially impacting aquatic communities by changes in water flow, temperature, and water chemistry (Comer et al. 2013; Soulard 2012).

5.1.4.4 Special Status Species

Current Conditions and Context

The decision area lies within the range of the Greater Sage-Grouse (*Centrocercus urophasianus*) Nevada/Northeastern California population (Table 5.1-5). The GRSG is a state-managed bird species dependent on sagebrush steppe ecosystems. It is characterized as a large grouse with a chunky, round body, small head, and long tail. The decision area intersects the GRSG PHMA and the GHMA (Figure 5.1-3). The PHMA represents areas identified as having the highest habitat value for maintaining sustainable sage-grouse populations and includes breeding, late brooding-rearing, and winter concentration areas. The GHMA represents areas that are occupied seasonally or year-round by sage-grouse that are outside of PHMAs (BLM 2015).

Table 5.1-5. Special Status Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Species Status and Habitat Association	Habitat within the Decision Area
Greater Sage-Grouse (*Centrocercus urophasianus*) Nevada/Northeastern California Population	This population of Greater Sage-Grouse (*Centrocercus urophasianus*) occurs throughout Nevada and parts of northern California. Sage-grouse are state-managed bird species throughout its range and depend upon sagebrush steppe ecosystems. Portions of PHMA GHMA intersect the decision area.	PHMA: MP 15 to MP 30, MP 43 to MP 56 GHMA: MP 15, MP 30 to MP 40, MP 63

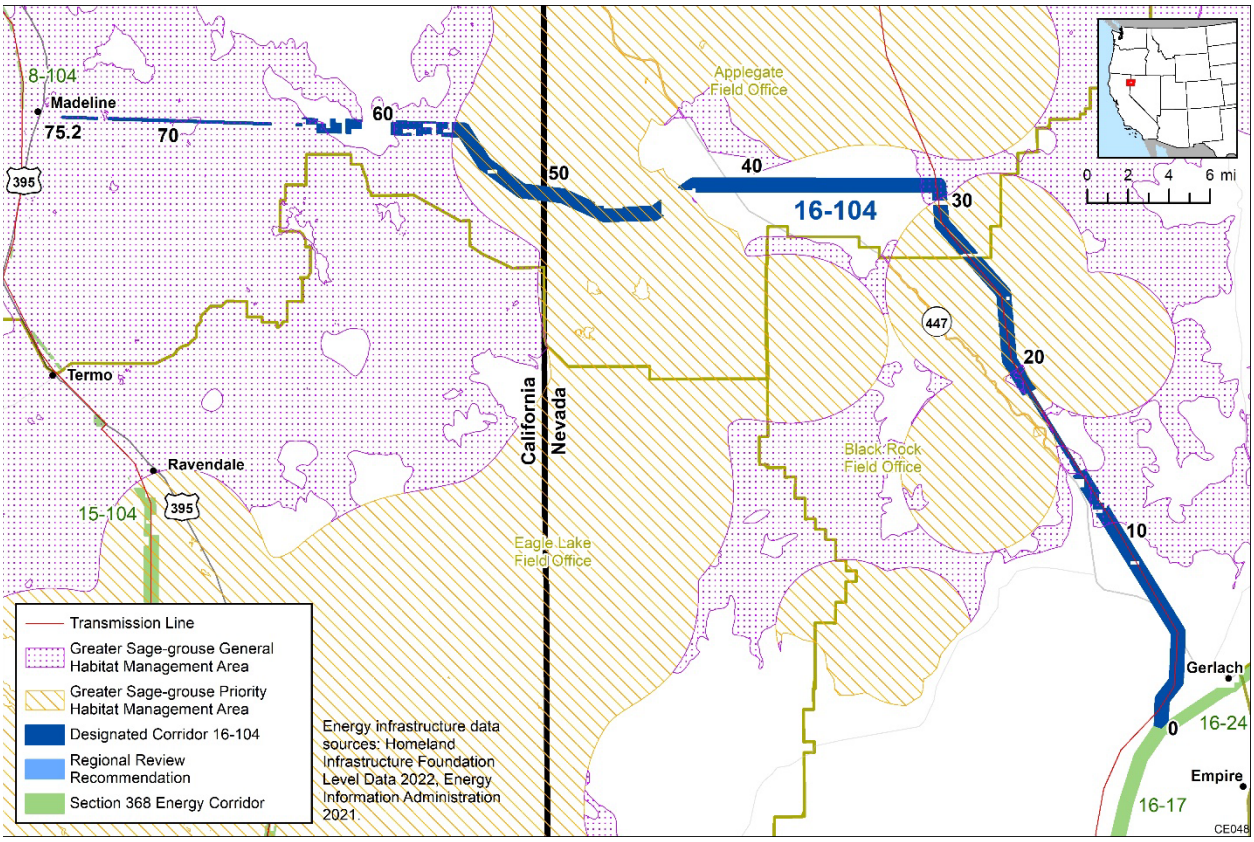

Figure 5.1-3. GHMA and PHMA in the Vicinity of the Decision Area.

The corridor-specific ecoregional conditions and context are described in the terrestrial wildlife section (Section 5.1.4.2). In 2015, the BLM and Forest Service amended a total of 98 land use plans to support sage-grouse conservation. The 2015 sage-grouse plan was prepared separately for each Western state where sage-grouse populations occur. The plan designated PHMAs and GHMAs. Amendments to some of the state-specific sage-grouse plans were developed in 2019 and 2020. Litigation is ongoing for the sage-grouse plans, and new plans are being prepared as of the publication of this AMS. GRSG is currently managed under the 2015 plans, where PHMA and GHMA are designated ROW avoidance areas.

The decision area falls under the Nevada and Northeastern California ARMPA. Both PHMAs and GHMAs are identified as ROW avoidance areas, although ROWs may be available with special stipulations. There is a 3% disturbance cap within PHMAs, but within existing designated utility corridors, the disturbance cap may be exceeded if site-specific NEPA analysis indicates that a net conservation gain to the species will be achieved, provided that the project is limited to the use for which the corridor is designated, and the designated width of the corridor will not be exceeded.

Trends and Forecasts

The Nevada/Northeastern California GRSG population has declined at an average rate of 3.86% annually between 2000 and 2016 (BLM 2019c). Threats to the species include drought, habitat degradation due to wildfire and invasive species, and direct habitat loss

due to human land-use modification. The RMPA for this GRSG population indicated that wildfire will continue to threaten the GRSG across its range through a loss of available habitat and reductions in multiple vital rates, and will further exacerbate population declines (BLM 2019c).

5.1.5 Environmental Justice

General information for environmental justice that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.5.

Current Conditions and Context

For environmental justice, a 2 mi buffer area was used to evaluate minority and low-income populations, 1 mi on either side of the decision area. The geographic distribution of minority and low-income groups within the buffer area was based on census block group data from the 2020 Census (U.S. Census Bureau 2019, 2020, 2021).

Table 5.1-6 lists the minority and low-income composition within the 2 mi buffer in the two counties on the basis of 2020 census data. The total minority population (those not listed as White alone, not Hispanic or Latino) in the buffer does not exceed 50% in either county and is not meaningfully greater (10 percentage points or more) than the countywide averages. The number of persons at or below twice the federal poverty rate in the buffer in each county does not exceed 50%, but exceeds the countywide percentage in the buffer in Washoe County (Table 5.1-6).

The 2 mi buffer had a population of 724 in 2020 (U.S. Census Bureau 2020). Median household income in Lassen County was $56,971 in 2020 and $68,272 in Washoe County, while the average unemployment rate in the two counties was 4.4% in 2021 (see Section 5.1.15).

Table 5.1-6. Minority and Low-Income Population Within Decision Area Buffer, 2020

Population Category	County and State	
	Lassen, California	Washoe, Nevada
Racial Groups		
Number of persons:		
Hispanic or Latino	68	74
White alone, not Hispanic or Latino	218	271
Black or African American alone	2	6
American Indian and Alaska Native alone	5	10
Asian alone	9	4
Native Hawaiian and Other Pacific Islander alone	3	3
Two or more races	17	31
Minority percent	32.5	32.4
County Minority percent	40.3	40.8

Population Category	County and State	
	Lassen, California	Washoe, Nevada
Low-income Population		
Number of persons	76	131
Low-income percent	25.9	39.9
County Low-income percent	34.6	27.4

Sources: U.S. Census Bureau (2019, 2020, 2021).

Trends and Forecasts

Forecasts of the effects of changes in employment opportunities, cost of living, social and cultural values, and consumer preferences on population growth and migration are undertaken only at the regional or national level for the population as a whole, with detailed forecasted data on minority and low-income populations at the census block group level not available. Preparing demographic forecasts for rural counties with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local employment, unemployment, income, population growth and migration, and the characteristics of minority and low-income populations that are difficult to forecast, particularly at the census block group level.

5.1.6 Geology, Soils, and Mining and Mineral Resources

Current Conditions and Context

The California portion of the decision area extends across Tertiary volcanic rocks, including andesite and basalt, and Tertiary pyroclastic and volcanic mudflow deposits (Jennings et al. 2010). The rock units have numerous mapped faults of unspecified displacement (Jennings et al. 2010). Near the California-Nevada state line, the designated corridor crosses a region of mixed geologic units in the Cottonwood Mountains vicinity, including the above-mentioned volcanics and loosely consolidated sediments, coarse colluvium, and basalt (Crafford 2007; Jennings et al. 2010). Further east of the border, the designated corridor crosses tuffaceous sedimentary rock units, alluvium, tuffs, and a broad area of basalt in the Buffalo Hills (Crafford 2007). The designated corridor descends into Crutcher Canyon, which includes basalt and rhyolite, with faults of unspecified displacement (Crafford 2007). The southern portion of the decision area crosses broad alluvial areas of Smoke Creek Desert that are interrupted by tuffaceous sedimentary rocks and the felsic intrusives of Godeys Rock (Crafford 2007).

Soil is poorly developed in alluvial materials in the low areas of the decision area, and it is generally absent in the upland areas of exposed bedrock.

Trends and Forecasts

The designated corridor extends across an area that is essentially unpopulated, with negligible change expected in the geologic, mineralogic, and soil conditions.

5.1.7 Human Health and Safety

General information for human health and safety that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.7.

Current Conditions and Context

Volcanic Hazards: The decision area is not located within the influence of any nearby active volcanoes. The nearest active volcanoes are Lassen Volcanic Center, Mount Shasta, and Medicine Lake Volcano (USGS 2018), all greater than 62 mi (100 km) from the western terminal of the corridor, located near Madeline, California.

Seismic Hazards: The decision area is located in an area with a relatively high earthquake potential. From MP 0 to about MP 20 of the designated corridor, there is a 2% probability of horizontal shaking exceeding 32 to 48 percent of gravity (%g) within 50 years; in the rest of the corridor, there is a 2% probability of exceeding 16 to 32%g within 50 years (USGS 2022a). If an earthquake with a peak ground acceleration (PGA) of greater than 16%g were to strike near a transmission line or pipeline within the designated corridor, damage to the infrastructure would be possible. Lassen County, California, which includes the western portion of the decision area, is within an area that has a 76% probability of one or more magnitude 7.0 earthquakes within the 30-year period 2014–2044 (CEA 2022).

Fault Crossings: Faults in which a slip has occurred within the past 10,000 years (Holocene faults) are commonly considered active (USGS 2022b). The designated corridor crosses an unnamed fault zone near MP 20, and two unnamed fault zones near MP 75 (USGS 2021; see Figure 5.1-4). These fault zones are classified as late quaternary, or less than 130,000 years in age, which indicates a low potential for activity. Other fault lines near the designated corridor are even older (less than 750,000 years).

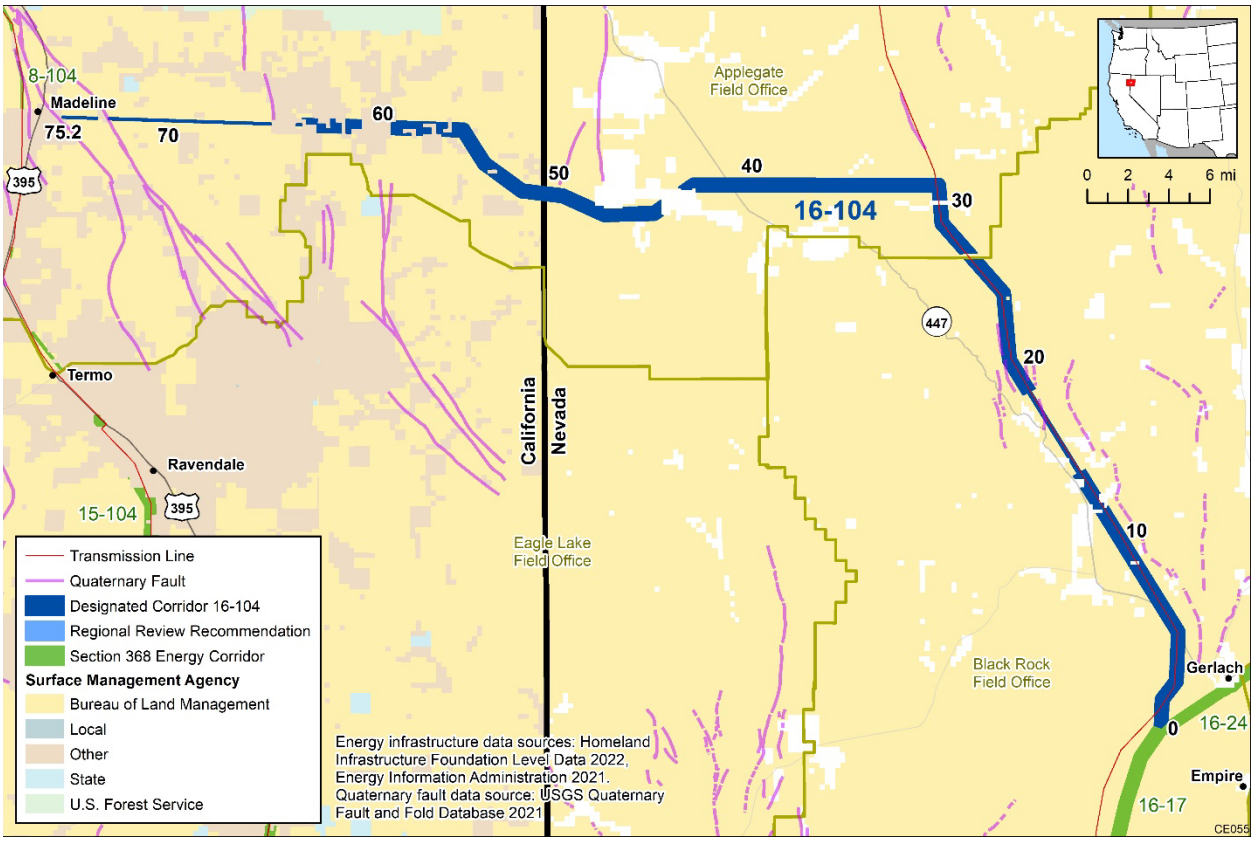

Figure 5.1-4. Fault Crossings in the Vicinity of the Decision Area.

Liquefaction Potential: The decision area is not located in an area rated for risk of liquefaction (i.e., not rated as low, intermediate, or high liquefaction potential) (California State Geoportal 2022). This indicates that the risk of liquefaction is low.

Landslide Potential: The area between about MP 30 and MP 50 of the designated corridor is classified as high susceptibility and of moderate incidence for landslides (BLM and DOE 2008, WWEC PEIS Figure 3.14-5). A large area just to the north of the designated corridor at this location is classified as moderate susceptibility and of low incidence.

Trends and Forecasts

The decision area has a moderate probability of experiencing a relatively powerful earthquake and/or landslide within the next 50 years.

5.1.8 Hydrology

Current Conditions and Context

The decision area covers a mix of terrain consisting of rugged mountainous zones and broad, flat alluvial plains and washes. Its western tip is within 100 meters (m) of the edge of the Pacific Northwest basin fill aquifer associated with the Madeline Plains of California. The center of the decision area is located on basin-fill aquifers beneath

Nevada's Duck Flats. The southern portion of the decision area extends across broad portions of additional basin-fill aquifers beneath the Smoke Creek Desert (USGS 2000). The bedrock areas do not generally serve as aquifers.

The designated corridor crosses numerous unnamed ephemeral stream channels in mostly alluvial or bedrock regions. The western portion of the decision area covers part of Red Rock Lake, Nevada and adjacent land. This lake is occasionally dry, based on a review of historical aerial photos. Just west of the state boundary, the designated corridor crosses a perennial stream in Tuledad Canyon, California. In Nevada, it crosses the main channel of ephemeral Duck Flat Wash. In the Deep Hole Spring Creek valley of Nevada, the designated corridor crosses numerous ephemeral drainages and one perennial stream, Clear Creek, all of which are tributary to Deep Hole Spring Creek. It also extends over a spring, New Spring (USGS 2022c).

The decision area is not located on a sole source aquifer (EPA 2023), and it does not cross any Wild and Scenic Rivers (USGS 2022c).

Trends and Forecasts

The decision area extends across an area that is essentially unpopulated. Changes in hydrologic conditions are expected to occur on short time scales in response to precipitation events.

5.1.9 Lands and Realty

General information for lands and realty that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.9.

Current Conditions and Context

Lands and realty management is guided by decisions made in existing RMPs. For Corridor 16-104, the planning area includes the BLM-administered lands managed under the Alturas RMP, the Surprise RMP, and the Winnemucca District Planning Area RMP. The lands and realty program consists generally of land use authorizations (e.g., ROWs) and land tenure (purchases and acquisitions, sales and exchanges, and withdrawals of public land).

Trends and Forecasts

In general, current management trends for land tenure indicate that the BLM will pursue a long-term program for repositioning public lands toward improved manageability and increased public benefits. Lands may be acquired to provide access or facilitate management, or to protect or enhance natural resources (BLM 2007b). Future opportunities for land acquisitions would be contingent on willing sellers, the condition of proposed acquired lands, and the availability of funding (BLM 2023a).

In general, the BLM will continue to consider land exchanges if such exchanges enhance public resource values and improve land ownership patterns and management capabilities of both private and public lands by consolidating ownership and reducing

the potential for conflicting land use. Small, isolated parcels of public lands, especially those surrounded by large blocks of individually owned private parcels, are most likely to be considered for disposal in the future. Generally, the BLM would also consider the disposal of some isolated parcels near communities, if those parcels are deemed necessary for community expansion and economic development. The BLM anticipates an increase in requests from private individuals and communities to acquire public lands in the future (BLM 2019a).

The lands and realty program responds to requests for ROWs, permits, leases, withdrawals, and land tenure adjustments from other programs or outside entities. The frequency of such requests is anticipated to increase as neighboring communities grow, and as the demand for use of public lands increases. As a result, future management of the lands and realty program may become more intense, complex, and costly (BLM 2019a).

The main land use topics addressed in this section focus on renewable energy; ROWs, particularly utility corridors; and military flight operations. While military flight operations are not an actual use of BLM-administered lands, they could have potential effects on energy corridors, particularly those involving above-ground transmission lines.

5.1.9.1 Renewable Energy

Current Conditions and Context

In 2005, the BLM signed a ROD implementing a wind energy development program. BLM-administered lands were categorized into areas having a low, medium, or high potential for development of wind energy production based on wind power classifications. Lands categorized as having low potential fall within wind power Classes 1 and 2, lands with a medium potential fall within wind power Class 3, and lands with a high potential fall within wind power Class 4 and higher. Wind resources in Class 4 and higher are generally considered to be economically developable with current technology. Class 3 wind resources are expected to become more economical as low-wind-speed turbines become increasingly available (BLM 2005b). For much of the decision area, the BLM-administered lands have a low potential for wind energy production. There are scattered areas with medium to high potential near MP 52 to MP 62 of the designated corridor (BLM 2005b).

In 2012, the BLM approved the Western Solar Plan, implementing RMP amendments for a solar energy development program in six southwestern states, including California and Nevada (BLM and DOE 2012). The Solar Programmatic Environmental Impact Statement (PEIS) ROD designated Solar Energy Zones (SEZs), areas that the BLM prioritizes for utility scale production of solar energy as well as variance areas (areas potentially available for utility-scale solar energy development located outside of SEZs). On December 8, 2022, the BLM published an NOI to prepare a PEIS and conduct scoping that would evaluate the environmental effects of potential improvements and expansions to the BLM's utility-scale solar energy planning (BLM 2022b). No SEZs or

solar variance areas occur in the immediate area of the designated corridor (DOE and BLM 2014).

Trends and Forecasts

Renewable energy production on BLM public lands has increased in recent years. As of November 2021, permitted renewable energy projects on BLM-managed lands include 36 wind, 37 solar, and 48 geothermal projects with a total combined capacity of more than 12 gigawatts of power (BLM 2023b). Continued growth of responsible renewable energy has recently been supported by Executive Order 14008, the Energy Act of 2020, and Congressional direction to seek to permit at least 25 gigawatts of solar, wind, and geothermal energy production on public lands no later than 2025 (BLM 2023c). In addition, laws enacted in most of the western states require energy companies and utilities to provide a portion of their energy from renewable energy sources. As a result, the BLM anticipates an increased interest in the use of public lands for renewable energy development.

The placement of renewable energy facilities depends on a number of factors that are not always addressed in BLM land use plans, such as economics, proximity to the electrical grid, project design, current technology, and potential resource impacts. However, BLM land use plans can be amended through the public process to accommodate such uses if necessary (BLM 2008b).

Under the Western Solar Plan, areas that are not included as part of the SEZs or variance areas are to be considered as potential exclusion areas for utility-scale solar energy development. Exclusion areas are identified based on the potential for resource conflicts (e.g., Greater Sage-grouse habitat) or because lands are not well suited for utility-scale solar energy development (BLM 2019a). The upcoming Solar PEIS may identify additional areas as suitable for utility-scale solar energy development, potentially increasing future solar energy development on BLM-administered land.

5.1.9.2 Rights-of-Way

Current Conditions and Context

Section 503 of FLPMA provides for the designation of energy corridors and encourages use of ROW collocation to minimize environmental impacts and the proliferation of separate ROWs.

The major energy and transportation ROWs associated with the decision area include an existing 1,000 kV transmission line from MP 0 to MP 30. A 60 kV transmission line is also within and adjacent to a portion of the designated corridor (Figure 5.1-5) (BLM, Forest Service, and DOE 2022).

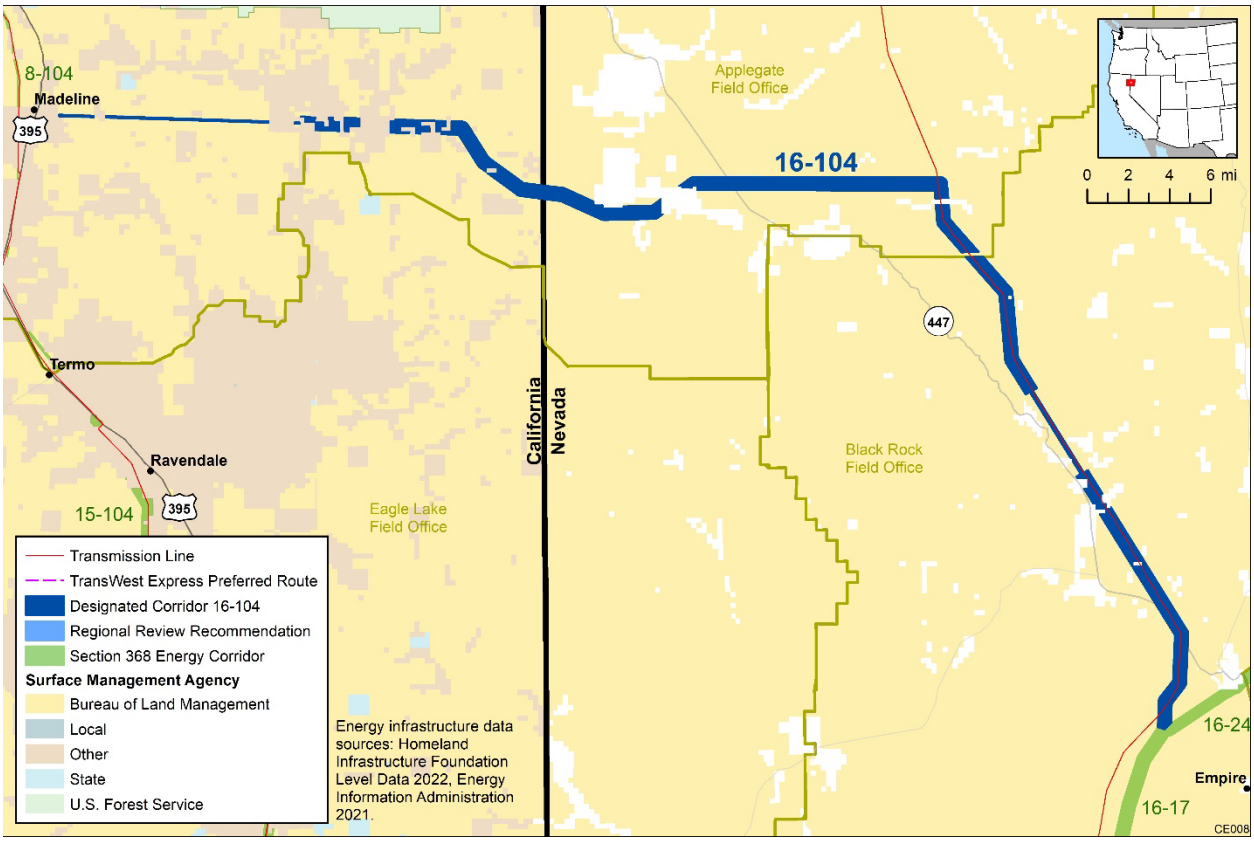

Figure 5.1-5. Transmission Lines in the Vicinity of the Decision Area

Trends and Forecasts

In general, requests for ROWs will continue to increase due to increasing population growth and urban expansion, which in turn, will increase demand for energy and the need for improved electric transmission grid reliability. Demand for ROWs may increase within areas that have potential for wind, solar, and geothermal energy. Existing or designated corridors could provide grid connectivity to accommodate for the anticipated growth in renewable energy production.

The BLM will continue to process and grant ROWs, consistent with national, state, and local plans. The BLM will continue to encourage colocation of ROWs to minimize environmental impacts and proliferation of separate ROWs.

As with past and present development, designed energy corridors or colocation with existing infrastructure will continue to be preferred for future development of linear utility infrastructure projects (particularly large, interstate energy transport projects). Colocation of utility infrastructure could continue to concentrate development, and associated surface disturbance, to certain areas, including areas adjacent to highways and major county roads, railroads, Section 368 energy corridors, and other existing or proposed energy corridors (BLM 2019a).

There are currently no major pending ROWs for transmission line or pipeline projects within the decision area. The designated corridor is not collocated along any existing transportation routes (BLM, Forest Service, and DOE 2022).

5.1.9.3 Military Training Flight Operations

Current Conditions and Context

The decision area is located within an MTR-VR between MP 31 and MP 36 and from MP 51 to MP 60. The decision area is also located within an SUA from MP 0 to MP 23, where it overlaps an existing 1,000 kV transmission line.

Trends and Forecasts

The trends and forecasts for military training flight operations are not under the purview of the BLM. DoD would consult with the BLM if any significant changes or increases in military training flights over BLM-administered lands were planned in the future.

5.1.10 Lands with Wilderness Characteristics

There are no managed lands with wilderness characteristics units within the decision area. Therefore, lands with wilderness characteristics are not expected to be affected during this planning effort and will not be discussed further.

5.1.11 Livestock Grazing and Wild Horse and Burro

General information for livestock grazing and wild horse and burro that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.11.

5.1.11.1 Livestock Grazing

Current Conditions and Context

Management direction for livestock grazing comes primarily from the RMPs that provide current management for livestock grazing and rangeland health. Most BLM-administered lands are or can be grazed by livestock, except for lands considered unsuitable due to steep slopes (greater than 70%) or barren areas (less than 2% vegetation) (BLM 1993, 2008b; BLM and DOE 2008). The number of Animal Unit Months (AUMs) could be modified over time—e.g., based on whether allotments meet land health standards (BLM 2008a). An AUM is the amount of forage necessary to support one cow and calf, five sheep, one horse, or one indigenous animal for one month. There are 10 grazing allotments within the decision area (Table 5.1-7 and Figure 5.1-6). For nine grazing allotments, the decision area overlaps less than 5% of the total size of the allotment. The decision area overlaps 17% of the Red Rock Lake allotment, located within the Applegate Field Office planning area in California. Grazing allotments within the Surprise Field Office planning area are managed in compliance with the standards established in the Approved Northeastern California and Northwestern Nevada Standards and Guidelines for Livestock Grazing (BLM 2008b).

Table 5.1-7. Livestock Grazing Allotments Intersected by the Decision Area

Allotment Name (Allotment Number)	Administrative State	Field Office	Allotment Acreage	Percentage of allotment within decision area
Tuledad (00802)	California	Applegate	164,020	3.9
Red Rock Lake (00803)	California	Applegate	2,572	17
Hall Field (00314)	California	Applegate	2,839	0.2
Tule Mountain (00310)	California	Applegate	60,726	0.5
Dry Cow (00306)	California	Applegate	6,321	2.6
North Mitchell Hill (00299)	California	Applegate	4,259	3.3
Bare (00900)	Nevada	Applegate	201,626	2.9
Buffalo Hills (00127)	Nevada	Black Rock	483,634	1.6
Selic-Alaska (00800)	California	Applegate	9,641	0.4
Coyote (00130)	Nevada	Black Rock	37,401	1.5

Source: BLM 2023d

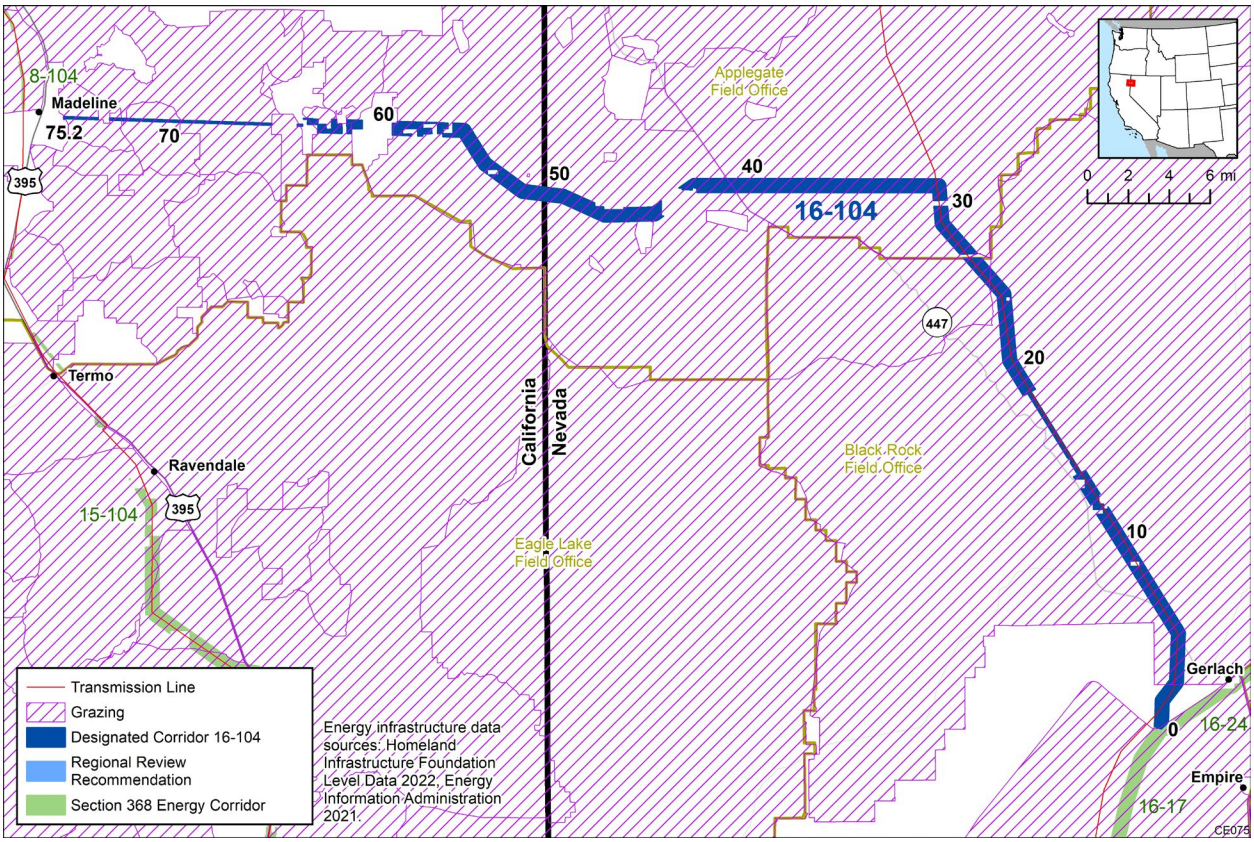

Figure 5.1-6. Grazing Allotments in the Vicinity of the Decision Area

Grazing allotments within the Winnemucca District planning area are managed to achieve land health standards according to the Sierra Front-Northwest Great Basin RAC Standards and Guidelines for Rangeland Health (BLM 2015).

Trends and Forecasts

Livestock grazing will continue to be managed through existing laws, regulations, and policies. Appropriate Best Management Practices (BMPs) will be followed to protect rangeland resources and, where necessary, to mitigate any conflicts with other uses and values. The BLM will continue to assure compliance with existing permit/lease requirements, to modify permits and leases, to monitor and supervise grazing use, and to remedy unauthorized grazing use. Management direction for livestock grazing comes primarily from the RMPs that provide current management for livestock grazing and rangeland health. Review of existing AUMs would be conducted on individual allotments through assessment of existing activity plans (i.e., allotment management plans, livestock grazing decisions, habitat management plans, watershed management plans, biological opinions, and multiple-use decisions). BLM enhances range conditions by controlling animal numbers, regulating season of use, regulating duration of use, and periodically resting rangelands as part of livestock management systems and following catastrophic events, such as fire (BLM 2008b).

The occurrence of weather extremes or shifts in climatic variables, such as the increase in frost-free days, change in the timing or amount of precipitation, and warmer summers, is often cited as a growing trend that may be the result of climate change (see Section 5.1.2). Increases in temperatures and shifts in precipitation patterns may reduce livestock forage production and alter the livestock carrying capacity on BLM-administered lands. Season or timing of grazing use and livestock numbers, distribution, intensity, and type of livestock may need to be adjusted on a temporary or long-term basis in response to climatic factors.

5.1.11.2 Wild Horse and Burro

Current Conditions and Context

The decision area intersects or is near to five wild horse and burro herd management areas (HMAs) (Figure 5.1-7). These include the Buckhorn, Coppersmith, and Fox Hog HMAs, which are addressed within the Surprise RMP (BLM 2008b), and the Granite Range and Buffalo Hills HMAs, which are addressed within the Winnemucca District Planning Area RMP (BLM 2015) (Table 5.1-8). The maximum appropriate management level (AML) for the HMAs is 958 wild horses and zero wild burros; however, the HMAs contain 961 wild horses and 19 wild burros (BLM 2023e).

Wild horse and burro HMAs that overlap the decision area also overlap GRSG PHMAs and GHMAs. The designated corridor overlaps PHMA from MP 15 to MP 24 and MP 43 to MP 56, and overlaps GHMAs from MP 14 to MP 15 and MP 30 to MP 31.

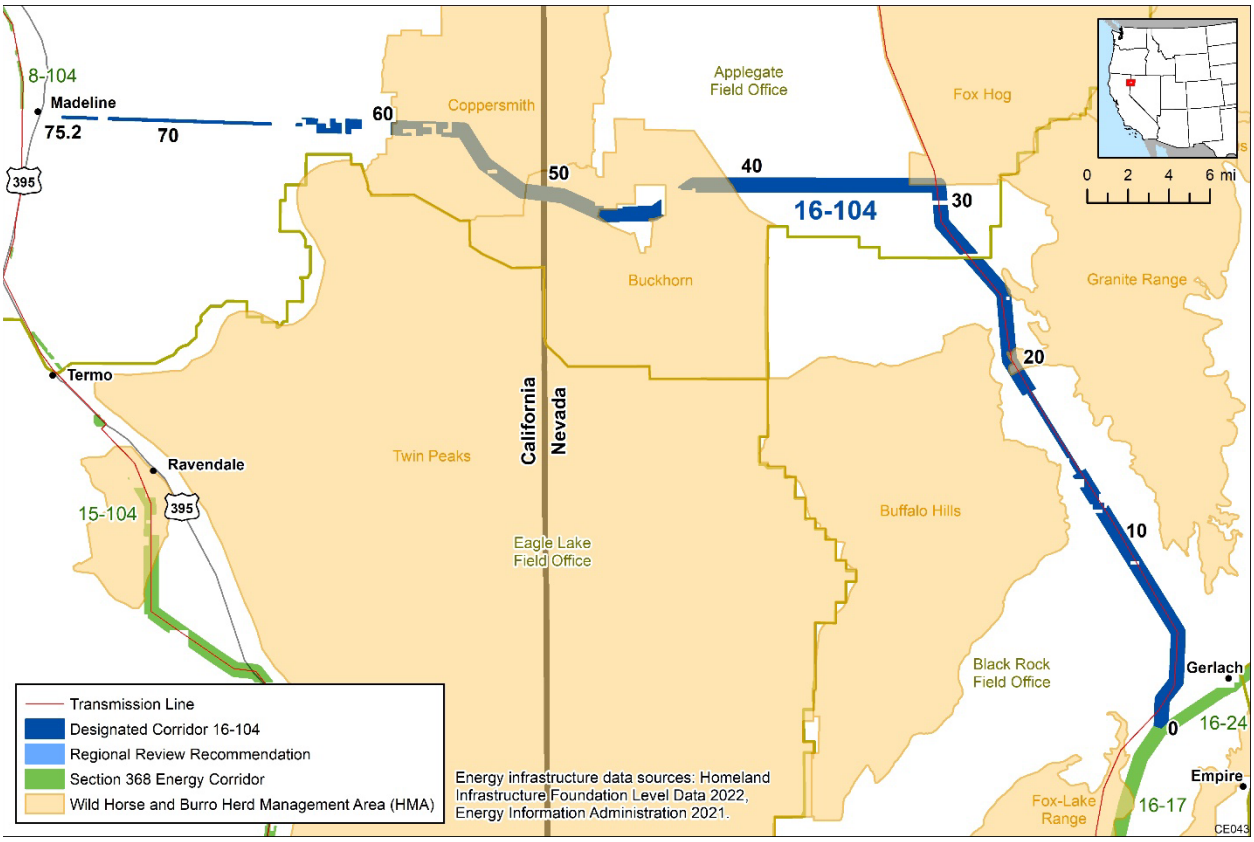

Figure 5.1-7. HMAs in the Vicinity of the Decision Area

Table 5.1-8. HMAs Within or in Proximity to the Decision Area

HMA	State	Planning Area	Location within Decision Area
Buckhorn	California	Surprise RMP	MP 40 to MP 51
Coppersmith	California and Nevada	Surprise RMP	MP 51 to MP 59
Fox Hog	Nevada	Surprise RMP	MP 30 to MP 32
Granite Range	Nevada	Winnemucca RMP	MP 20 to M 21, MP 24
Buffalo Hills	Nevada	Winnemucca RMP	MP 15 (does not intersect decision area)

Pertinent information on these HMAs is listed below (BLM 2023e). Herd areas (HAs) created from other HAs do not list acres in the HA columns, and will appear with a value of zero. The last gather month and year data reflect the removal of 10 or more animals during the fiscal year.

Coppersmith HMA (California and Nevada)

HA Size: 0
MHA Size 73,422 ac (60,246 ac on BLM-administered land)
AML: 50–75, 2023 estimated horse population is 98 (most recent population inventory April 2022)
Most recent year at AML: 2012
Last gather: December 2009

Buckhorn HMA (California and Nevada)

HA size: 0

HMA Size: 76,590 ac (67,415 ac on BLM-administered land)

AML: 59–85, 2023 estimated horse population is 255 (most recent population inventory April 2022)

Most recent year at AML: 2012

Last gather: December 2009

Fox Hog HMA (Nevada)

HA size: 127,577 ac (121,541 ac on BLM-administered land)

HMA size: 127,122 ac (121,086 ac on BLM-administered land)

AML: 120–226, 2023 estimated horse population 265 (most recent population inventory May 2022)

Most recent year at AML: 2014

Last gather: October 2021

Granite Range HMA (Nevada)

HA size: 103,804 ac (92,016 ac on BLM-administered land)

HMA size: 103,804 ac (92,016 ac on BLM-administered land)

AML: 155–258, 2023 estimated population 155 (most recent population inventory May 2022)

Most recent year at AML: 2022

Last gather: September 2022

Buffalo Hills HMA (Nevada)

HA size: 131,861 ac (125, 207 ac on BLM-administered land)

HMA size: 131,861 ac (125,207 ac on BLM-administered land)

AML: 188–314, 2023 population estimate 188 (most recent population inventory March 2021)

Burros: 2021 population estimate 19 (AML: 0/0)

Most recent year at AML: 2002

Last gather: July 2022

Trends and Forecasts

Challenges to wild horse and burro management include controlling populations within HMAs to maintain herd and rangeland health. Wild horse and burro herds that are above their established AML are at increased risk for food and water scarcity and habitat

degradation, especially as extreme drought conditions continue to threaten animal and land health across the West.

BLM-wide population estimates from March 2022 indicate a two-year decline in wild horse and burro population; the population decreased by 3,805 animals between March 2021 and March 2022. As of March 2022, the estimated total wild horse and burro population was 82,384 animals, three times the BLM's goal of approximately 27,000 animals (BLM 2022d). Climate change effects, including change in precipitation patterns and temperature, could further reduce water and forage availability and habitat for wild horses and burros.

5.1.12 Noise

General information for noise resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.12.

Current Conditions and Context

Except for small towns such as Gerlach in Nevada or Madeline in California, which are located on each end of the designated corridor, there are no population centers around the decision area. Given its remoteness, there are no sensitive receptors (e.g., residences, hospitals, schools, or nursing homes) located near the decision area.

California does not have regulatory standards limiting noise levels from sources associated with activities within the decision area (NPC 2022). However, California State law requires a Noise Element, which is a county's approach to controlling environmental noise and limiting community exposure to excessive noise levels. The fundamental goals of a Noise Element are to: (1) identify and analyze the major noise sources in the community; (2) provide data and guidance to inform a pattern of land uses that minimizes exposure of community residents to excessive noise; (3) protect quiet areas of a community from noise; and (4) develop implementation measures and strategies to address existing and foreseeable noise problems. The Lassen County Noise Ordinance (Lassen County Code, Chapter 9.65) defines limits for excessive noise and sets noise-level limits to protect noise-sensitive land uses. In general, noise levels within commercial and industrial areas are given a higher allowance, but noise from all sources is limited to no greater than 65 A-weighted decibel (dBA) Community Noise Equivalent Level (CNEL) at noise-sensitive land use receiver sites (see Appendix A.12).

Nevada also does not have regulatory standards limiting noise levels from sources associated with activities within the decision area (NPC 2022). Washoe County in Nevada does not have county-wide noise regulations or ordinances, but Reno and Sparks have noise ordinances without permissible noise limits (NPC 2022).

Noise sources around the decision area include road traffic, railroad traffic, aircraft flyover by military and civilian aviation, agricultural activities, animal noise from nearby wildernesses, industrial activities (e.g., surface mining or logging), and infrequent community activities and events. In addition, crackling or hissing corona noise from transmission lines and humming noise from substation transformers are additional

noise sources along the eastern half of the corridor where there is an existing transmission line. Except at each end of the corridor, the area around the corridor is mostly undeveloped, and its overall character is considered mostly pristine to rural.

Airports: The nearest airport in Washoe County, Nevada is Empire Airport, about 4 mi (6 km) southwest of the designated corridor at MP 0. The nearest airport in Lassen County, California is Ravendale Airport, about 16 mi (26 km) south of the western end of the designated corridor. Several public, private, and military airports along with heliports in these counties are scattered around the area.

Roads and Railroads: In Nevada, State Route 447 runs parallel to or crosses the designated energy corridor, starting from MP 0 near Gerlach. In California, U.S. Route 395 runs in the north–south direction, about 1 mi (1.6 km) west of the corridor near Madeline, California, and State Route 510 runs near the designated corridor. In addition, many county roads and local roads are located within the decision area. The nearest rail line is the Union Pacific Railroad (UPRR), which connects Winnemucca, Nevada to Sacramento, California and crosses the designated energy corridor at MP 0 near Gerlach, Nevada.

To date, short-term sound level measurements and manual traffic counts were performed for U.S. Route 395 near Madeline, California (Dudek 2021). The sound level of 67 dBA CNEL was reported at the center of the road and sound was identified the distance of 30 ft (9 m) to the boundary of the 65 dBA CNEL contour, which is the maximum acceptable level at noise-sensitive land use receptors. This traffic noise reduced to the background level within about 1 mi (1.6 km) from the road. Except for this measurement, no environmental noise survey has been conducted around the decision area. On the basis of the population density, the day-night average sound level (Ldn or DNL) is estimated to be 41 dBA for Washoe County in Nevada, which corresponds to rural residential areas. The Ldn is estimated to be 30 dBA for Lassen County, California, which corresponds to wilderness areas (Cavanaugh and Tocci 1998, Miller 2002).

Trends and Forecasts

Primary noise sources include roads, airports, railroads, and stationary sources. In general, doubling the number of noise sources of the same intensity increases the sound level only by 3 dB, which is a barely noticeable difference. For example, if the number of passenger cars increases from 1,000 to 2,000 vehicles per hour on any road, the noise level increases only by 3 dB. This level of drastic change in activities is not anticipated in the remote and unpopulated area in the decision area. As a result, even with population and industrial growth in the region, noise level is forecasted to increase slightly and unnoticeably in the near future.

5.1.13 Paleontology

General information for paleontological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.13.

Current Conditions and Context

Figure 5.1-8 depicts the PFYC Classes within the decision area. The PFYC Classes represent an estimate based on the available regional geologic data; they are not meant to replace project-specific evaluations of potential paleontological resources. The PFYC Classes in the Nevada portion of the decision area include Class 1 and 2 (very low and low, respectively). From approximately MP 15 through MP 50, the PFYC classification is Class 1. Overall, the probability of impacting significant paleontological resources in this area would be very low, and further assessment of paleontological resources is likely unnecessary. At the southeast end of the corridor, from MP 0 to MP 15, as well as within a small portion near MP 48, the PFYC classification is Class 2. Overall, the probability of impacting significant paleontological resources in this area would be low, and further assessment of paleontological resources would likely not be unnecessary, unless paleontological resources are known or found to exist. PFYC Classes in the California portion of the decision area were not available at the time of publication.

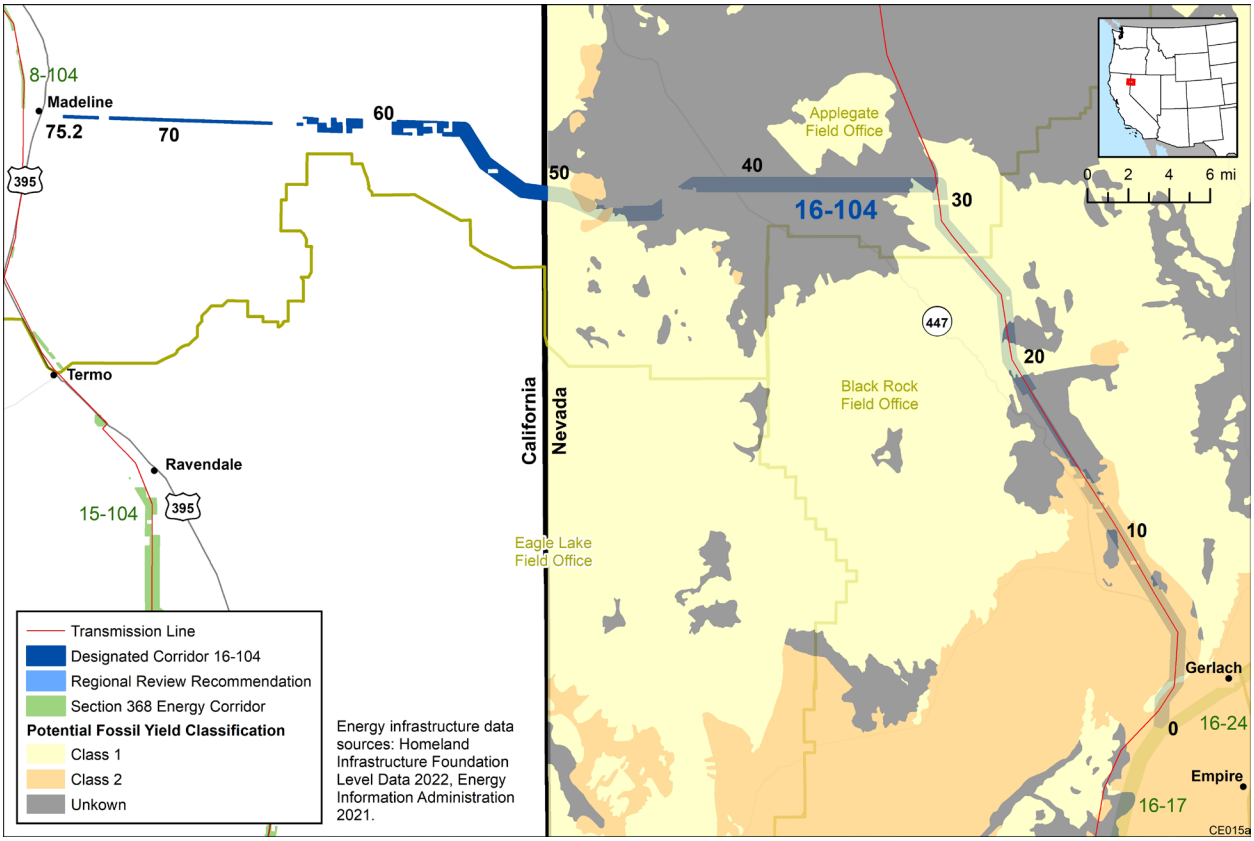

Figure 5.1-8. Potential Fossil Yield Classification in the Vicinity of the Decision Area

Although no systematic field survey has been conducted for the Winnemucca District Office in Nevada, many paleontological localities have been identified by researchers and paleontologists. Some of the most important paleontological resources in the Winnemucca planning area include Mesozoic fossils of icthyosaurs, which are some of the earliest North American members of the reptilian group, and Triassic remains of hybodont sharks, which are some of the few known occurrences in North America. The

Lund Petrified Forest consists of petrified wood paleoflora in Washoe County between Gerlach and Vya, Nevada, northeast of the corridor. The Winnemucca planning area includes other fossil mammal and fish remains as well as several other sources of paleo-environmental information (BLM 2013a).

Trends and Forecasts

Typically, impacts on paleontological resources occur due to erosion, OHV use, excavation, theft, vandalism, and surface-disturbing activities, such as trampling by animals and humans. Human-induced impacts including damage, theft, and vandalism are usually concentrated near roads and trails and other high traffic areas. In the future, impacts on paleontological resources may increase with increased visitation to areas containing these resources (BLM 2013).

5.1.14 Recreation

General information for recreation that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.14.

Current Conditions and Context

Dispersed recreation occurs throughout the decision area, particularly within the Poodle Mountains WSA area. Recreationalists visit Poodle Mountains WSA for hiking, camping, horse-packing, and rock climbing and scrambling. The designated corridor crosses the California NHT, portions of which are available for hiking, biking, and horseback riding. The nearby Tule Mountain WSA attracts deer hunters with primitive hunting camps. Section 5.1.14 describes these specially designated areas, among other congressionally and BLM-designated areas in and within close proximity to the decision area.

The decision area is designated as either limited or open OHV access; none of the decision area is designated as closed to OHV access (BLM 2008c, 2008a, 2015).

Trends and Forecasts

As population pressures increase, and with them the demand for quality outdoor recreation, the BLM field offices will retain and develop their ability to provide a wide variety of recreational opportunities. In part, this demand would be met by restoration and regular maintenance of existing recreation sites, creation of new recreational facilities, and more intensive management. However, the unspoiled character of natural landscapes must be preserved and vulnerable areas would be excluded from all development (recreational and otherwise) in order to preserve their pristine, natural condition (BLM 2007a, 2007b, 2008c, 2008, 2019a, 2019b). The use of developed recreation sites is on an upward trend, following growth trends in adventure tourism and heritage tourism, and increased populations in communities.

It is reasonable to expect that there will be a continuing need to construct recreation facilities in response to community and tourism industry growth. With visitation to BLM-

administered public lands continuing to increase (and with present visitation already creating the need for additional facilities), facilities to provide for these visitors must keep pace, so as to protect the land and to provide for human sanitation. Current use levels continue to degrade resources, and additional facilities are needed to accommodate visitation and to stabilize resource values (BLM 2019a).

OHV use has become a substantial issue, because of the number of users who participate in this recreation opportunity, and because of concerns related to the potential resource degradation that can result from high levels of unmanaged use in sensitive areas. OHV use has become one of the fastest growing recreation activities. Visitors are drawn to these areas to experience the numerous roads and trails available for OHV use, the diverse backcountry opportunities, the spectacular scenery, and the challenging OHV opportunities the landscape and terrain provide. This trend is expected to continue (BLM 2019a). Increasing OHV traffic on public lands has caused the uncontrolled proliferation of user-created, undesignated trails arising from repeated cross-country travel. Unauthorized motorized use causes natural resource damage (e.g., to soils and habitat) and increased public safety concerns (WAPA and BLM 2015). The development of field office–wide OHV plans will help to control the social and environmental impacts related to this activity (BLM 2007a).

5.1.15 Socioeconomics

Current Conditions and Context

Socioeconomic data are presented for a ROI around the decision area, composed of the counties in which the corridor would be located. The ROI for the decision area includes Lassen County, California and Washoe County, Nevada.

Population

In 2020, the population of the two-county ROI was 519,222 people (Table 5.1-9). During the period 2010 to 2020, population increased at a low annual average rate in Washoe County, and declined in Lassen County, also at a low annual average rate, with population in the ROI as a whole increasing at an average annual rate of 0.01% during this period. The population in the ROI is projected to be 617,573 by 2040.

Table 5.1-9. ROI Population

County	Population			Average Annual Growth Rate, 2010–2020 (%)
	2010	2020	2040	
Lassen, California	34,895	32,730	27,293	-0.01
Washoe, Nevada	421,407	486,492	590,280	0.01
ROI Total	456,302	519,222	617,573	0.01

Sources: Nevada Department of Taxation 2021; State of California 2022; U.S. Census Bureau 2019, 2020.

Employment and Income

Table 5.1-10 presents civilian labor force statistics for the ROI in 2021. More than 250,400 people were employed in the ROI as a whole, and 11,429 were unemployed,

with unemployment rates of 4.3% in Washoe County and 5.9% in Lassen County (Table 5.1-10). Wage and salary employment (not including self-employed persons) by industry for 2020 is provided in Table 5.1-11. More than 125,300 people in the ROI were employed in services (51.3% of the total), with 35,220 (14.4%) persons employed in wholesale and retail.

Table 5.1-10. ROI Civilian Labor Force Statistics, 2021

County	Employed, 2021	Unemployed, 2021	Unemployment Rate, 2021
Lassen, California	8,615	544	5.9
Washoe, Nevada	241,797	10,885	4.3
Total	250,412	11,429	4.4

Source: U.S. Department of Labor 2022.

Table 5.1-11. ROI Wage and Salary Employment by Industry, 2020

Sector	County		ROI Total	Share of ROI Total (%)
	Lassen, California	Washoe, Nevada		
Agriculture, forestry, fishing and hunting	395	1,073	1,468	0.6
Mining, quarrying, and oil and gas extraction	22	884	906	0.4
Utilities	107	1,744	1,851	0.8
Construction	756	18,593	19,349	7.9
Manufacturing	140	19,728	19,868	8.1
Wholesale and retail trade	751	34,469	35,220	14.4
Transportation and warehousing	190	12,835	13,025	5.3
Finance, insurance, and real estate services (FIRE)	191	13,251	13,442	5.5
Services, not incl. FIRE	3,147	122,181	125,328	51.3
Public Administration	2,557	11,139	13,696	5.6
Total	8,256	235,897	244,153	

Source: U.S. Census Bureau 2022c

Table 5.1-12 details income in the ROI for 2020. Total personal income stood at $32.7 billion, generated primarily in Washoe County ($31.5 billion), while median annual income was $56,971 in Lassen County and $68,272 in Washoe County.

Table 5.1-12. ROI Personal Income, 2020

County	Total Personal Income ($ billions)	Median Income ($)
Lassen, California	1.2	56,971
Washoe, Nevada	31.5	68,272
ROI Total	32.7	

Sources: U.S. Census Bureau 2022d; U.S. Department of Commerce 2022.

Housing

Table 5.1-13 details housing characteristics within the ROI in 2020. There were 3,964 vacant rental housing units in the ROI as a whole, with rental vacancy rates of 1.5% in Lassen County and 1.9% in Washoe County.

Table 5.1-13. ROI Housing Characteristics, 2020

County	Housing Units		Rental Vacancy Rate (%)
	Total	Vacant Rental	
Lassen, California	12,766	191	1.5
Washoe, Nevada	201,401	3,773	1.9
ROI Total	214,167	3,964	1.9

Sources: U.S. Census Bureau 2022e, 2022f.

Trends and Forecast

In 2020, the population of the two-county ROI was 519,222, with the majority of people (486,492) living in Washoe County (Table 5.1-9). Population is projected to decline slightly in Lassen County, at an annual rate of -0.01%, and to increase at a similar rate in Washoe County, between 2020 and 2040. As noted above, the population in the ROI is projected to be 617,573 by 2040.

Given the lack of appropriate geographic-specific forecasts for changes in employment opportunities, business costs, cost of living, and consumer preferences, the effects of which may be more easily predicted at the regional or national level, forecasts of their effects on employment, employment by industry, unemployment, income, and housing at the county level are not available. Preparing forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility, or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local economic activity that are difficult to forecast.

5.1.16 Special Designations

General information for special designations that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.16.

Special designations are addressed in this section only if they are intersected by or located within close proximity to the decision area. These include:

- California NHT; and
- Poodle Mountain WSA.

The proximity of special designation areas to the decision area is depicted in Figure 5.1-9.

5.1.16.1 National Historic Trails

Current Conditions and Context

The designated corridor intersects the California NHT in Nevada from approximately MP 4 to MP 5 (Figure 5.1-9) within the Winnemucca District planning area. The corridor does not intersect the California NHT within a NHT high potential segment, and there is an existing transmission line where the designated corridor crosses the trail.

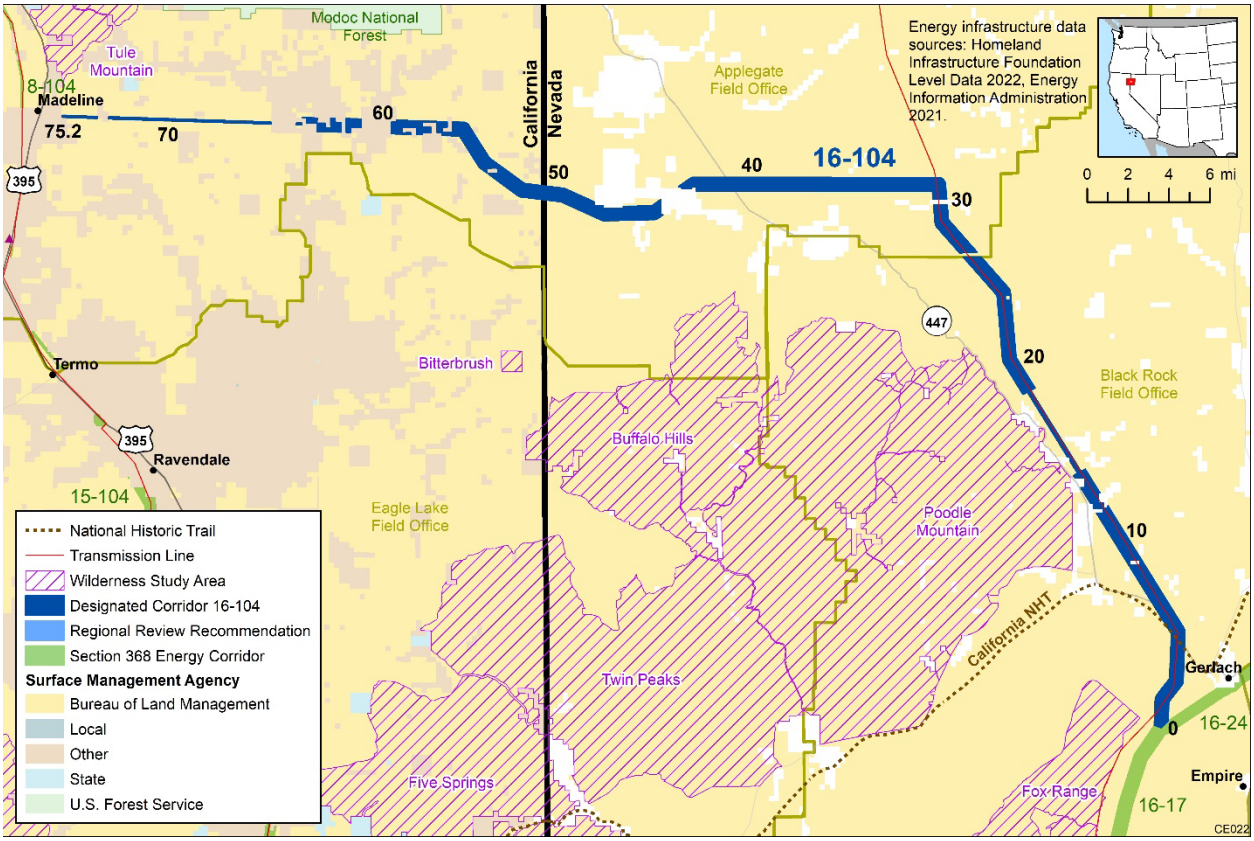

Figure 5.1-9. Special Designations in the Vicinity of the Decision Area

Trends and Forecasts

The BLM would continue to consider impacts on national trail-related scenic, recreation, and natural resources, qualities, values, and associated settings, and the primary use or uses of the trails; and it would continue to provide opportunities for scientific and educational use of national historic trails (BLM and Western 2015). Avoidance of adverse effects under the National Historic Preservation Act and adverse impacts under the National Trails System Act, as described by BLM Manual 6280 (BLM 2012), is preferred. If avoidance is not possible, the BLM will implement appropriate measures that will minimize or mitigate the effects and impacts on the California NHT to the extent practicable in accordance with BLM policy.

5.1.16.2 Wilderness Study Areas

Current Conditions and Context

There are no WSAs within the decision area. The 142,050 ac Poodle Mountain WSA is located in Nevada, on the west side of Surprise Valley Road near MP 14 to MP 21, within the Winnemucca District planning area. At its closest point, the WSA is located more than 0.1 mi from the decision area (Figure 5.1-9).

Trends and Forecasts

Demand for dispersed activities such as hiking, backpacking, hunting, wildlife-viewing, photography, and the study and contemplation of nature is expected to increase on BLM-administered lands. Preserving key wilderness characteristics of WSAs will ensure the preservation of lands suitable for these, and other, activities (BLM 2007a). As mentioned, should any WSA, in whole or in part, be released from wilderness consideration, such released lands will be managed in accordance with the goals, objectives, and management prescriptions established in this RMP, unless otherwise specified by Congress in its releasing legislation. The BLM will examine proposals in the released areas on a case-by-case basis, but will defer all actions that are inconsistent with RMP goals, objectives, and prescriptions, until it completes a land use plan amendment (BLM 2015).

5.1.17 Tribal Interests

General information for tribal interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.17.

Current Conditions and Context

The BLM has identified 32 Federally recognized Tribes with cultural affiliation and an interest in the decision area for Corridor 16-104. There are two Federal Indian Reservations in Washoe County and one Indian Rancheria in Lassen County near the decision area: Pyramid Lake Paiute Reservation, Reno Sparks Indian Colony, and Susanville Indian Rancheria (Table 5.1-14). There are three Indian Reservations just outside of Lassen and Washoe counties: Summit Lake Reservation, Fort McDermit Indian Reservation, and Fallon Paiute-Shoshone Reservation (BLM 2022b; HUD 2022; BIA 2022; Heizer 1978a, 1978b, 1978c). These Tribes should be invited to formal government-to-government consultations and be included in all public outreach for this planning effort. Due to a history of removal and displacement since the early 1800s, it is difficult to identify all Tribes with affiliation to the decision area. Any additional Tribes not mentioned in this document should be identified through ongoing formal outreach and consultation.

Table 5.1-14. Federal Indian Reservations Near the Corridor 16-104 Decision Area

Reservation, Tribe	Federally Recognized Tribes	County, State
Fallon Paiute Shoshone Reservation	Paiute-Shoshone Tribe of the Fallon Reservation and Colony	Churchill County, Nevada
Fort McDermitt Indian Reservation	Fort McDermitt Paiute and Shoshone Tribes	Humboldt County, Nevada
Pyramid Lake Paiute Indian Reservation	Pyramid Lake Paiute Tribe	Washoe, Lyon, and Storey County, Nevada
Reno Sparks Indian Colony	Reno Sparks Indian Colony	Washoe County, Nevada
Summit Lake Reservation	Summit Lake Paiute Tribe of Nevada	Humboldt County, Nevada
Susanville Indian Rancheria	Susanville Indian Rancheria	Lassen County, California

The following Tribes have been identified as having cultural affiliation with the lands near the Corridor 16-104 decision area:

- Alturas Indian Rancheria
- Bear River Band of the Rohnerville Rancheria
- Berry Creek Rancheria of Maidu Indians of California
- Big Lagoon Rancheria
- Blue Lake Rancheria
- Cachil Dehe Band of Wintun Indians of the Colusa
- Cedarville Rancheria
- Cher-Ae Heights Indian Community of the Trinidad
- Enterprise Rancheria Estom Yumeka Maidu Tribe
- Fort Bidwell Paiute Indian Reservation
- Fort McDermitt Paiute and Shoshone Tribes
- Greenville Rancheria
- Grindstone Indian Rancheria
- Hoopa Valley Tribe
- Kkaruk Tribe of California
- Lovelock Paiute Tribe
- Mechoopda Indian Tribe of the Chico Rancheria
- Modoc Tribe of Oklahoma
- Pasketa Band of Nomlaki Indians of California
- Pit River Tribe (includes XL Ranch, Big Bend, Likely, lookout, Montgomery Creek, and Roaring Creek Rancherias)
- Pyramid Lake Paiute Tribe
- Quartz Valley reservation
- Redding Rancheria
- Resighini Rancheria
- Round Valley Reservation
- Sherwood Valley Rancheria of Pomo Indians
- Summit Lake Paiute Tribe of Nevada
- Susanville Indian Rancheria
- Tolowa Dee-Ni' Nation
- Winnemucca Indian Colony of Nevada

- Wiyot Tribe
- Yurok Tribe

Within the decision area, a wide variety of archaeological site types and areas may be of significant cultural importance to Tribes affiliated with the corridor (see Section 5.1.3).

Areas with high densities of cultural resources are designated CRMAs for their protection. During the Section 368 Energy Corridor Regional Review, public outreach facilitated the recognition that the Tuledad/Duck Flat CRMA intersects the designated corridor. Decisions and action should be conducted in a way that prevents adverse impacts on the archaeological and historical values of the CRMA (BLM 2022a, 2022b).

Tribes previously have been interested in working with BLM to collect flat rock—volcanic decorative rock occurring in relatively thin (often less than an inch) layers in northeast California—that has commonly been used by some southeastern Tribes in sacred ceremonies and practices (BLM 2007b). There previously also have been tribal interests in preservation of pinyon, juniper, and sage-grouse habitats that are present within the decision area (see Section 5.1.4.4) (BLM 2007b, 2015, 2020).

Poodle Mountain WSA is within 1.5 mi of the designated corridor and may be of significance to Tribes affiliated with the area (BLM, Forest Service, and DOE 2022). Any viewsheds obstructed by any future proposed project within the designated corridor may impact areas of traditional cultural importance. Native American Tribes may desire access to other BLM-administered lands to practice traditional cultural ceremonies. More information on potential areas of viewshed concerns can be found in Section 5.1.18.

Current Tribal cultural practices involving natural and cultural resources of religious and cultural importance in the designated corridor are not known. Tribes have a deep understanding and history with the land that has been passed down through generations and that cannot be properly identified by archaeological fieldwork alone. Therefore, formal government-to-government consultation concerning future projects and resource management remains the best means for identifying and addressing Tribal land use concerns and interests.

Trends and Forecasts

Tribes have previously expressed interest in implementing a new interagency operating procedure (IOP) for Tribal concerns including a component to conduct ethnographic studies that would increase understanding of significant resources of concern to Tribes. The existing IOP from the 2009 WWEC PEIS ROD focused only on identifying sacred sites, sacred landscapes, gathering grounds, and burial areas, along with avoiding, minimizing, or mitigating impacts on these places through project proponents, consultation with Tribes, and relevant parties (BLM, Forest Service, and DOE 2022).

OHV area designations are required by BLM for any administered lands (43 CFR Part 8342.1); area designations should be labeled as open, limited, or closed to protect resources and ensure visitor safety. If the corridor designation is removed, the corridor

will become limited or open OHV access (see Section 5.1.14). Tribes may express concerns regarding changes to open land places that might impact cultural and natural resources of traditional and historical importance. Tribal areas of concern should be further defined through continued outreach and consultation.

5.1.18 Visual Resources

General information for visual resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.18.

Current Conditions and Context

The decision area is located in a scenic region between California and Nevada. A significant portion of BLM-administered land along the corridor is classified as VRM Class II (Figure 5.1-10). Table 5.1-15 lists the key features for visual resources within the decision area.

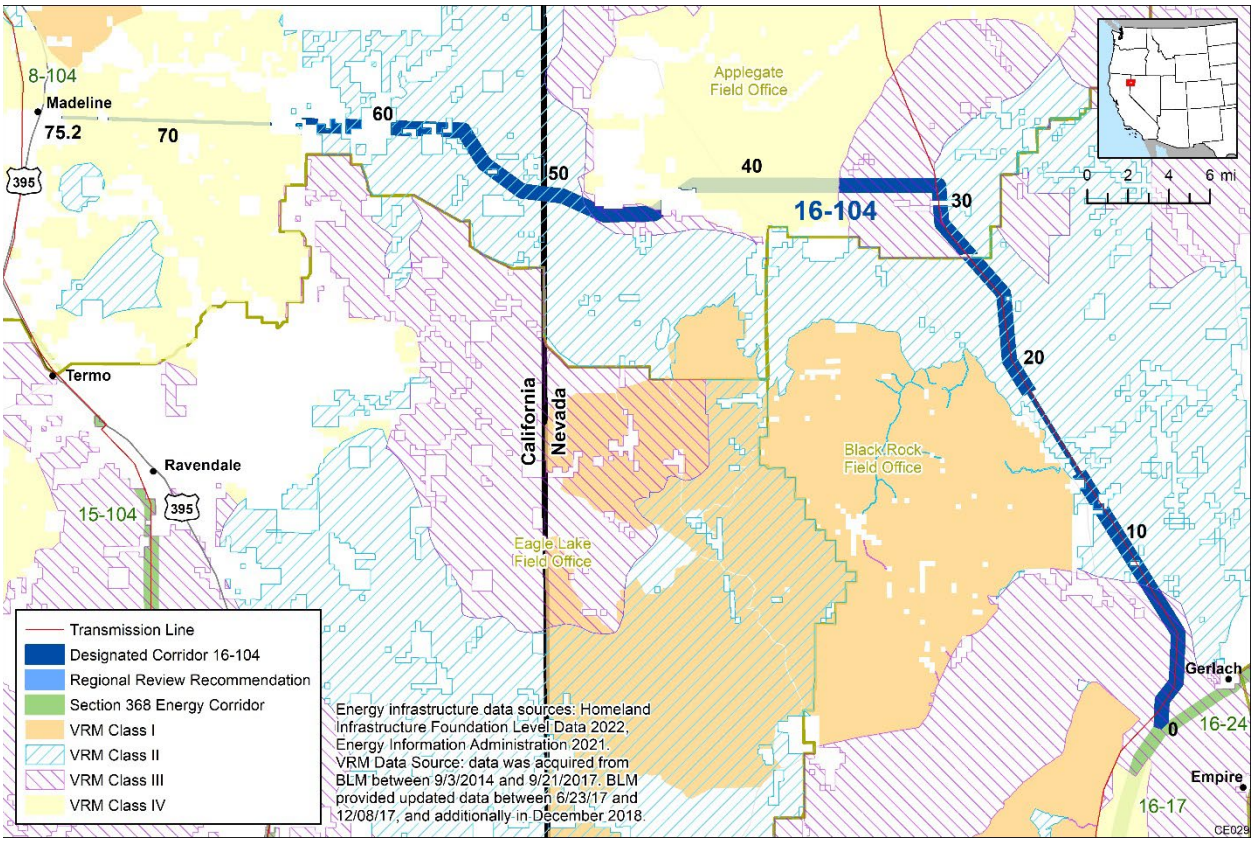

Figure 5.1-10. VRM Class I and II Areas in the Vicinity of the Decision Area

Table 5.1-15. Key Features in the Vicinity of the Decision Area

Key Feature	State	Agency	Physical Attributes	Viewer Groups and Experiences	BLM VRM Class Designation
California NHT	Nevada portion	NPS	Traces of historic portions of the trail, graves, landmarks, and other markers	Portions of the trail are available for hiking, biking, and horseback riding	NA
Poodle Mountains WSA	Nevada	BLM	Flat and rolling terrain with elevations ranging from 3,850 to 6,832 ft	Attracts hikers, campers, horse-packing, rock climbing and scrambling	VRM Class I
Tule Mountain WSA	California	BLM	Tule Mountain is 7,098 ft in elevation with views in all directions. The mountain itself has pine, fir and aspen trees.	Attracts deer hunters with primitive hunting camps	VRM Class I

Northern Nevada is characterized by elongated, generally north–south trending mountain ranges separated by broad open basins. This type of landscape allows for long viewing distances (BLM 2015).

In California, the Alturas Field Office planning area includes beautiful scenery, with hillside forests of pine and fir, extensive sagebrush-steppe, lava fields, and deep river canyons. Visual contrasts are striking, especially in fall, when the vivid yellows, oranges, and reds of aspen and oak add seasonal beauty. The WSAs, including Tule Mountain WSA, contain many interesting volcanic features, such as cinder cones and lava plateaus. There are also exceptional roadside vista points. However, large expanses of juniper have been removed from the landscape in recent years without any consideration for visual or other resource values. Many of these removal projects are visible from local roadways and have altered the visual character of the landscape (BLM 2008c).

The California NHT intersects with the designated energy corridor in Nevada. It is not a continuous trail; it consists of many trail traces, structures, graves, landmarks, and markers left on the landscape. Between 1841 and 1869, up to 250,000 people sold their belongings, packed wagons, and set out for California. Portions of the trail are on private property, and access to segments of the trail depends on the landowner. Accessible portions of the trail can be enjoyed by hiking, biking, horseback riding, or by car (NPS n.d.)

Poodle Mountain WSA is located approximately 1 mi west of the corridor. It contains three distinct landforms: basalt plateau highlands, basalt plateau canyon country, and fringing desert piedmont. Elevations range from 3,850 to 6,832 ft. Poodle Mountain itself is a volcanic vent and is flat and rolling. The basalt plateau canyon country has many deep-cut canyons and gorges.

Activities at Poodle Mountain WSA include hiking, camping, horse-packing, rock climbing and scrambling. Added attractions include the Poodle Mountain volcanic center and impressive canyons (Friends of Nevada Wilderness n.d.).

The Tule Mountain WSA is dominated by big sage, juniper, and mountain mahogany. A stand of pine, fir, and aspen is located near the top of the mountain, on the south slope, which faces the decision area. The main feature is Tule Mountain itself, at 7,098 ft in elevation, which has vistas in all directions. Hunting activities occur during the appropriate seasons. The WSA has many primitive hunting camps during deer hunting season (BLM 2008a).

The Alturas RMP states that the scenic beauty of planning area landscapes will be preserved for present and future generations, and that much of the area will exist in its current visual condition. Skillful management and ongoing attention to visual appearances will continue to improve other areas. Development may happen in Class IV areas that significantly alter present visual appearances; however, any such development will also be relatively harmonious with the surrounding landscape (BLM 2008c).

Trends and Forecasts

In Nevada, BLM manages a large percentage of the land base in the region, making these lands a critical resource for providing recreation opportunities to visitors (BLM 2015).

The values available and sought by recreation users in the Surprise Field Office planning area primarily focus on solitude; quietness; visual scenery; and the ability to perceive rugged, untamed country with few people or human impacts. These values include the enjoyment of striking arid-land scenery, experienced in a rugged, undeveloped setting. The need of visitors to experience peace and solitude, and the opportunity to contemplate visually inspiring landscapes, is fundamental to most recreational activities in this area (BLM 2008a).

Population growth in the vicinity of the corridor, including the metropolitan areas of Klamath Falls, Oregon; Reno, Nevada; and Redding, California, has caused an increased demand for use of public lands to support community needs and low impact recreation. The Alturas Field Office has experienced a substantial increase in requests for land tenure decisions or adjustments and for land use permits and authorizations, including those for renewable energy development (BLM 2008c).

5.1.18.1 Night Sky

Although there is no reference to conservation, protection, or management of Night Sky environments in existing RMPs, this decision area is largely undeveloped and would be ideal as a night sky area.

Night sky can be impacted by required utility lighting. The Federal Aviation Administration (FAA) Advisory Circular 70/7460-1K (2007) requires that all airspace obstructions higher than 200 ft or close to an airfield have appropriate lighting. Some transmission towers will require obstruction-warning lighting, and lights may be placed at higher elevations if blocked by trees or terrain. For very tall towers, this includes daytime strobe lighting as well as nighttime lighting (FAA 2007).

5.2 Corridor 18-23

Corridor 18-23 is located within the BLM California Bishop and Ridgecrest field offices and the BLM Nevada Sierra Front and Stillwater field offices (Table 5.2-1). Corridor 18-23 is a 240-mi (386-km) designated energy corridor that provides a north-south pathway for energy transport from Carson City, Nevada to east of Bakersfield, California. Corridor 18-23 connects to other Section 368 energy corridors, creating a continuous corridor network across BLM- and Forest Service-administered lands from Oregon to southern California. The designated energy corridor contains existing infrastructure—115-, 138-, 345-kV alternating current (AC) transmission lines, a 1000-kV direct current (DC) transmission lines, and state highway 395 —along its entire length. Corridor 18-23 has a variable width, ranging from 1,320 ft to 10,560 ft and is designated multi-modal to accommodate both transmission lines and pipeline infrastructure. The corridor is also designated on Forest Service lands, but this planning effort will only consider changes to the corridor on BLM-administered lands.

Corridor 18-23

Designated Corridor:
Section 368 Energy Corridor 18-23 as designated in the 2009 *ARMPA/ROD for Designation of Energy Corridors on BLM-administered Lands in the 11 Western States* (BLM 2009)

Regional Review Recommendation:
Shift the corridor to the 1000-kV DC transmission line where it deviates from this alignment and narrow the entire corridor to a 250-ft width

Decision Area:
- The BLM-administered lands within the entire length of the designated energy corridor
- The BLM-administered lands that follow the existing 1000 kV DC transmission line where it deviates from the designated corridor

Planning Area:
The BLM-administered lands managed under the Bishop RMP, the California Desert Conservation Plan, as modified by the Northern & Eastern Mojave Desert amendment and the DRECP LUPA and lands under other administration within the vicinity of the decision area

The regional review recommended shifting the corridor to the 1000-kV transmission line where it deviates from this alignment and narrowing the corridor to a 250-ft width to restrict future energy infrastructure development to the existing ROW (BLM, Forest Service, DOE 2022). The regional review concluded that these changes could minimize impacts from any future development while maintaining corridor utility and would avoid the recently designated Alabama Hills National Scenic Area (designated in the John D. Dingell, Jr. Conservation, Management, and Recreation Act on March 12, 2019).

The decision area (that is, the actual parcels under BLM management that could be affected by the change in the corridor designation) for Corridor 18-23 is depicted in 5.2-1 and includes:

- the BLM-administered lands within the entire length of the designated energy corridor; and
- the BLM-administered lands that follow the existing 1,000 kV DC transmission line where it deviates from the designated corridor.

The planning area (that is, the wider area that could be impacted by a change in corridor designation, including both BLM-managed lands and lands under other administration) includes the BLM-administered lands managed under the Bishop RMP, the California Desert Conservation Plan, as modified by the Northern & Eastern Mojave Desert amendment and the DRECP Land Use Plan Amendment (LUPA) (Figure 5.2-1).

Table 5.2-1. BLM Administration Boundaries for Corridor 18-23 Decision Area

State	District/Field Office	Milepost (MP)
California	BLM California, Bishop Field Office Ridgecrest Field Office	MP 67 to MP 211 MP 212 to MP 240
Nevada	BLM Nevada, Sierra Front Field Office Stillwater Field Office	MP 0 to MP 43 MP 44 to MP 66, Regional Review Recommendation

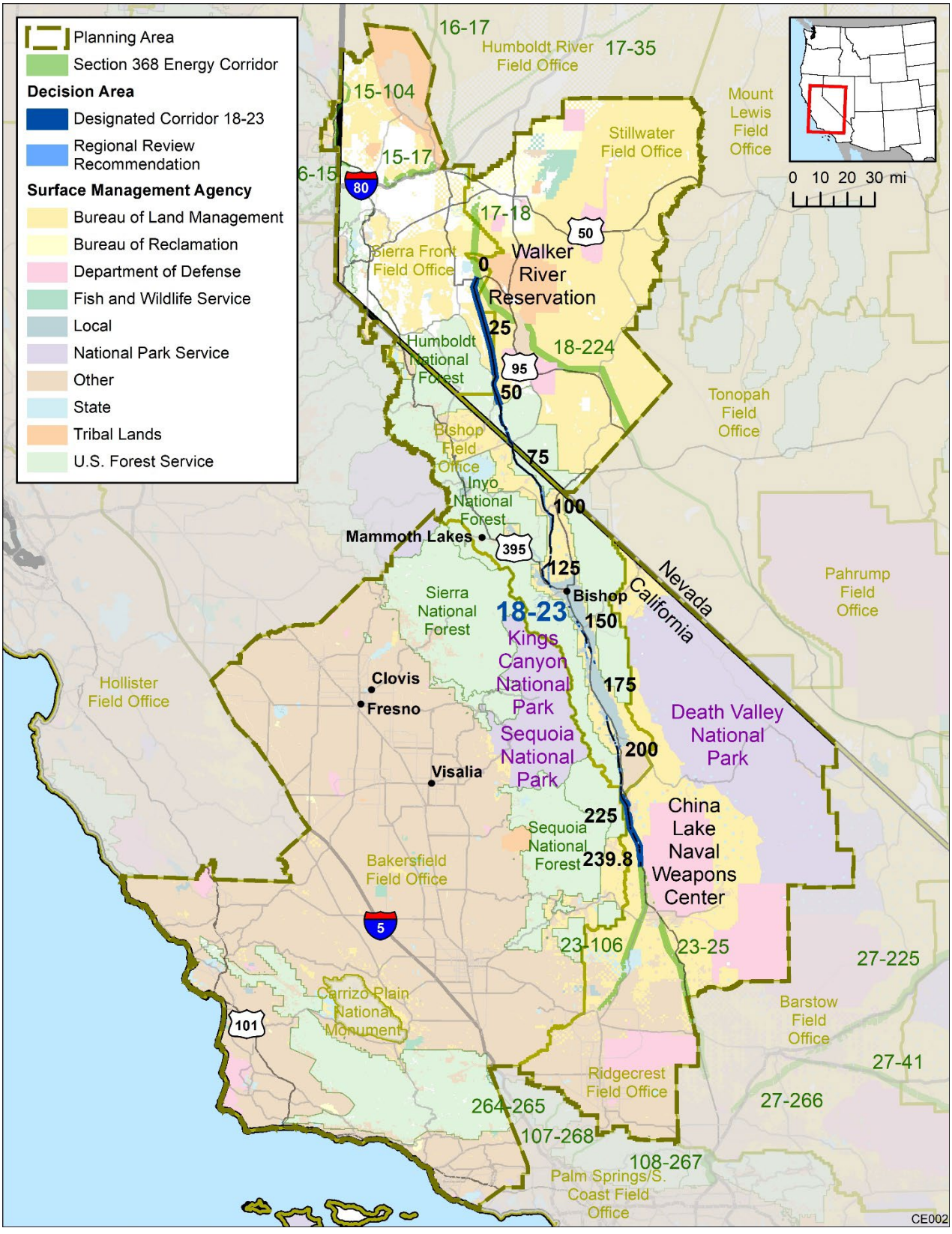

Figure 5.2-1. Corridor 18-23 Planning Area

Key Findings

Table 5.2-2 highlights the potentially affected resources that warrant analysis and summarizes the most important conclusions (key findings) drawn from each of the Area Profile resource sections. In general, these resources could be impacted from revisions to the designated Corridor 18-23 resulting from this planning effort.

Table 5.2-2. Key Findings for Corridor 18-23 Decision Area

Resource	Key Finding
Air Quality	Federal Class I areas within a range of 100 km (62 mi)[7] of the designated corridor include John Muir Wilderness Area, Kings Canyon National Park, Domeland Wilderness Area, Sequoia National Park, Ansel Adams Wilderness Area, Hoover Wilderness Area, Yosemite National Park, Kaiser Wilderness Area, Emigrant Wilderness Area, Mokelumne Wilderness Area, and Desolation Wilderness Area. There are no Tribal Class I areas within 100-km (62-mi) of the decision area. Mono Basin in Mono County, and Owens Valley in Inyo County, California are nonattainment areas for PM_{10} but are in unclassified/attainment areas for all other criteria pollutants under the NAAQS. Based on 2019-2021 data, O_3 concentrations exceeded the standard once, PM_{10} standard was exceeded frequently, while $PM_{2.5}$ standards were exceeded on occasion but not violate the standard. In Bishop, California, 24-hr PM_{10}, design values tend to either increase or decrease depending on the location and exceedances of the standard are more frequent than any other places in the U.S.
Climate	The planning area is characterized by wide variations in elevation, latitude, and topographic features have a considerable impact on wind patterns, temperatures, precipitations, and other meteorological parameters. The area lies on the eastern, lee side of the Sierra Nevada Range, which services as a barrier to moisture moving in from the Pacific and influences the climate of the area.
Cultural Resources	The designated corridor passes through Fish Slough ACEC, which contains the Bishop Petroglyph Loop. Close proximity to Fossil Falls District (NRHP-listed and ACEC) and Alabama Hills National Scenic Area containing significant historic resources.
Ecology	
Vegetation	The decision area is located within the CBR Ecoregion. Vegetation communities consist of pinyon-juniper woodland, big sagebrush, and mixed salt desert scrub.
Invasive Species	Invasive species are a significant concern in the decision area, particularly mustards, thistles, filaree, red brome, and Mediterranean split grass.
Fire and Fuels	Changes in historic fire regimes have significantly affected native vegetation communities and created a positive feedback loop that promotes increased fire frequency and in turn, repeated fires promote more favorable conditions for exotic weeds.
Terrestrial Wildlife	Mule deer, pronghorn, black bear, tule elk, Rocky Mountain elk, Desert bighorn sheep, and mountain lion ranges are within the decision area, as well as upland game birds and waterfowl. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways.
Fish and Aquatic Species	Fish Slough ACEC is located near designated corridor. Owens pupfish is a federally listed native fish species in the decision area.
Special Status Species	The decision area intersects habitat for the Bi-State Sage Grouse, yellow billed cuckoo and Sierra Nevada Bighorn Sheep.

[7] EPA has noted that a 100-km (62-mi) range is generally acceptable for Air Quality Related Values (AQRVs) impact modeling, but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Given the magnitude and schedule of the project along the corridor, these emissions are relatively small and their release heights are at ground- or near-ground level, so potential impacts would be anticipated to be limited locally.

Resource	Key Finding
Environmental Justice	The minority population in the 2 mi buffer for Mineral County, Nevada exceeds 50% and is meaningfully greater than the countywide average. The number of persons at or below twice the federal poverty rate within the buffer in each of the four counties exceeds countywide levels. In Mineral County, the low-income percentage in the buffer is higher than 50%.
Geology, Soils, and Minerals	Soil is poorly developed in the alluvial materials in the low areas of the decision area.
Human Health and Safety	There is relatively high volcano and earthquake potential within the decision area.
Hydrology	Water resources in the region are limited. There are numerous ephemeral washes, many nearby ephemeral lakes, a small nearby area of irrigated agriculture, and two aqueduct systems.
Lands and Realty	A 500-kV DC transmission line and 115-, 138-, and 345-kV transmission lines are located within the designated corridor. A 1000-kV DC transmission line is located within the Regional Review Recommendation. Portions of the designated corridor follows State Highway 395. MTR-visual routes and SUA routes are located within the decision area.
Lands with Wilderness Characteristics	There are no managed lands with wilderness characteristics units within the decision area.
Livestock Grazing and Wild Horse and Burro	
Livestock Grazing	There are 18 grazing allotments within the designated corridor and 21 grazing allotments within the Regional Review Recommendation.
Wild Horse and Burro	Three wild horse HMAs intersect with, or are in close proximity to the decision area and the HMAs contain a maximum total of 414 wild horse AMLs (estimated population 1,469 horses) and 0.0 wild burro AMLs (estimated population 73-plus burros).
Noise	On the basis of the population density, the L_{dn} or DNL is estimated to be 37 dBA for Lyon County in Nevada, 23 dBA for Mineral County in Nevada, 28 dBA for Mono County in California, and 25 dBA for Inyo County in California, all of which correspond to wilderness areas.
Paleontology	The PFYC Classes within the Nevada portion of the decision area and the Ridgecrest Field Office in California are mostly Class 1 and 2, with small areas assigned PFYC Class 5. Within California, PFYC Class 3 are located from around MP 150 to MP 238.
Recreation	The WSAs, ACECs, and Alabama Hills National Scenic Area (NSA) on BLM-administered lands and nearby Forest Service lands, particularly within the California-portion of the decision area provide numerous recreational opportunities throughout the area. The decision area is designated as limited or open OHV access.
Socioeconomics	In 2020, the population of the four-county ROI (Inyo and Mono Counties in California and Lyon and Mineral Counties in Nevada) was 96,000 people and median income ranged from $56,971 to $68,272. The unemployment rate ranged from 3.8% for Mineral County to 6.8% for Mono County in 2021, with the largest share of workers employed in the wholesale and retail trade industries.
Special Designations	The decision area is in close proximity to, adjacent to, or within the Fish Slough ACEC, Crater Mountain ACEC, Owens Lake ACEC, Olancha Greasewood ACEC, Mojave Ground Squirrel ACEC, Sierra Canyons ACEC, and Fossil Falls ACEC; Excelsior WSA, Chidago Canyon WSA, Casa Diablo WSA, Fish Slough WSA, Volcanic Tableland WSA, and Crater Mountain WSA; and the Alabama Hills NSA.

Resource	Key Finding
Tribal Interests	There are 42 Federally recognized Tribes with cultural affiliation and an interest in the decision area. There are 10 Federal Indian Reservations, Rancherias, and areas of Indian lands held in Trust in Inyo and Mono, County California, and Lyon and Mineral County, Nevada. There are three Indian Reservations and Ranches outside of the designated decision area. Areas that may potentially contain cultural and natural resources of traditional and historical importance to Native American Tribes may be ethnohistoric habitation sites, trails, burial sites, rock shelters, petroglyphs, prehistoric seasonal camps, and locations with plant, animal, minerals, and waters that may be used for sacred practices or subsistence practices.
Visual Resources	The decision area is adjacent to VRM Class I area: Sacatar Trail Wilderness Area. A significant portion of BLM-administered land within the decision area is classified as VRM Class II.

5.2.1 Air Quality

General information for air quality resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.1.

Current Conditions and Context

National parks and wilderness areas designated as mandatory Federal Class I areas under the CAA and other areas re-designated as Class I at the request of a state or Indian Tribe have special air quality protections under federal law. Federal Class I areas within a range of 100 km (62 mi)[8] of the Corridor 18-23 decision area include in order of distance from the corridor: John Muir Wilderness Area, Kings Canyon National Park, Domeland Wilderness Area, Sequoia National Park, Ansel Adams Wilderness Area, Hoover Wilderness Area, Yosemite National Park, Kaiser Wilderness Area, Emigrant Wilderness Area, Mokelumne Wilderness Area, and Desolation Wilderness Area. There are no Tribal Class I areas in the 100-km (62-mi) range.

Each state can have its own SAAQS. The CARB, the clean air agency of the State of California, has established separate ambient air quality standards (CAAQS) (CARB 2022a). The CAAQS include the same six criteria pollutants as in the NAAQS but also include standards for visibility reducing particles, sulfates, H_2S, and vinyl chloride. In general, the CAAQS are the same as or more stringent than the NAAQS, except for 1-hr NO_2 and for 1-hr SO_2 standards. Nevada has its own SAAQS (Nevada Administrative Code [NAC] 445B.22097), and has a standard for H_2S in addition to those included in NAAQS.

The CARB and the NDEP are responsible for monitoring ambient air quality and for ensuring that the ambient air quality levels are maintained in accordance with federal and state standards. As with EPA's designations based on the NAAQS, the CARB designates areas as attainment or nonattainment based on the CAAQS. Ambient air

[8] EPA has noted that a 100 km range is generally acceptable for AQRVs impact modeling, but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Given the magnitude and schedule of the project along the corridor, these emissions are relatively small and their release heights are at ground- or near-ground level, so potential impacts likely would be limited locally.

quality monitoring refers to collecting and measuring samples of ambient air to evaluate the status of the air pollutants in the atmosphere as compared to clean air standards and historical information.

The decision area is located in Lyons and in Mineral counties in Nevada and in Mono and in Inyo counties in California. The decision area runs through Mono Basin in Mono County, California, which is in a nonattainment area for PM_{10} (EPA 2022a). The decision area runs through the Owens Valley in Inyo County, California, which is also in a nonattainment area for PM_{10} (EPA 2022a). The decision area is in unclassified/attainment areas for all other criteria pollutants under the NAAQS. In addition, both Mono and Inyo counties are in nonattainment areas for O_3 and for PM_{10}, for which CAAQS were established (CARB 2022b).

In California, air monitoring stations are located in Mono County, and/or in Inyo County for all criteria pollutants except PM. In Nevada, air monitoring stations are located, in Lyon County; Mineral County has no air monitoring stations. The nearest air monitoring station to the designated corridor is in Bishop, California (Inyo County), which collects CO, O_3, PM_{10}, $PM_{2.5}$, and SO_2. Other nearby stations include PM_{10} and $PM_{2.5}$ monitoring stations around Mono Basin and Owens Lake, California, where windblown dust occur from their exposed lakebeds during high wind events. The nearest NO_2 station is Searles Valley in San Bernardino County, California, which is located about 30 mi (48 km) east of the southern end of the decision area. Based on 2019-2021 data, CO, NO_2, and SO_2 concentrations were well below the standards, while O_3 concentrations exceeded the standard once. However, PM_{10} standard was exceeded frequently, while $PM_{2.5}$ standards were exceeded on occasion but not violate the standard[9] (EPA 2022b).

Trends and Forecasts

This section uses available air monitoring data between 2012 and 2021 at air monitoring stations mostly in Inyo County, California and "design values" [10] for CO, O_3, PM_{10}, and $PM_{2.5}$ to represent the decision area (EPA 2022b). Since 2016, Bishop, California has data for CO, which are well below the standard but show an upward trend over time. Since 2015, 8-hr O_3 data are available at Bishop, where design values tend to increase slightly and one or two exceedances per year were observed. For 24-hr PM_{10}, design values tend to either increase or decrease depending on the location and exceedances of the standard are more frequent than any other places in the U.S. For 24-hr $PM_{2.5}$, design values tend to increase over time and exceedances of the standard per year vary depending on the location. Fifty-one exceedances of the $PM_{2.5}$ standard were recorded at Mammoth in Mono County; most occurred in September and October 2020. In addition, Bishop has 7-year SO_2 data, which are well below the standard but show an upward trend.

[9] Exceedances of the standard does not necessarily mean the violation of the standard. For example. 24-hr $PM_{2.5}$ standard is attained when the 98th percentile of daily values, averaged over 3 years, does not exceed the standard level.

[10] "Design values" are the statistic used to compare ambient air monitoring data against the NAAQS to determine designations for each NAAQS.

Owens Lake in Inyo County is located in the Owens Valley near the south end of the decision area. Mono Lake in Mono County is located in the Mono Basin in the northern portion of the decision area. Owens Lake is the largest single source of windblown dust in the U.S. Historically, Owens Valley and Mono Basin have been plagued by windblown dust from the exposed lakebeds of Mono Lake and Owens Lake during high wind events.

The decision area extends across an area that is largely undeveloped, sparsely populated, and remote. New activities in the decision area that could trigger air pollution issues are not yet identified. Even if they occur in the near future, their emissions would be controlled under the permits designed to ensure that are consistent with applicable regulations along with mitigation measures, except windblown PM and wildfire-related pollution which cannot be easily mitigated. Due in part to air regulations driven by the CAA, NO_X and VOC emissions from human sources should continue to decline over the next few decades (Nolte et al. 2018). However, climate change will also influence future levels of ozone in the U.S. by altering weather conditions and by impacting emissions from human and natural sources. The prevailing evidence strongly suggests that climate change alone introduces a climate penalty for ozone over most of the U.S. from warmer temperatures and increases in natural emissions. In other words, air quality and climate change are interconnected, so changes in one inevitably cause changes in the other. For example, fossil fuel emissions will cause increases in ozone, the third most important GHG after CO_2 and CH_4, that likely will trigger heat waves, which in turn will amplify air pollution. Therefore, more frequent and longer droughts might lengthen the wildfire season and result in large wildfires, evidenced from higher $PM_{2.5}$ levels observed in Washoe County, Nevada in 2020 and 2021 (WCHD 2022), and increased windblown dust emissions from disturbed soils. Air quality in the decision area would be degraded by wildland fires (including prescribed burning) in upwind areas and by windblown dust from local emissions.

5.2.2 Climate

General information for climate that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.2.

Current Conditions and Context

Wide variations in elevation, latitude, and topographic features within the decision area, which extends about 240 mi (386 km) in the north-south direction, have a considerable impact on wind patterns, temperatures, precipitations, and other meteorological parameters. The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. The prevailing wind direction aloft over the region is from the west (the westerlies), as it is in most of the U.S.; however, complex terrains in the area is responsible for deflecting these winds. Accordingly, wind patterns are sometimes dissimilar even over short distances.

The decision area runs in the leeward side of the Sierra Nevada mountain range, which largely serves as a barrier to moisture moving in from the Pacific creating a “rain

shadow" effect on the area. The norther half portion of the decision area is located in the plateau, while its southern half lies along the valley. In general, elevations of the decision area range from 4,000 ft (1,219 m) to 6,000 ft (1,829 m). Near the California/Nevada state line, the elevation is over 8,000 ft (2,438 m) and temperature and precipitation are quite different from the rest of the decision area. Bodie, California represents this higher elevation area and a separate discussion of temperature and precipitation for this area is provided below. Per the National Centers for Environmental Information (NCEI) Local Climatological Data for Bishop, California (the halfway point of the decision area), the area is characterized by relatively mild temperatures but frequent large diurnal variations, scarce precipitation, and low relative humidity (NCEI 2022a).

There are no meteorological stations in the immediate vicinity of the corridor except Bishop, California; therefore, meteorological data at stations closely representing the decision area in terms of proximity and topography are presented here.

Wind. Average wind speeds among meteorological stations are similar, ranging from about 6.2 mph (2.8 m/s) to 7.6 mph (3.4 m/s) (NCEI 2022b). Westerly winds (including winds from southwest through northwest) prevail at the Minden and Mammoth Yosemite airports, which are close to the windward side of Sierra Nevada Range, but wind patterns at other three stations are more affected by local topographic features. Wind speeds categorized as calm (less than 1 mph [0.5 m/s]) occurred more frequently, ranging from about 18% to 31% of the time because of the stable conditions caused by strong radiative cooling in the arid environment. Note that wind patterns between Mammoth Yosemite Airport and Bishop Airport are somewhat different even though two stations are only 30 mi (48 km) apart.

Temperature. Except for Bodie, California, historical annual average temperatures in the decision area are in the 50s, ranging from 51.3 °F (10.7 °C) to 59.9 °F (15.5 °C), as shown in Table 5.2-3 (WRCC 2022a). Monthly average temperature extremes range from a low of 17.8 °F (-7.9 °C) to a high of 97.9 °F (36.6 °C). January was the coldest month and July was the warmest month. At Bishop, the monthly temperature average in December is the same as that in January. Each year, about 60 to 99 days had a maximum temperature of ≥90 °F (32.2 °C), while about 73 to 169 days had minimum temperatures at or below freezing (32 °F [0 °C]), with about near 0 to 4 days below 0 °F (-17.8 °C).

In Bodie, California, near the state border with Nevada, historical annual average temperature was 37.6 °F (3.1 °C), with monthly average temperatures ranging from a low of 5.6 °F (-14.7 °C) to a high of 76.9 °F (24.9 °C), as shown in Table 5.2-3 (WRCC 2022a). January was the coldest month and July was the warmest month. Each year, almost no days had a maximum temperature of ≥90 °F (32.2 °C), while about 302 days had minimum temperatures at or below freezing (32 °F [0 °C]), with about 34 days below 0 °F (-17.8 °C).

Precipitation. The area lies on the eastern, lee side of the Sierra Nevada Range, a massive mountain barrier that markedly influences the climate of the area (WRCC 2022b). One of the greatest contrasts in precipitation found within a short distance in

the U.S. occurs between the western slopes of the Sierras in California and the valleys just to the east of this range. Along with prevailing westerly winds, as the warm moist air from the Pacific Ocean ascends the western slopes of the Sierra Nevada Range, the air cools, condensation takes place and most of the moisture falls as precipitation. As the air descends the eastern slope, it is warmed by compression, and very little precipitation occurs. The effects of this mountain barrier are felt not only in the leeward side of the Sierra Nevada Range but also throughout the State of Nevada, with the result that the lowlands of Nevada are largely desert or steppes.

Except for Bodie, California, near the state border with Nevada, historical annual precipitation ranged from 5.06 in (12.9 cm) to 6.50 in (16.5 cm), as shown in Table 5.2-3 (WRCC 2022a). Precipitation is most frequent in winter (ranging from 32% to 58%) and least frequent in summer (ranging from 7% to 19%). Annual average snowfall ranged from about 3.2 in (8.1 cm) to about 6.7 in (17.0 cm), with the snowiest month in January, followed by either February or December. In general, both precipitation and snowfall tend to increase with increasing elevation.

In Bodie, historical annual precipitation was 12.73 in (32.3 cm), as shown in Table 5.2-3 (WRCC 2022a). Precipitation is most frequent in winter (about 41%) and least frequent in summer (about 16%). Due to its elevation, snowfall amount was much greater than at any other stations. Annual average snowfall was about 95.7 in (243.1 cm), with the snowiest month in January, followed by December.

Table 5.2-3. Temperature and Precipitation Summaries at Selected Stations in the Vicinity of the Decision Area[a]

Station	Temperature						Annual Precipitation	
	Monthly Averages[b]			Number of Days with:				
	Min.	Max.	Mean	Max. ≥90°F	Min. ≤32°F	Min. ≤0°F	Water Equivalent	Snowfall
Yerington, Nevada	17.8°F (–7.9°C)	92.4°F (33.6°C)	51.3°F (10.7°C)	59.5	169.4	3.7	5.06 in (12.9 cm)	6.7 in (17.0 cm)
Bodie, California	5.6°F (-14.7°C)	76.9°F (24.9°C)	37.6°F (3.1°C)	0.1	302.3	34.3	12.73 in (32.3 cm)	95.7 in (243.1 cm)
Bishop, California	21.8°F (–5.7°C)	97.7°F (36.5°C)	56.1°F (13.4°C)	97.1	142.8	0.3	5.28 in (13.4 cm)	8.1 in (20.6 cm)
Independence, California	27.5°F (–2.5°C)	97.9°F (36.6°C)	59.9°F (15.5°C)	99.2	88.1	0.1	5.21 in (13.2 cm)	3.2 in (8.1 cm)
Haiwee, California	29.1°F (–1.6°C)	95.6°F (35.3°C)	59.7°F (15.4°C)	85.7	73.4	0.1	6.50 in (16.5 cm)	4.9 in (12.4 cm)

[a] Summary data presented in the table are based on the period of record: from 1894 to 2012 (Yerington); from 1895 to 2012 (Bodie); from 1948 to 2012 (Bishop); from 1893 to 2012 (Independence); and from 1923 to 2012 (Haiwee).

[b] "Minimum Monthly Average" denotes the lowest monthly average of daily minimum during the period of record, which normally occurs in January, except in Bishop where the lowest averages of January and December are the same. "Maximum Monthly Average" denotes the highest monthly average of daily maximum during the period of record, which normally occurs in July.

Source: WRCC 2022a

Trends and Forecasts

In the last century, southern California has experienced one of the largest increases in temperature in the continental U.S. The state has warmed about 3 °F (1.7 °C) and all of

the California is becoming warmer. In California, there are recent upward trends in average temperatures. The six warmest years have all occurred since 2014 (2014 through 2018, and 2020) in the 126-year period of record (1895–2020). Temperatures in California have risen almost 3 °F (1.7 °C) in California since the beginning of the 20th century. In the last century, the state of Nevada has warmed about 2 °F (1.1 °C). Temperatures in Nevada have risen almost 2.4 °F (1.3 °C), since the beginning of the 20th century. In Nevada, over the last 26 years, the annual number of very hot days has been above average, with the highest 5-year average occurring during the 2015–2020 period, partly because of very high annual values in 2017, 2018, and 2020 (NCEI 2022c). For the decision area, annual average temperature has increased about 1.5 to 3 °F (0.8 to 1.7 °C) (EPA 2016a, 2016b).

Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others. The changing climate is likely to increase the need for water but reduce the supply. Rising temperatures increase the rate at which water evaporates into the air from soils and surface waters along with transpiration from plants. However, less water is likely to be available, because precipitation is unlikely to increase as much as evaporation. Soils are likely to be drier, and periods without rain are likely to become longer, making droughts more severe (EPA 2016a, 2016b). Precipitation is highly variable from location to location and from year to year. In California, the driest consecutive 5-year interval was 1928–1932, and the wettest was 1979–1983. The late 1990s had the highest number of 2-in. extreme precipitation events, which show no overall trend. In Nevada, after wet conditions in the late 1990s, total annual precipitation has been near or below average since 2000 but shows no overall trend across the 126-year period of record. Seasonal precipitation patterns vary across the state, with most locations receiving the majority of their precipitation during the winter months (NCEI 2022c).

As the climate warms, less precipitation falls as snow, and more snow melts during the winter. That decreases snowpack—the amount of snow that accumulates over the winter. This snowpack melts during spring and summer, which provides water supply for cities and farms. Since the 1950s, the snowpack has declined in both California and Nevada that drain into the Colorado River. On average, about 4% and 5% of the land in California and Nevada, respectively, have burned per decade since 1984. Higher temperatures and drought due to global warming are likely to increase the severity, frequency, and extent of wildfires, which reduce air quality and harm human health and ecosystems (EPA 2016a, 2016b).

Over the next few decades, annual average temperature over the contiguous U.S. is projected to increase by about 2.2 °F (1.2 °C) relative to 1986– 2015, regardless of future scenario (USGCRP 2018). As a result, recent record-setting hot years are projected to become common in the near future. Much larger increases in California and Nevada are projected by the late twenty-first century. Temperature is expected to

increase 2 to 5 °F (1.1 to 2.8 °C) under a lower scenario (RCP4.5) and 5 to 8 °F (2.8 to 4.4 °C) under a higher scenario (RCP8.5) relative to 1986–-2015.[11]

In the late century, the greatest precipitation changes are projected to occur in winter and spring, with similar geographic patterns to observed changes: increases across the Northern Great Plains, the Midwest, and the Northeast (USGCRP 2018). In California and Nevada, precipitation projections decrease in spring through fall but increase in winter. Note that changes in average precipitation is much more difficult for climate models to predict than temperature. Surface soil moisture over most of the U.S. is likely to decrease, accompanied by large declines in snowpack in the western U.S. and shifts to more winter precipitation falling as rain rather than snow, which is conducive to more wildfires.

Associated with ongoing global warming, large wildfire frequency, fire duration, and fire season length have increased substantially in the western U.S. in recent decades and are projected to increase, especially in the Southwest (USGCRP 2018). This is due primarily to earlier spring snowmelt and warmer temperatures that increase evaporation rates (i.e., reduce the moisture availability) and thus dry out the vegetation that provides the fuel for fires. In addition, California and Nevada snowpack plays a critical role in water supply and flood risk. Projected earlier melting of the snowpack due to rising temperatures could have substantial negative impacts on water-dependent sectors and ecosystems (NCEI 2022c).

5.2.3 Cultural Resources

General information for cultural resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.3.

Current Conditions and Context

Prehistoric sites in the northern portion of the decision area are represented mainly by elements of nomadic society, including seasonal encampments and rock shelters close to water sources in lowlands. Other lowland areas bearing favored natural resources, flora, and fauna are also likely to be occupied for varying amounts of time and seasonally. Upland areas radiating out from central habitation sites are likely to contain evidence of activities related to hunting (e.g., hunting blinds), tool material quarrying, flintknapping, and other resource gathering. Petroglyphs are often found on prominent rock outcrops, which are occasionally associated with rock shelters/cave shelters. Further south into the Owens Valley, site densities and numbers increase, possibly an effect of geographic constraint and reliable water sources. Habitation sites tend to be less ephemeral and are often multi-component. Rock shelters and petroglyphs continue

[11] For climate projections, the international scientific community developed four RCPs, i.e., RCP2.6, RCP4.5, RCP6.0, and RCP8.5, in which radiative forcing is stabilized at 2.6, 4.5, 6.0, and 8.5 W/m^2 in the year 2100, respectively. RCP4.5, called as a lower scenario, is generally associated with lower population growth, more technological innovation, and lower carbon intensity of the global energy mix, while the reverse is true for RCP8.5, called as a higher scenario.

to be present. Isolated artifacts and scatters including lithics and pottery are present in varying degrees of relation to habitation sites.

Historic resources relate primarily to early mining activities and subsequent infrastructure development that supported these communities. Remains include wood and stone structures/foundations, fencing, irrigation features, railroad lines, trails, dumps. Later historic remains are tied to increases in both nucleated settlement and intensified agriculture. Evidence for the latter has tended to be obliterated by successive land-use alteration up to the present, however historic farmstead and ranching structures may be expected to remain under ideal conditions. Objects and structures related to set construction in the historic film industry are found in the Alabama Hills area, introducing potential anachronistic elements to the resource record.

Known Cultural Resources

Cultural resources listed in this section are generally representative of the region within the decision area. They characterize prehistoric and historic site types that may reasonably be expected to be affected in the absence of specific resource location data. In some cases—e.g., sites listed on the National Register—resources would not be affected but are included as part of this regional characterization.

Nevada

There are seven sites listed on the National Register within the Carson City Field Office planning area: the Grimes Point Petroglyph Site, Hidden Cave Archaeological Site, Rock Creek Stage and Telegraph Site, Cold Springs Pony Express Station, Sand Springs Pony Express Station, Lahontan Dam and Power Station, and the Carson River Diversion Dam. There is one National Historic Landmark, the Virginia City Historic District (BLM 2001).

The Carson City District Draft RMP/EIS (2014) expands on these resources, indicating approximately 9,000 prehistoric and historic sites within 10% of the planning area (Sierra Front and Stillwater field offices). Local climate conditions and lack of vegetation allow for high visibility of both prehistoric and historic sites, although actual site counts and densities vary and are not evenly distributed across the area.

Prehistoric sites tend to be ephemeral, based on seasonality and availability of natural resources. Proximity to water sources and associated flora and fauna were favored for longer-term habitation, while upland activities focused on hunting, quarrying, and gathering of other resources. There is a wide range of site types, varying in usage, location, and environment: Camps, rock shelters, petroglyphs, hunting blinds, quarry, and flint-knapping sites for example. Significantly close to Yerington are the East Walker River Petroglyphs (BLM 2014). The Black Mountain/Pistone Archaeological District (ACEC) southeast of Yerington includes significant petroglyphs and cultural artifacts including projectile points, rock features such as corrals and hunting blinds, and habitation sites (BLM 2013a).

Historic resources in the planning area relate primarily to early prospecting/mining, beginning in 1849, with subsequent supporting settlements, ranches, transportation,

and agriculture. Significant transportation resources in the area include railroads and several National Historic Trails, the latter of which often followed existing Native American trails. Further transportation development included toll roads and eventually 20th century accommodations for automobile use, significantly, the Lincoln intercontinental highway. Resources relating to ranching, homesteading, agriculture, and logging are found mainly in relation to early mining operations. Evidence for agriculture is seen in wood and stone houses, dugouts, canals, and fencing. National irrigation efforts created the National Reclamation Act of 1902, leading to large irrigation projects in the western U.S., including the Lahontan Dam within the Carson City District planning area. (BLM 2014).

California

The Bishop Field Office planning area extends from the Nevada border, south to Olancha, and encompasses the majority of the decision area within California. Cultural resources including prehistoric and historic sites are found within the Bishop Field Office. While the Bishop RMP (1993) does not address cultural resources directly, it does indicate significant cultural resources within the nine management areas within the field office. The designated corridor passes through two of these management areas:

- Benton Management Area: Fish Slough ACEC, which contains the Bishop Petroglyph Loop, the Carson-Colorado Railroad, and other historic features. (Note: the corridor designation passes through 0.8 km of the Fish Slough ACEC at MP 112-113).
- Owens Valley Management Area: no cultural resources indicated. Owens Lake Management Area: cultural resources not specified (BLM 1993a).

The Manzanar National Historic Site, listed on the National Register, lies on the west side of US 395 but is circumvented by crossing the US 395 to the east side at roughly MP 181. This is the site of a WWII internment camp, where Japanese immigrants and Japanese U.S. citizens were relocated in 1942 (BLM 2021a). Also contained within the historic site are several unspecified prehistoric habitations (BLM 2016a).

The Alabama Hills National Scenic Area is indicated for historical and presumably prehistoric cultural resources. Although resources are not specified, the environmental assessment for the Alabama Hills Management Plan provides for assistance in the protection of "cultural resources located on the Lone Pine Paiute-Shoshone Reservation 'Trust Land' addition identified in Title XIV, Section 1404 of the Dingell Act (Public Law 116-9, 16 USC ffff-3)" (BLM 2021a, 2021b). Historical resources in the area include the Chicken Ranch and associated landscape and trail system to the east and a sheep trail in the western portion of the planning area. The area has also been historically favored for cinematography with an un-inventoried presence of structures, objects, and features related to this industry. Notable cinematographic features include the partially remaining bridge from the 1939 film "Gunga Din" and the mining arrastra which was constructed for the film "Yellow Sky" in 1948. Also in the vicinity are the historic Los Angeles Aqueduct storage bunkers, now managed by the BLM (BLM 2021b).

The decision area is located within or in close proximity to three SRMAS within the DRECP planning area: Alabama Hills NSCMA and SRMA, East Sierra SRMA, and the Olancha SRMA. Significant cultural resources include the Fossil Falls National Register Archaeological District (ACEC), within which the Stahl site has demonstrated remains dating to over 10,000 years B.P. Also within the district are prehistoric habitation sites and obsidian lithic scatters quarried from the Sugarloaf Obsidian Source. The Southern Owens Valley Mortuary Complex near Owens Lake contains 12 distinct archaeological sites, nine of which are on BLM-administered land. These sites are comprised of artifact and rock mound features. Human remains occur at most of these sites. In addition to these 12 sites, more than 50 additional prehistoric and several dozen historic sites are found within this complex. The Owens Lake ACEC was designated for its significant historic and cultural values, including sensitive archaeological and cultural resources that are important to Native Americans and vulnerable to adverse change; and wildlife and plant resources including bird habitat of recognized national importance, sensitive species habitat and rare plant communities (BLM 2016a). To the southeast, at the north end of the Rose Valley is located the Rose Spring Archaeological Site complex. The significance of this site to the greater region is found in its over 3,000-year continuous occupation, laying the foundation for much of the chronological sequencing for California and the Great Basin. The Sierra Canyons along the eastern Sierra west of US 395 includes listed and eligible prehistoric and historic sites, notably a portion of the Los Angeles Aqueduct (BLM 2016a).

The DRECP Proposed LUPA/EIS (2015a) provides estimates for prehistoric and historic cultural resources affected by implementing the plan. The Owens Valley subregion within this plan extends from just south of the town of Big Pine to the end of the designated corridor northwest of Ridgecrest. Table 5.2-4 summarizes cultural resource types and National Register status by DRECP ecoregion subarea. Only Owens River Valley and West Mojave and Eastern Slopes subareas are included here (after BLM 2015a Appendix R1.8, Table R1.8-2). Note: CR Density units not given in report.

Table 5.2-4. National Register Status of Cultural Resources in the Vicinity of the Decision Area

Ecoregion Subarea /NR Status	Prehistoric	Historic	Multi-component	Unknown Type	Isolate	Total	Acres Surveyed	Percent Surveyed	CR Density
Owens River Valley									
Unknown Status	8	45	0	1,239	0	1,292			
Not Evaluated	223	85	118	3	0	432			
Not Eligible	5	7	1	0	7	20			
Eligible	24	5	4	0	0	33			
Listed	1	0	0	0	0	1			
Subtotal	263	143	123	1,242	7	1,778	1,005	0.20%	1.76
West Mojave and Eastern Slopes									
Unknown Status	36	35	0	5,957	0	6,028			
Not Evaluated	750	243	37	0	0	1,030			
Not Eligible	57	36	5	0	119	217			
Eligible	53	12	8	0	0	73			

Listed	2	0	0	0	0	2			
Subtotal	898	326	50	5,957	119	7,350	179,246	4.90%	0.04

Source: BLM 2015a

Table 5.2-5 lists National Register, California Landmarks, CRHR, and Points of Interest for Inyo County within the DRECP (BLM 2015a Appendix R1.8, Table R1.8-3).

Table 5.2-5. Inyo County Cultural Resources in the Vicinity of the Decision Area

Name	National Register	California Historical Landmark	California Register	POHI
Archaeological Site CA-INY-134	1		1	
Big and Little Petroglyph Canyons	1		1	
Burned Wagons Point		1		
Camp Independence Fort		1		
Cartago Boat Land				1
Coso Hot Springs	1		1	
Cottonwood Charcoal Kilns		1		
Death Valley Gateway		1		
Death Valley Junction Historic District	1		1	
Eagle Borax Works	1		1	
Eichbaum Toll Road		1	1	
Farley's Olancha Mill Site		1	1	
Fossil Falls Archaeological District	1		1	
Furnace of the Owens Lake Silver-Lead Company		1		
Grave of 1872 Earthquake Victims		1		
Harmony Borax Works	1		1	
Inyo County Courthouse	1		1	
Keeler, end of the line				1
Manzanar War Relocation Center	1	1	1	
Mary Austin's Home		1		
Old Stovepipe Wells		1		
Reilly	1		1	
Saline Valley Salt Tram	1		1	
Site of Bend City		1		
Site of Putnam's Cabin		1		
Valley Wells		1		
Inyo County Totals	**11**	**14**	**13**	**2**

Source: BLM 2015a

Approximately 46 miles of the southern end of the designated corridor north of Olancha is located within the California Desert Conservation Area Northern and Eastern Mojave (NEMO) Desert. Within this planning area, the following sites (without locations) are listed or eligible for listing on the National Register (BLM 2002a):

- CA-SBr-3186 (Baker vicinity)
- Paiute Pass Archaeological District

- Cerro Gordo National Historic District
- Death Valley Junction Historic District
- National Old Trails Road (CA-SBr-2910H)
- Mormon Road/Trail (Ca-SBr-4411H)
- AT & SF Railroad (CA-SBr-6693)
- Old Spanish Trail (CA-SBr-4272H)
- Tonopah & Tidewater Railroad (CA-INY-4772H)
- Hoover Dam to San Bernardino Transmission Line
- Boulder Transmission Lines 1, 2, 3
- Mormon Road Monument (Ca-SBr-4411H)
- Harry Wade Exit route
- Searles Lake Borax Discovery Site
- National Old Trails Monument
- Von Schmidt State Boundary
- Mojave Road (CA-SBr-3033H)
- California/Arizona Desert Training Center Maneuver Area
- Camp Ibis (Desert Training Center)
- Lanfair

Most of these sites are not within the decision area, but are included here as a cross section of resources in the area. Several ACECs noted in the Ridgecrest area of the NEMO study area include elements of prehistoric and historic nature: Cerro Gordo, Surprise Canyon, and White Mountain City. Unspecified petroglyphs, archaeological sites, and historical mining trails are also indicated. Of the latter, the Ridgecrest area includes the Burgess Mine Trail, Lonesome Miner Trail, and the Snowflake Mine Trail (BLM 2002a).

Trends and Forecasts

Natural processes such as wind/rain erosion and possibly sediment accretion may affect surficial remains in some areas, causing site deflation, slumping on unstable slopes, and material degradation. Subsurface sites will be less susceptible to immediate threats of erosion but retain the threat of deposit instability due to land use change (e.g., loss of vegetation cover). Anthropogenic factors affecting cultural resource preservation include both active and passive actions. The former includes intentional vandalism and looting of sites, as well as collection of artifacts. Rock art and petroglyphs are particularly susceptible to graffiti, given the prominence of many of these locations along modern trails. Without adequate signage, fencing, and recourse to legal constraints, damage to cultural remains may still occur with encroaching infrastructure development, especially in areas that have already been developed. This type of disturbance may include excavation, grading, deforestation, and mining. Passive factors that may contribute to site deterioration involve a wide variety of outdoor recreational activities. These include hiking, off-roading, rock climbing, biking, and camping. Visual impacts on sites or areas significant to Native Americans may be impacted by a combination of these factors: The broader effect of development on

natural viewsheds, within which significant sites may exist, will continue to be a potential deleterious factor in some areas.

5.2.4 Ecology

General information for ecological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.4.

5.2.4.1 Vegetation, Invasive Species, and Fire

Current Conditions and Context

The decision area is in the CBR Ecoregion. Vegetation communities in the vicinity of the decision area consist of pinyon-juniper woodland, big sagebrush shrubland, and mixed salt desert scrub (Figures 5.2-2a and b) (Comer et al. 2013a). Most of the vegetation of these communities are comprised of creosote bush/white bursage, mixed saltbush, Joshua tree, blackbush, and Mojave yucca vegetation. Cottonwoods, willows, and water birch are less common, but they provide important wildlife habitat (BLM 2002a).

Threats to vegetation communities are primarily from water use, invasive species, transportation, mining, burro use or livestock grazing (Comer et al. 2013b; BLM 2002a). Overall, Landscape Condition Index scores for Big Sagebrush Shrubland and mixed salt scrub are high to moderately high but there is significant spatial variation (Comer et al. 2013a). While development is limited in the ecoregion, it occurs in areas with high resource value near surface water and soils with high vegetative productivity (Comer et al. 2013a). Lower elevation vegetation communities are most impacted by these stressors given their relative accessibility compared to higher elevation montane vegetation communities.

Invasive Species

Invasive species are of significant concern in the decision area especially mustards, thistles, filaree (*Erodium cicutarium*), red brome (*Bromus rubens*), and Mediterranean split grass (*Schismus barbatus*). Many of the desert spring and riverine riparian areas have been rated as nonfunctional or functioning-at-risk due to upstream water use, groundwater overdraft and/or the invasion of exotic plants like tamarisk/saltcedar (*Tamarix*spp.), black locust (*Robinia pseudoacacia*) and honey locust (*Gleditsia triacanthos*) and tree of heaven (BLM 2002a). With the exception of tamarisk management activities, most weed control efforts have been limited.

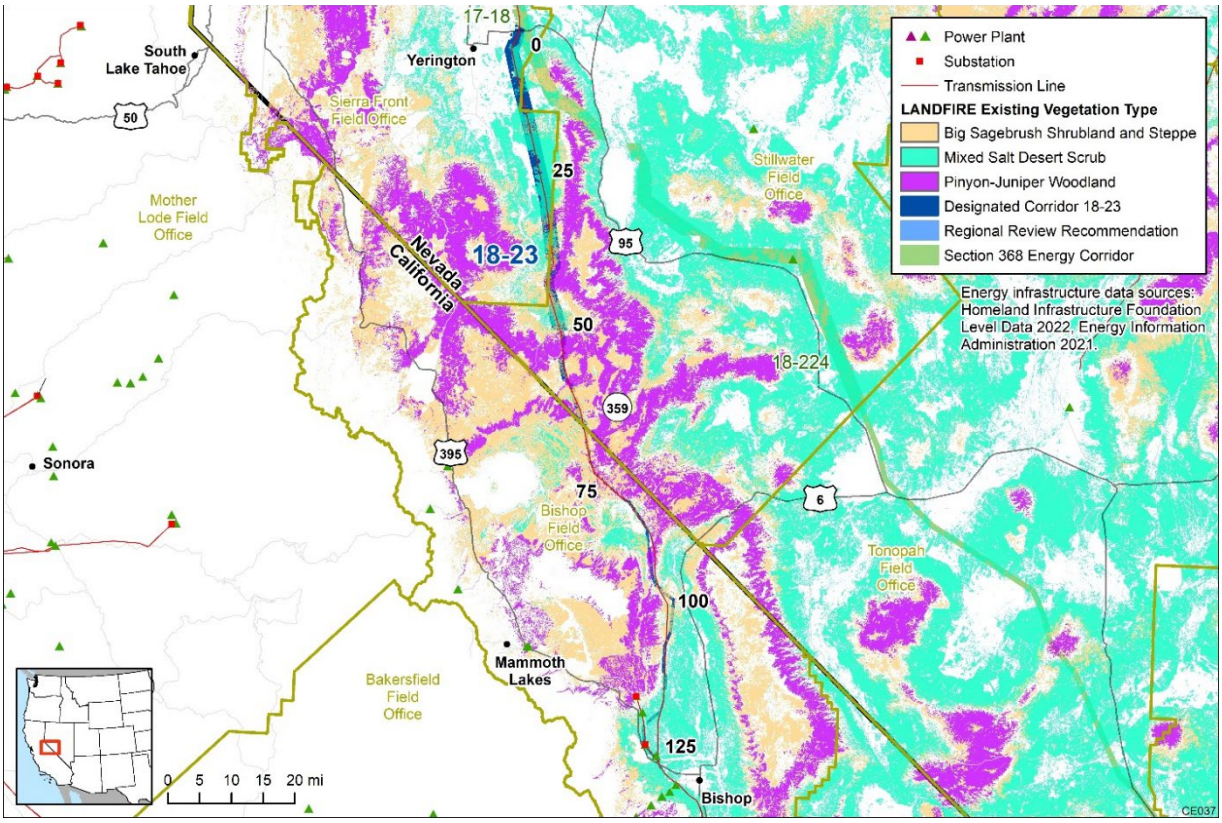

Figure 5.2-2a. Vegetation Communities in the Vicinity of the Decision Area (2020 Landfire)

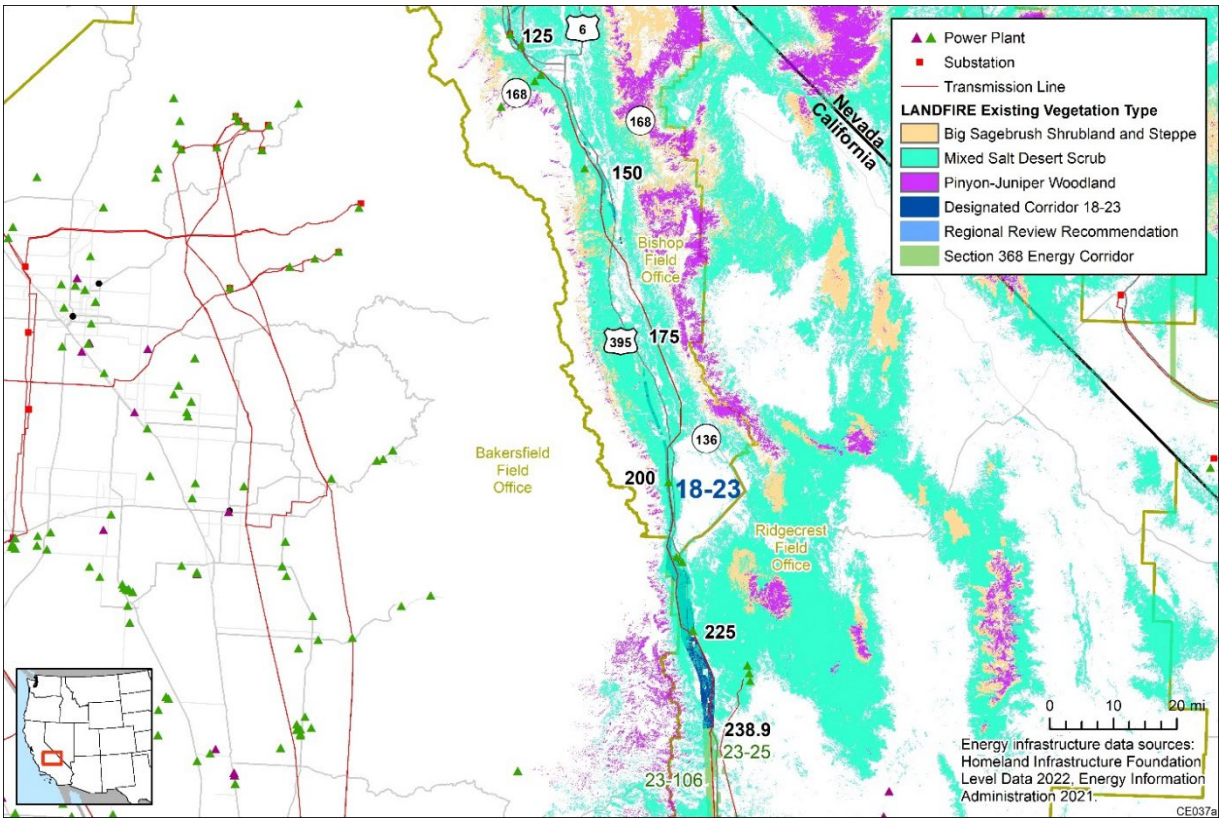

Figure 5.2-2b. Vegetation Communities in the Vicinity of the Decision Area (2020 Landfire)

Trends and Forecasts

An increase in maximum monthly summer temperature and longer growing season is forecast for the region between now and 2060 (Comer et al. 2013a). Some of the potential effects could alter fire frequency in forest and shrubland systems, decrease plant productivity due to greater frequency and duration of droughts, and promote the expansion of invasive annual grasses and forbs under hotter drier conditions (Comer et al. 2013a). Finally, a shift in vegetation communities to drought tolerant, shallow-rooted species may occur. In addition, species distribution models for the ecoregion indicated mixed salt desert scrub is expected to expand into adjacent lands currently occupied by big sagebrush shrubland throughout much of the area through 2060 (Comer et al. 2013a).

Fire and Fuels

Changes in historic fire regimes, mediated by soil disturbance, active fire suppression, and the introduction of exotic weeds, have significantly affected native vegetation communities and has created a positive feedback loop that promotes increased fire frequency and in turn, repeated fires promote more favorable conditions for exotic weeds (Comer et al. 2013a). Surface disturbing activities (e.g., vehicle use and cattle grazing) also increase fire frequency by soil disturbance that favors weeds (NPS 2002). Current patterns of altered fire regimes are expected to continue into the future (Comer et al. 2013a).

5.2.4.2 Terrestrial Wildlife

Current Conditions and Context

The decision area crosses the border of California and Nevada. One challenge to wildlife management is the conflicting management goals across jurisdictions. California ranks first among the 50 states in overall biological diversity and Nevada ranks eleventh. A major threat to terrestrial wildlife in California is its rapidly growing human population and the resulting loss of suitable habitat (CDFW 2015). Nevada's arid climate and limited water resources present challenges for conservation. The most critical problems facing terrestrial wildlife in Nevada are the alteration of aquatic habitats due to the extraction and consumption of water; invasive, exotic, and feral species; and the impacts of wildfire and fire suppression (Wildlife Action Plan Team 2012).

The decision area is located primarily in the Mojave Basin and Range (MBR) and CBR ecoregions. A very small portion of the decision area is also located in the Sierra Nevada ecoregion. The MBR is comprised primarily (70%) of desert scrub habitat (Comer et al. 2013b) while the CBR is comprised of shrub and steppe (36%), desert scrub (22%), and subalpine/ montane forests and woodlands (19.5%) (Comer et al. 2013a). In the CBR and MBR, the current landscape condition tends to be moderate to high across most of the wildlife species distributions. There are concentrated areas of low landscape condition, which reflects the effects of roads and other development. The impacts of roads and other development become most evident when wildlife

species tend to occur at lower elevations in all or part of their habitat range (Comer et al. 2013a). Species concentrated at higher elevations are found in the highest landscape condition areas (Comer at al. 2013b).

The following section focuses on game species (big game species, upland game birds, and waterfowl) and migratory birds. Other species may inhabit the decision area but are not directly discussed. Any management direction that affects the recovery, maintenance, or improvement of wildlife populations discussed in this section would also indirectly support other native species. Table 5.2-6 lists the managed big game species with habitat in the decision area.

Game species

Big Game Species

There are six big games species in California (CDFW 2022a) but only four species have ranges intersecting the decision area: mule deer, pronghorn, black bear, and tule elk. There are nine big game species in Nevada (NDOW 2022), but only five species have occupied habitat within the decision area: black bear, desert bighorn sheep, mountain lion, mule deer, and pronghorn (Table 5.2-6). Population numbers for these big game species fluctuate annually and depend on conditions such as weather, hunting, forage quality, water availability, and cover (WAPA 2015). The decision area contains numerous big game habitats including crucial winter habitat and year-round habitat. Big game migration corridors and crucial winter ranges are typically considered the most important habitats for big game species, especially during harsh winters (WAPA 2015).

Table 5.2-6. Managed Big Game Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Habitat Association and Life History	State
Black bear (*Ursus americanus*)	The decision area intersects black bear yearlong range in California and occupied habitat in Nevada. Forested areas provide cover and rivers and streams provide a source of food. Conflicts with humans is the greatest threat to black bears (NDOW 2022).	California & Nevada
Desert bighorn sheep (*Ovis canadensis nelson)*	The decision area intersects the year-round range of desert bighorn sheep. This species of bighorn sheep prefers the rough and rocky habitat of mountains in southern Nevada. Steep rocks offer protection against predators, who are unable to navigate and climb up after the bighorn sheep. Although residents of deserts, they do require freestanding water to help them get through the hot summers (NDOW 2022).	Nevada – only present in designated corridor; not present where change is recommended in regional review

Common Name *Scientific Name*	Habitat Association and Life History	State
Mountain lion (*Puma concolor*)	Roughly 45%of the state of Nevada is suitable mountain lion habitat. In Nevada, mountain lions are most likely found in areas of pinion pine, juniper, mountain mahogany, ponderosa pine and mountain brush (MLF 2022). Suitable habitat may be found within the decision area. Mountain lions mostly occupy remote and inaccessible areas. Their annual home range can be more than 560 square mi, while densities are usually not more than 10 adults per 100 square mi. The cougar is generally found where its prey species (especially mule deer) are located. In addition to deer, they prey upon most other mammals (which sometimes include domestic livestock) and some insects, birds, fishes, and berries. They are active year-round. Their peak periods of activity are within two hours of sunset and sunrise, although their activity peaks after sunset when they are near humans. They are hunted on a limited basis and are closely monitored in some states (DOE and BLM 2008).	Nevada
Mule deer *(Odocoileus hemionus)*	The decision area intersects winter and year-round habitat in Nevada, as well as the year-round range of the mule deer in California. Mule deer attain their highest densities in shrublands characterized by rough, broken terrain with abundant browse and cover. Some populations of mule deer are resident (particularly those that inhabit plains), but those in mountainous areas are generally migratory between their summer and winter ranges. They have a high fidelity to specific winter ranges where they congregate within a small area at a high density. Their winter range occurs at lower elevations within sagebrush and pinyon-juniper vegetation. Winter forage is primarily sagebrush, and true mountain mahogany, fourwing saltbush, and antelope bitterbrush are also important. Prolonged drought and other factors can limit mule deer populations. Mule deer are also susceptible to chronic wasting disease. When present, up to 3% of a herd's population can be affected by this disease (DOE and BLM 2008).	California & Nevada
Pronghorn antelope *(Antilocapra americana)*	The decision area intersects the crucial winter habitat of the pronghorn in Nevada and the yearlong range of the pronghorn in California. Pronghorn inhabit non-forested areas such as desert, grassland, and sagebrush habitats. Herd size can commonly exceed 100 individuals, especially during winter. They consume a variety of forbs, shrubs, and grasses, with shrubs of greatest importance. Fawning occurs throughout the species range. However, some seasonal movement within their range occurs in response to factors such as extreme winter conditions and water or forage availability Pronghorn populations have been adversely impacted in some areas by historic range degradation and habitat loss and by periodic drought conditions (DOE and BLM 2008).	California & Nevada
Tule elk *(Cervus canadensis nannodes)*	The yearlong range of Tule elk intersects the decision area in California. Tule elk are the smallest of all the elk species in North America and they are endemic to California. They are not migratory but do move throughout their range in response to seasonal availability of food. They live in open country under semi-desert conditions. Threats to the tule elk include vulnerability to disease due to genetic bottlenecking, conflict with ranchers, and habitat degradation and loss due to human development (CDFW 2022b).	California

*Intersections with decision area was determined using GIS data or habitat range maps from NDOW (NDOW 2017) and CDFW (CDFW 2022c) when possible.

Upland Game Birds

Upland game bird species that may occur in the decision area include American crow, band-tailed pigeon, California quail, chukar, Eurasian collared dove, Gambel's quail, mountain quail, mourning dove, ring-necked pheasant, sooty grouse, wild turkey, and Wilson's snipe. Chukar, ring-necked pheasants, and wild turkeys are not native to California and Nevada but are found as year-round residents in both states (DOE and BLM 2008). American crows are found throughout most of the lower 48 states in many different habitats, but they are most often seen in open woodlands (NDOW 2022). The band-tailed pigeons' summer and winter ranges intersect the decision area in California. They are found in hardwood and coniferous forests (CWHR 2016a). California quail are common throughout the low and middle elevations of California and northern Nevada in areas with a shrub, scrub, and brush with grass/forb openings, open woodlands, valleys where water is present, and edges of croplands (CWHR 2016b and NDOW 2022). Chukars are found in dry, rocky terrain with abundant cheatgrass and can often be found near water sources in drainages that have sufficient escape cover (WAPA and BLM 2015). Eurasian-collared doves can be found in various habitats including neighborhoods, grasslands, agricultural fields, woodland edges, and roadsides (NDOW 2022). Gambel's quail occur in California and Nevada. They occupy shrub habitats near riparian areas (WAPA and BLM 2015). Mountain quail are found in alpine forests of the sierras, marshes, and pinyon juniper forests in northwestern Nevada (NDOW 2022). Mourning doves occur in a wide range of habitats from deciduous forests to shrubland and grassland communities (WAPA and BLM 2015). Ring-necked pheasants inhabit agricultural areas and are common in areas that provide sufficient cover (e.g., weedy fields, fence rows, ditches) (WAPA and BLM 2015). Sooty grouse are found in alpine forests of the Sierras (NDOW 2022). Wild turkeys occur in Nevada. Suitable habitat includes trees for food, escape cover, and nighttime roosting and forbs and grass for food and foraging habitat (UDWR 2014). Their greatest threat is disease (NDOW 2022). Wilson's snipes are year-round residents in the decision area in California. They are found in wet pastures, canals and ditches, and other fresh emergent wetlands. Breeding occurs in wet areas adjacent to ponds and rivers (CWHR 2016c). Most upland game species exhibit annual population fluctuations depending on weather and habitat conditions (WAPA and BLM 2015).

Waterfowl

Waterfowl are also popular game birds in California and Nevada. Some common waterfowl in California and Nevada include American coot, American wigeon, Canada goose, green-winged teal, ross's goose, snow goose, canvasbacks, gadwall, greater white-fronted goose, mallard, northern pintail, redhead, ring-necked duck, northern shoveler, wood duck, tundra swan, greater scaup and lesser scaup (CDFW 2022d and NDOW 2022). Species distributions are limited to the rivers, streams, lakes, reservoirs, ponds, and wetlands found within the decision area. Population numbers for these species vary annually depending on weather and habitat conditions (WAPA 2015).

Various conservation and management plans exist for waterfowl including the 2018 North American Waterfowl Management Plan (NAWMP), signed by the U.S. Canada, and

Mexico. The NAWMP is a model for international conservation of wetlands and waterfowl. It was first signed in 1986 and has been adapted through reviews and updates in response to changing science and conservation goals (NAWMP 2018). While waterfowl species are considered game birds, they also are protected under the MTBA.

Migratory Birds

Many bird species occurring in California and Nevada are seasonal residents and exhibit seasonal migrations. These birds include waterfowl, shorebirds, raptors, and neotropical songbirds. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways (DOE and BLM 2008).

The Pacific Flyway includes the Pacific Coast Route, which occurs between the eastern base of the Rocky Mountains and the Pacific coast of the U.S.. This flyway encompasses the states of California, Nevada, Oregon, and Washington, and portions of Montana, Idaho, Utah, Wyoming, and Arizona. Birds migrating from the Alaskan Peninsula follow the coastline to near the mouth of the Columbia River, then travel inland to the Willamette River Valley before continuing southward through interior California. Birds migrating south from Canada pass through portions of Montana and Idaho and then migrate either eastward to enter the Central Flyway or turn southwest along the Snake and Columbia River valleys and then continue south across central Oregon and the interior valleys of California. This route is not as heavily used as some of the other migratory routes in North America (DOE and BLM 2008).

Migratory birds encompass a variety of passerine and raptor species, most of which are protected under the MBTA of 1918 (16 USC 703-711) and Executive Order 13186. Migratory birds include neotropical migrant species, raptors, waterfowl, shorebirds, and wading birds. A wide range of migratory birds occur within the Alabama Hills National Scenic Area and SRMA and could occur within the decision area. The riparian habitats attract migratory birds for nesting and stopover sites between summer and winter ranges. Winter resident raptors, such as Cooper's hawk and rough-legged hawk as well as breeding summer residents, such as northern harrier, red-tailed hawk, prairie falcon, barn owl, and great horned owl can be found in the SRMA (BLM 2020).

The decision area intersects the Adobe Valley California Important Bird Area (IBA), the Mono Highlands global IBA, and the Owens River California IBA. The Adobe Valley IBA is a locally important stopover site for migrant waterbirds (National Audubon Society 2022a). The Mono Highlands California IBA attracts large numbers of migrant songbirds during the fall when riparian thickets are filled with fruiting currants (National Audubon Society 2022b). The Owens River IBA attracts thousands of migrating shorebirds with exposed mudflats (National Audubon Society 2022c).

Trends and Forecasts

Climate forecasts indicate the potential for profound transformation in many ecosystems across the CBR during the next two to five decades. Climate change modeling for the MRB and CBR to 2060 suggest significant increases in maximum monthly temperatures forecasted for the decision area. These forecasts appear to be

most intense along the southern CBR and southwestern MBR. Looking out to 2060, there is potential for considerable changes to the current distributions of many wildlife species. Lowest-elevation basins throughout the CBR and MBR could transition from cool semi-desert into very warm and sparsely-vegetated desert landscapes more typical of the Mojave Basin and Range (Comer et al. 2013a, 2013b).

Climate change has the potential to impact wildlife communities by changes in temperature and precipitation and therefore in changes in their seasonal habitats. Some examples of potential climate change related impacts include:

- Both winter-only and summer-only ranges (the elevational extremes) of ungulates such as mule deer, are forecasted to contract substantially within the MBR and CBR (Comer et al. 2013a, 2013b).
- Combined winter and summer ranges of desert bighorn sheep are predicted to remain fairly stable within the MBR, with contractions forecasted for lower-elevation transitions into the Sonoran Desert, and expansions expected along high-elevation margins of the ecoregion (Comer et al. 2013b).
- Higher than normal summer temperatures are forecasted across most grazing allotments (Comer et al. 2013a, 2013b).

5.2.4.3 Fish and Aquatic Species

Current Conditions and Context

One important aquatic habitat near the designated corridor is the wetland in the Fish Slough ACEC. Aquatic habitat in the region also supports specialized desert fish species like the endangered Owens pupfish, the Owens speckled dace and the once-abundant Owens sucker and Owens tui chub.

The area has moderate to high riparian corridor condition and intactness and streams with relatively high quality and low sediment loading (Comer et al. 2013a). Introduced species like bass, crayfish, and mosquitofish have reduced populations of native aquatic species.

Trends and Forecasts

An increase in maximum monthly summer temperature is forecast for the region between now and 2060 (Comer et al. 2013a). Climate change has the potential to impact aquatic communities by changes in temperature and precipitation patterns potentially resulting in:

- reduced stream flow depth and duration in intermittent stream and perennial streams;
- greater stress to aquatic communities due to higher water temperatures over a greater portion of the year;
- greater erosion due to an increase in intense flows following periods of rainfall in summer; and

- loss of groundwater dependent aquatic habitat due to reduced groundwater discharge to springs and seeps.

5.2.4.4 Special Status Species

Current Conditions and Context

The decision area intersects habitat for three special status species: Bi-State Sage-Grouse Distinct Population Segment (hereafter "Bi-State sage-grouse DPS" or "Bi-State DPS"), Yellow-billed Cuckoo, and Sierra Nevada Bighorn Sheep. These species are discussed below and summarized in Table 5.2-7.

Table 5.2-7. Special Status Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Species Status and Habitat Association	State	Habitat within the Decision Area
Bi-State Sage-Grouse Distinct Population Segment (DPS) (*Centrocercus urophasianus*)	The Bi-State sage-grouse DPS represents a genetically distinct and geographically isolated population of Greater Sage-Grouse (*Centrocercus urophasianus*) that straddles the border between Nevada and California. Throughout its range, the populations of sage-grouse are state-managed bird species that depend upon sagebrush steppe ecosystems.	California and Nevada	MP 33, MP 35 to MP 38, MP 81 to MP 83, MP 86 to MP 89, and MP 93 to MP 103
Yellow-billed Cuckoo (*Coccyzus americanus*)	The Yellow-billed Cuckoo inhabits riparian woodlands and lowland vegetation near fresh water. It is listed as threatened under the ESA with designated critical habitat.	California	MP 161
Sierra Nevada Bighorn Sheep (*Ovis canadensis sierrae*)	The Sierra Nevada Bighorn Sheep is a subspecies of Bighorn Sheep unique to the Sierra Nevada Mountains of California. It is listed as endangered under the ESA with designated critical habitat.	California	MP 207

The Bi-State sage-grouse DPS represents a genetically distinct and geographically isolated population of Greater Sage-Grouse (*Centrocercus urophasianus*) that straddles the border between Nevada and California. Throughout its range, the populations of sage-grouse are state-managed bird species that depend upon sagebrush steppe ecosystems. The Bi-State DPS has undergone multiple federal status assessments and associated litigation, beginning in October 2013 when it was proposed for listing as threatened under the ESA by the USFWS. After federal agency decisions and challenges in 2015 and 2018, the USFWS decided in 2020 to withdraw the proposed rules to list the DPS as threatened and designate critical habitat (85 FR 18054). Habitat for the Bi-State DPS occurs throughout the decision area (Figures 5.2-3a and b).

The Yellow-billed Cuckoo (*Coccyzus americanus*) inhabits riparian woodlands and lowland vegetation near fresh water. It is listed as threatened under the ESA with designated critical habitat.

The Sierra Nevada Bighorn Sheep (*Ovis canadensis sierrae*) is a subspecies of Bighorn Sheep unique to the Sierra Nevada Mountains of California. It is listed as endangered under the ESA with designated critical habitat.

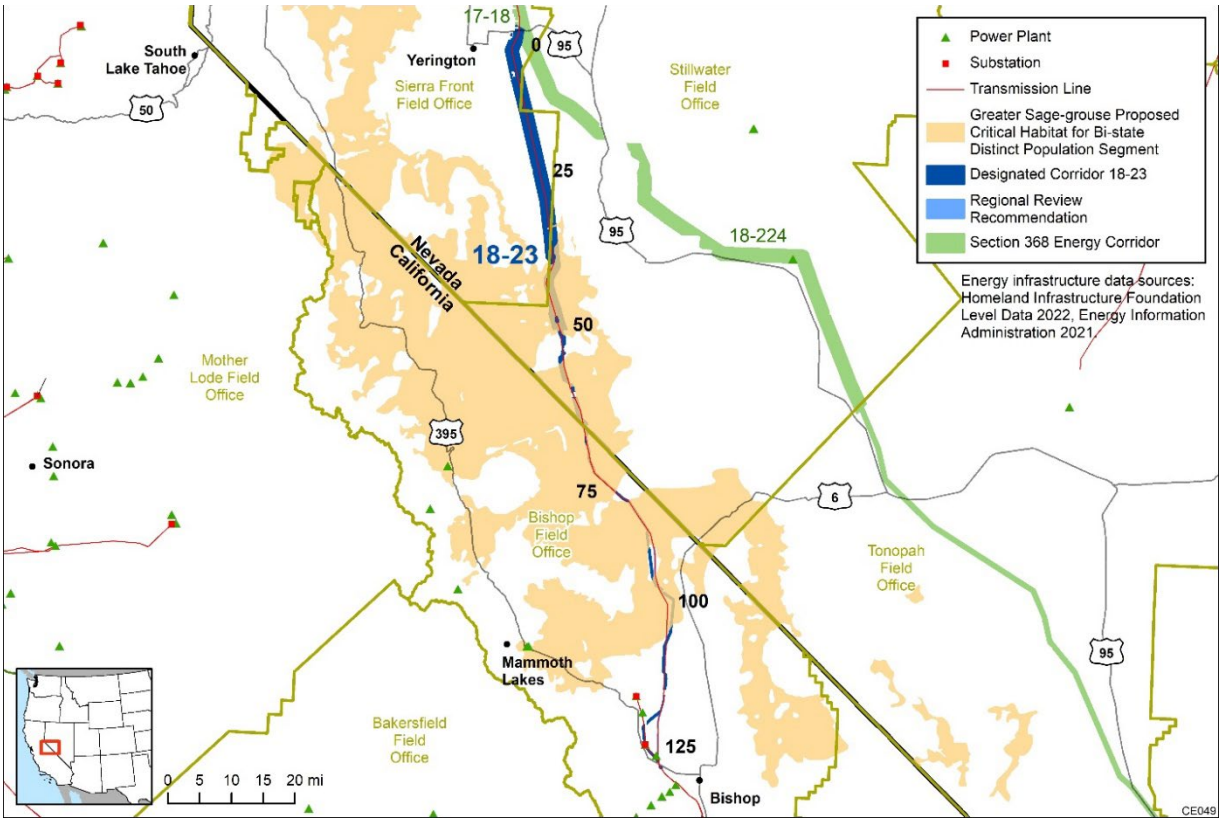

Figure 5.2-3a. Special Status Species Habitat in the Vicinity of the Decision Area

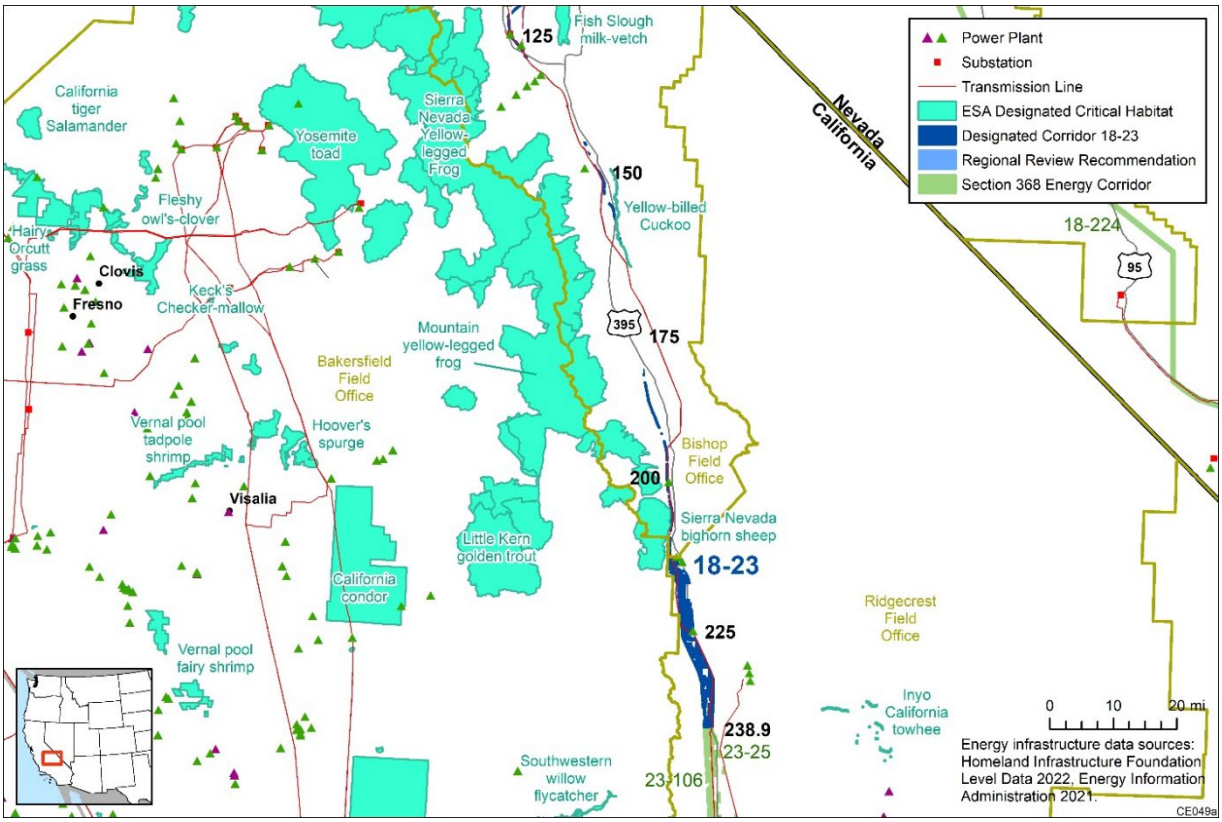

Figure 5.2-3b. Special Status Species Habitat in the Vicinity of the Decision Area

Ecoregional conditions for the decision area are described in the terrestrial wildlife section (Section 5.2.4.2). Populations of special status species in the decision area have fluctuated over recent years. For example, the Bi-State sage-grouse DPS has been declining since 2011 following several years of population growth between 2008 and 2011 (USGS 2019).

Trends and Forecasts

Recent models for the Bi-State sage-grouse DPS suggest that the population trend is neither decreasing nor increasing for the time period between 1995 and 2018 and population trends for the Bi-State DPS remain consistent with other GRSG populations in Nevada (USGS 2019). Similar to other sage-grouse populations, threats to the Bi-State DPS include drought, habitat degradation due to wildfire and invasive species, and direct habitat loss due to human land use modification.

The Yellow-billed Cuckoo and Sierra Nevada Bighorn Sheep are both listed under the ESA. Populations of both species have experienced declines in recent years. For example, the Yellow-Billed Cuckoo in the western United States has been extirpated from most of its historical range and is now reduced to fewer than 500 pairs (American Bird Conservancy 2022).

5.2.5 Environmental Justice

General information for environmental justice that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.5.

Current Conditions and Context

For environmental justice, a 2 mi buffer area was used to evaluate minority and low-income populations, 1 mi on either side of the decision area. The geographic distribution of minority and low-income groups within the buffer area was based on census block group data from the 2020 Census (U.S. Census Bureau 2022a,2022b,2023).

Table 5.2.8 lists the minority and low-income composition within the 2 mi buffer in the four counties on the basis of 2020 census data. For three of the counties, the total minority population (those not listed as White alone, not Hispanic or Latino) in the buffer does not exceed 50% and is not meaningfully greater (10 percentage points or more) than the countywide average. The total minority population for that portion of the buffer located in Mineral County, Nevada exceeds 50% and is meaningfully greater (10 percentage points or more) than the countywide average. The number of persons at or below twice the federal poverty rate in the buffer exceeds countywide levels in each of the four counties. In Mineral County, the low-income percentage in the buffer is higher than 50% (Table 5.2-8).

The 2 mi buffer had a population of 16,658 in 2020 (U.S. Census Bureau 2022b). Countywide median household income ranged from $31,500 in 2020 in Mineral County

to $64,924 in Mono County, while the average unemployment rate in the four counties was 5.6% in 2021 (see Section 5.2.15).

Table 5.2-8. Minority and Low-Income Population Within Decision Area Buffer, 2020

Population Category	County and State			
	Inyo, California	Mono, California	Mineral, Nevada	Lyon, Nevada
Racial Groups				
Number of persons:				
Hispanic or Latino	2,395	326	87	822
White alone, not Hispanic or Latino	5,823	1,578	246	2,859
Black or African American alone	52	6	4	24
American Indian and Alaska Native alone	822	76	483	58
Asian alone	112	12	2	18
Native Hawaiian and Other Pacific Islander alone	5	9	0	1
Two or more races	484	100	42	153
Minority percent	40.1	25.7	71.7	27.4
County Minority percent	42.0	34.2	37.2	28.5
Low-income Population				
Number of persons	2,925	667	638	1,172
Low-income percent	31.4	25.0	53.9	37.3
County Low-income percent	25.7	24.8	45.8	27.5

Sources: U.S. Census Bureau (2022a, 2022b,2023).

Trends and Forecasts

Forecasts of the effects of changes in employment opportunities, cost of living, social and cultural values, and consumer preferences, on population growth and migration are undertaken only at the regional or national level for the population as a whole, with detailed forecasted data on minority and low-income populations at the census block group level not available. Preparing demographic forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local employment, unemployment, income, population growth and migration, and the characteristics of minority and low-income populations, that are difficult to forecast, particularly at the census block group level.

5.2.6 Geology, Soils, and Mining and Mineral Resources

Current Conditions and Context

The northern portion of the decision area in Nevada is located on ash flow tuff, tuffaceous sedimentary rocks, and felsic intrusives of the Gray Hills and other rugged areas, and on the alluvium of Mason Valley (Crafford 2007). It crosses one mapped fault of unspecific displacement (Crafford 2007). Just north of the state line, the Nevada portion of the designated corridor goes over basalt, rhyolite and other shallow intrusives, andesite, and breccias in the Bodie Mountains. One mapped fault of

unspecified displacement is in this area (Crafford 2007). At the state line, the designated corridor is located over portions of the alluvium of California's Mono Valley. Further south, it runs over the Adobe Hills, a broad area of Tertiary volcanics containing faults of unspecified displacement and alluvium of the Adobe Valley (Jennings 2010). Further south, the designated corridor travels over Mesozoic granitic rocks of the Benton Range and Blind Spring Hill, Tertiary and Quaternary volcanics, and the loosely consolidated Quaternary sediments of Blind Spring Valley (Jennings 2010). More mapped faults are in these areas. Further south, the designated corridor is located in an area of Mesozoic granitic rock, Paleozoic marine units, and a broad area of Quaternary pyroclastic and volcanic mudflow deposits referred to as the Volcanic Tableland. This area contains numerous faults of unspecific displacement (Jennings 2010). Further south, following an interruption, the designated corridor continues in Quaternary volcanics of Crater Mountain and the Mesozoic granitic rocks of Poverty Hills and adjacent alluvium of Owens Valley (Jennings 2010). South of another interruption, the designated corridor resumes on faulted Mesozoic granitic rock of the Alabama Hills. The next portion of the corridor is dominated by alluvium in the Owens Valley and Rose Valley.

The southern tip of the decision area in California is located on Mesozoic granitic rock and Quaternary volcanics comprising the Argus Mountains (Jennings 2010). Soil is poorly developed in the alluvial materials in the low areas of the decision area. Despite the desert soil, several center-pivot irrigation systems are present near the corridor near Big Lake, California. Soil is generally absent in the upland areas of exposed bedrock.

Trends and Forecasts

The decision area extends across an area that is essentially unpopulated with negligible change expected in the geologic, mineralogic, and soil conditions.

5.2.7 Human Health and Safety

General information for hazardous materials and human health that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.7.

Current Conditions and Context

Volcanic Hazards – The decision area is located near five active volcanoes: Coso Volcanic Field (lava domes), Long Valley Caldera, Golden Trout Creek volcanic field, Mono Craters (lava domes), and Mono Lake Volcanic Field (cinder cones) (DOE and BLM 2008, Table 3.14-1). Volcanoes are classified as active if they have erupted in the past 10,000 years (in the Holocene era). While eruption of any of these active volcanoes is unlikely during the lifetime of a transmission or pipeline project, if a volcano were to erupt with this infrastructure present, impacts from lava and debris flows and/or falling lava or rock fragments could damage the infrastructure, particularly aboveground power lines. Damaged transmission lines could start wildfires. Since volcanoes generally give

warning signs prior to eruption, there would likely be time for emergency planning prior to an eruption that could damage corridor energy infrastructure.

Seismic Hazards – The decision area is located is in an area with a high earthquake potential. The entire decision area is within areas with a 2% probability of horizontal shaking exceeding 32 to 48%g within 50 years; with some portions of the corridor having a 2% probability of exceeding 64%g within 50 years (USGS 2022a). If an earthquake with a PGA of greater than 32%g were to strike near a transmission line or pipeline in the decision area, damage to the infrastructure would be possible or likely.

Fault Crossings – Faults in which a slip has occurred within the past 10,000 years (Holocene faults) are commonly considered active (USGS 2022b). Many fault lines cross the decision area, including several young fault lines (less than 150 years) in the California portion of the corridor (USGS 2021) (Figures 5.2-4a and b). These young fault lines indicate a relatively high potential for earthquakes along the corridor.

Liquefaction Potential:– An area near the designated corridor (MP 120) has a high liquefaction potential, and another area near MP 127 and MP 186 has a medium liquefaction potential (DOE and BLM 2008, Figure 3.14-3). The most susceptible soils are generally along rivers, streams, and lake shorelines, as well as in some ancient river and lake deposits.

Landslide Potential – The decision area does not intersect with any areas classified for landslide susceptibility (DOE and BLM 2008, Figure 3.14-5). The risk of landslides at locations near this corridor is low.

Trends and Forecasts

The decision area has a relatively high probability of experiencing a powerful earthquake within the next 50 years.

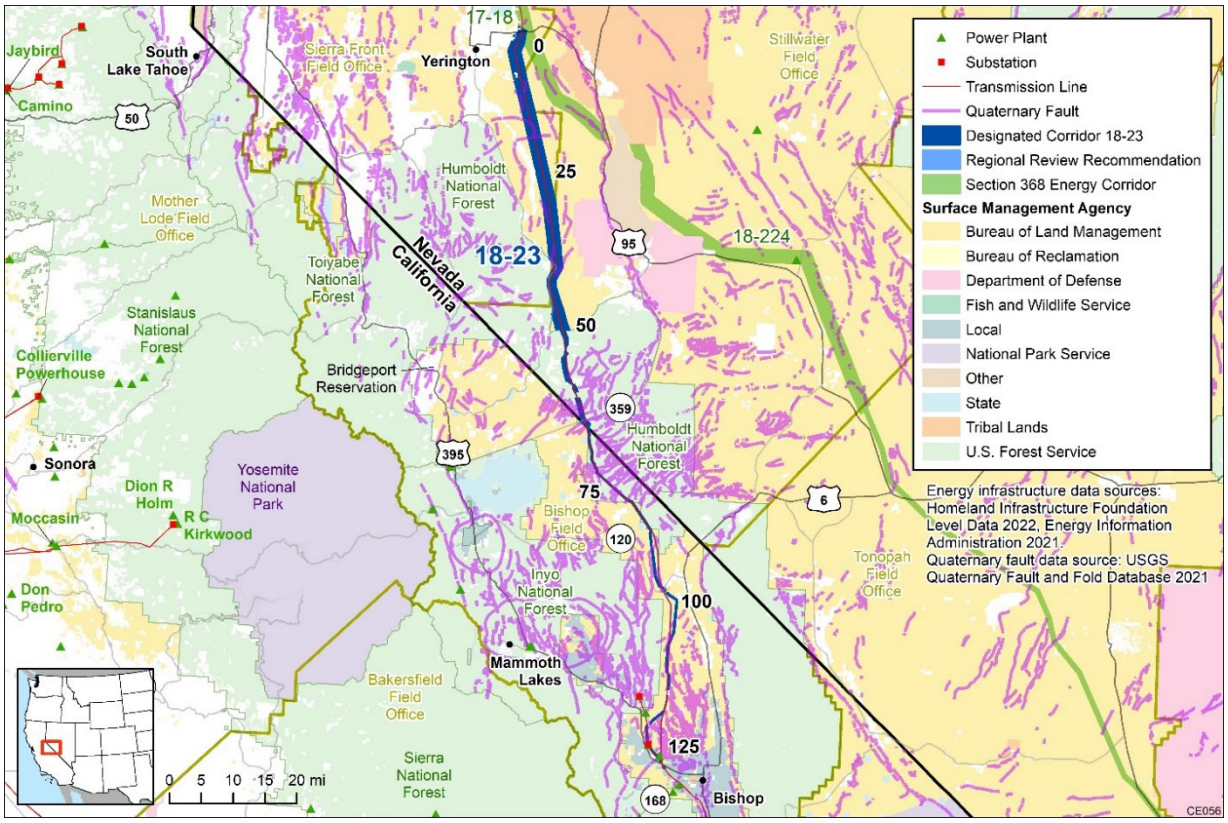

Figure 5.2-4a. Fault Crossings in the Vicinity of the Decision Area

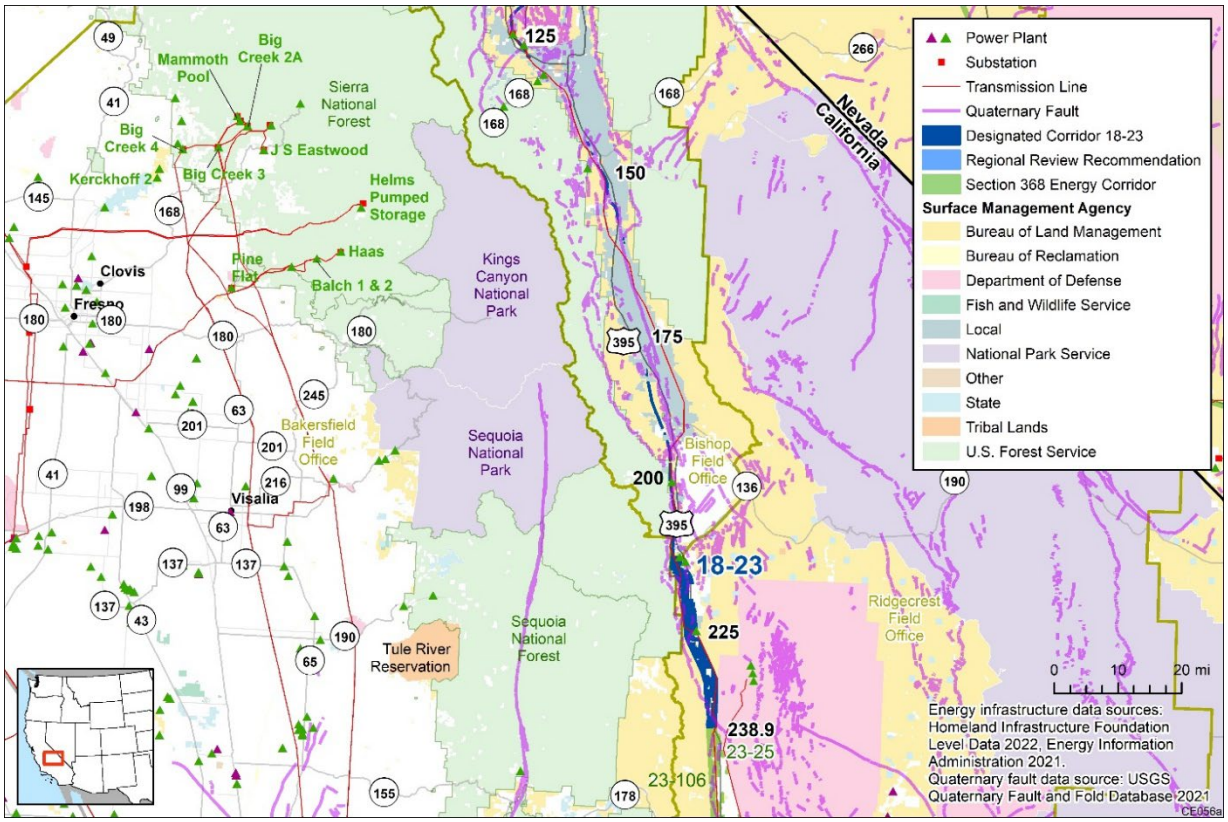

Figure 5.2-4b. Fault Crossings in the Vicinity of the Decision Area

5.2.8 Hydrology

Current Conditions and Context

The decision area covers a mix of terrain consisting of rugged mountainous zones and broad, flat alluvial plains and valleys. The alluvium consists of unconsolidated sand and gravel and is considered a basin-fill aquifer (USGS 2000). The bedrock areas do not generally serve as aquifers.

The northern portion of the decision area extends across numerous unnamed ephemeral drainages, many of which are tributary to the Walker River in Nevada (USGS 2022c). In California, the designated corridor is within 1 km of two ephemeral lakes in the Adobe Valley, Adobe Lake and River Spring Lake, and extends over portions of a third ephemeral lake, Antelope Lake. It coincides with a named spring, Antelope Spring, in this vicinity. In the Benton Range, the decision area crosses numerous ephemeral mountain drainages as well as one perennial stream, Spring Canyon Creek. Further south, the designated corridor is within 200 m of three perennial waterways, Owens River, Lower Rock Creek, and Horton Creek. Further south, near Big Pine, California, the corridor is within 1.5 km of perennial Klondike Lake. The designated corridor is within 500 m of Big Pine Creek, which is a tributary to the Owens River. Big Pine Creek flows east in the Owens Valley, with the corridor within 500 m of it for part of its length. Several center-pivot irrigation systems are present near Monola, California. Further to the south, the designated corridor is within 600 m of three perennial water features: Tinemaha Creek, Tinemaha Reservoir, and Owens River. Near Lone Pine, California, the corridor extends over part of two ephemeral creeks, Lone Pine Creek and Tuttle Creek. In the Owens Valley, the decision area is within 3 km of the large ephemeral Owens Lake and crosses ephemeral Cottonwood Creek and numerous unnamed ephemeral tributaries to the lake. The Los Angeles Aqueduct is also in the Owens Valley and generally parallel to and downslope of the decision area; however, in several places the corridor crosses the aqueduct in many places near Owens Lake and to the south. Further south, portions of the decision area are located over a named spring, Rose Spring, the aqueduct, the Second California Aqueduct, more ephemeral drainages, and over the footprint of Little Lake, which is occasionally dry based on an inspection of historic aerial photos.

The decision area is not located on a sole source aquifer (EPA 2022c) and it does not cross any Wild and Scenic Rivers (USGS 2022c).

Trends and Forecasts

The decision area extends across an area that is essentially unpopulated with little active land use except for a small nearby area of irrigated agriculture. Many ephemeral lakes are present adjacent to or in some cases overlapping with the corridor. Changes in hydrologic conditions are expected to occur on short time scales in response to precipitation events.

5.2.9 Lands and Realty

General information for lands and realty that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.9.

Current Conditions and Context

Current lands and realty management is guided by decisions made in existing RMPs. For the Corridor 18-23 decision area, the planning area includes the BLM-administered lands managed under the Bishop RMP (BLM 1993a), the California Desert Conservation Area Plan as amended (BLM 1999), as modified by the Northern & Eastern Mojave Desert amendment and the DRECP LUPA (BLM 2016a); and the ROD for the Alabama Hills Management Plan (BLM 2021b). The lands and realty program consists generally of land use authorizations (e.g., ROWs) and land tenure (purchases and acquisitions, sales and exchanges, and withdrawals of public land).

Trends and Forecasts

In general, current management trends for land tenure indicates that the BLM will pursue a long-term program for repositioning public lands toward improved manageability and increased public benefits. Lands may be acquired to protect threatened natural and cultural resource values and fulfill the public's need for outdoor recreation and open space (BLM 2002b). Future opportunities for land acquisitions would be contingent on willing sellers, the condition of proposed acquired lands, and the availability of funding (BLM 2023a).

In general, the BLM will continue to consider land exchanges if such exchanges enhance public resource values and improve land ownership patterns and management capabilities of both private and public lands by consolidating ownership and reducing the potential for conflicting land use. Small, isolated parcels of public lands, especially those surrounded by large blocks of individually owned private parcels, are most likely to be considered for disposal in the future. Generally, the BLM would also consider the disposal of some isolated parcels near communities, if those parcels are deemed necessary for community expansion and economic development. The BLM anticipates an increase in requests from private individuals and communities to acquire public lands in the future (BLM 2019a).

The lands and realty program responds to requests for ROWs, permits, leases, withdrawals, and land tenure adjustments from other programs or outside entities. The frequency of such requests is anticipated to increase as neighboring communities grow and the demand for use of public lands increases. As a result, future management of the lands and realty program may become more intense, complex, and costly (BLM 2019a).

The main land use topics addressed in this section focus on renewable energy; ROWs, particularly utility corridors and, as applicable, roads and railroads; and military flight operations. While military flight operations are not an actual use of BLM-administered

lands, they could have potential effects on energy corridors, particularly those involving above-ground transmission lines.

5.2.9.1 Renewable Energy

Current Conditions and Context

In 2005, the BLM signed a ROD implementing a wind energy development program. BLM-administered lands were categorized into areas having a low, medium, or high potential for development of wind energy production based on wind power classifications. Lands categorized as having low potential fall within wind power Classes 1 and 2, lands with a medium potential fall within wind power Class 3, and lands with a high potential fall within wind power Class 4 and higher. Wind resources in Class 4 and higher are generally considered to be economically developable with current technology. Class 3 wind resources are expected to become more economical as low-wind-speed turbines become increasingly available (BLM 2005e).

Most BLM-administered lands within the decision area have a low potential for wind energy production. There are some areas with medium-to-high potential east of the designated corridor from about MP 220 to MP 229.

In 2012, the BLM approved the Western Solar Plan, implementing RMP amendments for a solar energy development program in six southwestern states, including California and Nevada. The Solar PEIS ROD designated SEZs, areas that the BLM prioritizes for utility scale production of solar energy as well as variance areas, (areas potentially available for utility-scale solar energy development located outside of SEZs). On December 8, 2022, the BLM published an NOI to prepare a PEIS and conduct scoping to evaluate the environmental effects of improvements and expansions to the BLM's utility-scale solar energy planning (BLM 2022a). No SEZs occur near the decision area. Scattered solar variance areas are located within the designated energy corridor between MP 108 and MP 212. Solar variance areas are located within the Regional Review Recommendation between MP 108 to MP 116 (DOE and BLM 2014).

Trends and Forecasts

Renewable energy production on BLM public lands has increased in recent years. As of November 2021, permitted renewable energy projects on BLM-managed lands include 36 wind, 37 solar, and 48 geothermal projects with a total combined capacity of more than 12 gigawatts of power (BLM 2023b). Continued growth of responsible renewable energy has recently been supported by Executive Order 14008, the Energy Act of 2020, and Congressional direction to seek to permit at least 25 gigawatts of solar, wind and geothermal energy production on public lands no later than 2025 (BLM 2023c). In addition, laws enacted in most of the western states require energy companies and utilities to provide a portion of their energy from renewable energy sources. As a result, the BLM anticipates an increased interest in the use of public lands for renewable energy development.

The placement of renewable energy facilities depends on a number of factors that are not always in BLM land use plans such as economics, proximity to the electrical grid, project design, current technology, and potential resource impacts. However, BLM land use plans can be amended through the public process to accommodate such uses if necessary (BLM 2008a).

Under the Wester Solar Plan, areas that are not included as part of the SEZs or variance areas are to be considered as potential exclusion areas for utility-scale solar energy development. Exclusion areas are identified based on the potential for resource conflicts (e.g., Greater Sage-grouse habitat) or because lands are not well suited for utility-scale solar energy development (e.g., areas with slopes greater than 5%) (BLM 2012). The upcoming Solar PEIS may identify additional areas as suitable for utility-scale solar energy development, potentially increasing future solar energy development on BLM-administered land.

As the potential for wind and solar resources are somewhat limited within the decision area of, coupled with the extent of specially designated areas within the BLM-administered lands, it is unlikely that utility-scale renewable energy projects would be extensively developed within the decision area.

5.2.9.2 Rights-of-Way

Current Conditions and Context

Section 503 of FLPMA provides for the designation of energy corridors and encourages use of ROW collocation to minimize environmental impacts and the proliferation of separate ROWs.

A 500-kV DC transmission line and 115-, 138-, and 345-kV transmission lines are located within the designated corridor in various locations (Figures 5.2-5a and b). Portions of the designated corridor follow State Highway 395. The Regional Review Recommendation would follow the 1,000 kV DC transmission line for its entire length.

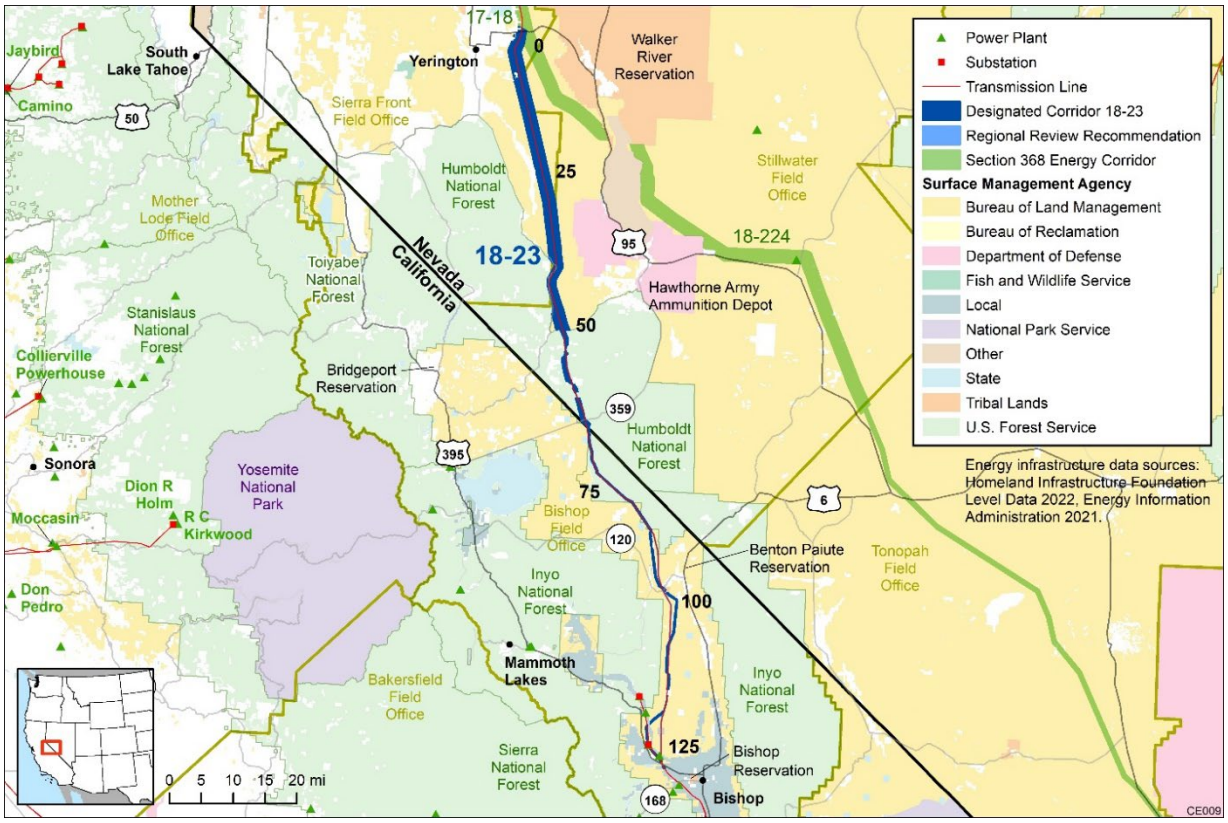

Figure 5.2-5a. Transmission Lines in the Vicinity of the Decision Area

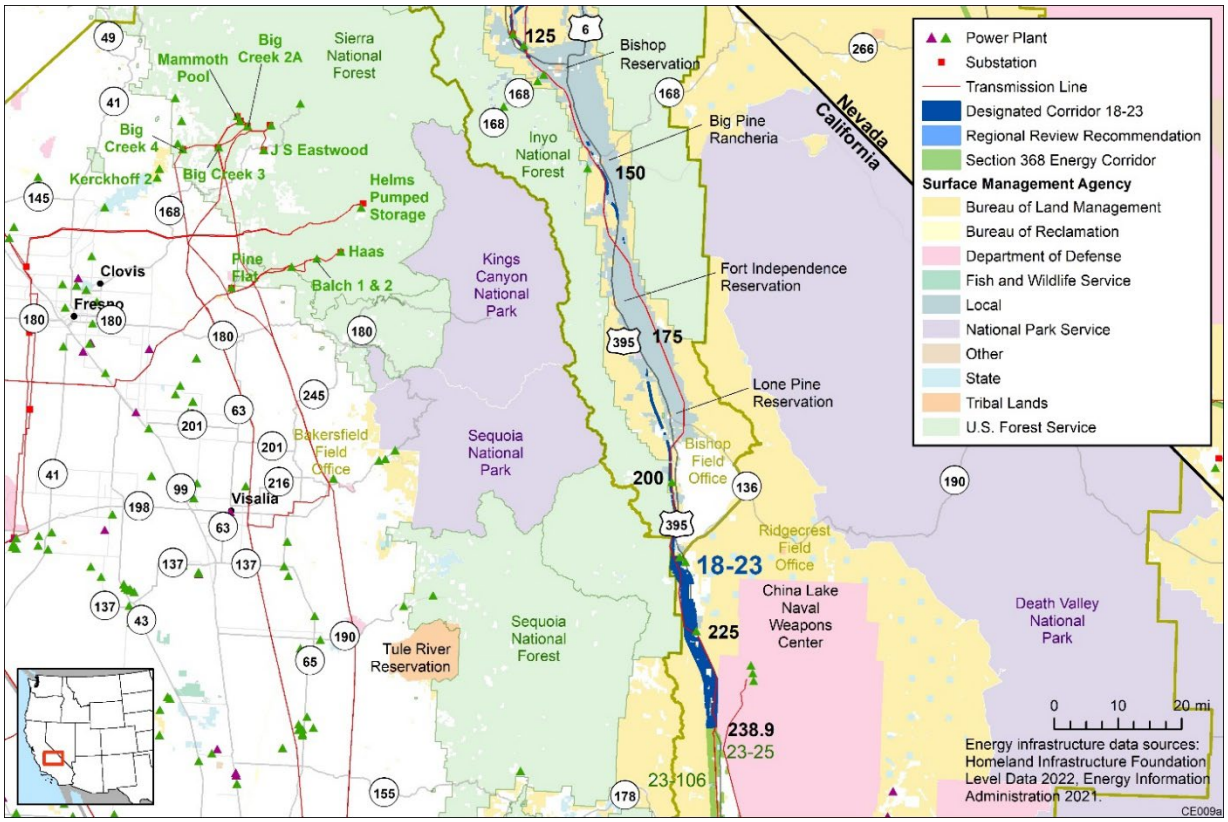

Figure 5.2-5b. Transmission Lines in the Vicinity of the Decision Area

Trends and Forecasts

In general, requests for ROWs will continue to increase due to increasing population growth and urban expansion, which in turn, will increase demand for energy and the need for improved electric transmission grid reliability. Demand for ROWs may increase within areas that have potential for wind, solar, and geothermal energy. Existing or designated corridors could provide grid connectivity to accommodate for the anticipated growth in renewable energy production. The BLM will continue to process and grant ROWs, consistent with national, state, and local plans. The BLM will continue to encourage colocation of ROWs to minimize environmental impacts and proliferation of separate ROWs.

As with past and present development, designated energy corridors or colocation with existing infrastructure will continue to be preferred for future development of linear utility infrastructure projects (particularly large, interstate energy transport projects). Collocation of utility infrastructure could continue to concentrate development, and associated surface disturbance, to certain areas, including areas adjacent to highways and major county roads, railroads, Section 368 energy corridors, and other existing or proposed energy corridors (BLM 2019a).

5.2.9.3 Military Training Flight Operations

Current Conditions and Context

The decision area is located within MTR-VR, MTR-IR, an MTR- Slow Route, and an SUA. The existing 115-, 138-, and 345-kV transmission lines and a 1,000 kV DC transmission line are also located within these military training flight operations areas. Table 5.2-9 displays the MTRs and where they intersect the decision area.

Table 5.2-9. MTRs Intersected by the Decision Area

Military Training Route Type	State	Planning Area	MPs[a]
Visual Route	Nevada and California	Carson City RMP	MP 18 to MP 38 MP 206 to MP 239
Instrument Route	Nevada and California	Carson City RMP Bishop RMP	MP 30 to MP 49 MP 66 to MP 67 MP 204 to MP 209
Slow Route	Nevada and California	Carson City RMP	MP 0 to MP 20
Special Use Area	Nevada and California	Bishop RMP DRECP	MP 145 to MP 239

[a] Based upon MPs of the designated corridor

Trends and Forecasts

The trends and forecasts for military training flight operations are not under the purview of BLM. DoD would consult with BLM if any significant changes or increases in military training flights over BLM-administered lands were planned for the future.

5.2.10 Lands with Wilderness Characteristics

There are no managed lands with wilderness characteristics units within the decision area. Lands with wilderness characteristics are not expected to be affected during this planning effort and will not be discussed further.

5.2.11 Livestock Grazing and Wild Horse and Burro

General information for livestock grazing and wild horse and burro resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.11.

5.2.11.1 Livestock Grazing

Current Conditions and Context

Management direction for livestock grazing comes primarily from the RMPs that provide management for livestock grazing and rangeland health. Most BLM-administered lands are or can be grazed by livestock except for lands considered unsuitable due to steep slopes (greater than 70%) or barren areas (less than 2% vegetation) (BLM 1993b, 2008b; BLM and DOE 2008). The number of AUMs could be modified over time—e.g., based on whether allotments meet land health standards (BLM 2008c). An AUM is the amount of forage necessary to support one cow and calf, five sheep, one horse, or one indigenous animal for one month. There are 18 grazing allotments within the designated corridor and 21 grazing allotments within the Regional Review Recommendation (Table 5.2-10 and Figures 5.2-6a and b). Within the designated corridor, eight allotments overlap less than 5% of the total size of the allotment and nine allotments overlap between 5% and 31% of the total size of the allotment. The designated corridor overlaps 64%of the Olancha Common allotment. Within the Regional Review Recommendation, 11 allotments overlap less than 5% of the total size of the allotment and 10 grazing allotments overlap between 5% and 30% of the total size of the allotment. The Regional Review Recommendation overlaps 64% of the Olancha Common allotment.

Table 5.2-10. Livestock Grazing Allotments Intersected by the Decision Area[a]

Allotment Name (Allotment Number)	Administrative State	Field Office	Allotment Acreage	Percentage of Allotment within Decision Area
Designated Corridor				
Mono Sand Flat (06072)	California	Bishop	63,085	0.04
Shannon Canyon/Baker Creek (06021)	California	Bishop	8,178	1.2
Butler Mountain (03510)	Nevada	Stillwater FO	45,620	1.8
Alabama Hills (06046)	California	Bishop	78,012	2.1
Volcanic Tablelands (06007)	California	Bishop	47,152	2.4
Bramlette (06038)	California	Bishop	40,121	3.3

Allotment Name (Allotment Number)	Administrative State	Field Office	Allotment Acreage	Percentage of Allotment within Decision Area
Hammil Valley (06024)	California	Bishop	44,332	3.5
Adobe Valley (06027)	California	Bishop	25,419	3.8
Poverty Hills (06050)	California	Bishop	5,887	5.9
Parker Butte (03572)	Nevada	Stillwater FO	30,784	7.9
East Crater Mountain (06079)	California	Bishop	6,235	9.9
Perry Springs-Deadman (03573)	Nevada	Stillwater FO	62,833	20
Gray Hills (03539)	Nevada	Stillwater FO	105,462	21
Tunawee (05009)	California	Bishop	56,053	25
Ash Creek (06042)	California	Bishop	3,836	30
Nine Mile (03569)	Nevada	Stillwater FO	26,913	31
East Walker (03531)	Nevada	Stillwater FO	32,462	31
Olancha Common (05011)	California	Bishop	15,591	64
Regional Review Recommendation				
Mono Sand Flat (06072)	California	Bishop	63,085	0.04
Red Mountain (06047)	California	Bishop	8,536	0.2
Chalk Bluff (06043)	California	Bishop	17,285	0.5
West Crater Mountain (06019)	California	Bishop	6,397	0.6
Shannon Canyon/Baker Creek (06021)	California	Bishop	8,178	1.4
Butler Mountain (03510)	Nevada	Stillwater FO	45,620	1.8
Alabama Hills (06046)	California	Bishop	78,012	2.1
Volcanic Tablelands (06007)	California	Bishop	47,152	2.5
Adobe Valley (06027)	California	Bishop	25,419	3.9
Bramlette (06038)	California	Bishop	40,121	3.9
Hammil Valley (06024)	California	Bishop	44,332	4.0
Poverty Hills (06050)	California	Bishop	5,887	6.7
Parker Butte (03572)	Nevada	Stillwater FO	30,784	7.7
East Crater Mountain (06079)	California	Bishop	6,235	12
Perry Springs-Deadman (03573)	Nevada	Stillwater FO	62,833	19
Gray Hills (03539)	Nevada	Stillwater FO	105,462	21
Tunawee (05009)	California	Bishop	56,053	25
Ash Creek (06042)	California	Bishop	3,836	29
East Walker (03531)	Nevada	Stillwater FO	32,462	30
Nine Mile (03569)	Nevada	Stillwater FO	26,913	30
Olancha Common (05011)	California	Bishop	15,591	64

[a]Allotments are listed if they are on BLM-administered lands within the Corridor 18-23 decision area.

Source: BLM 2023d.

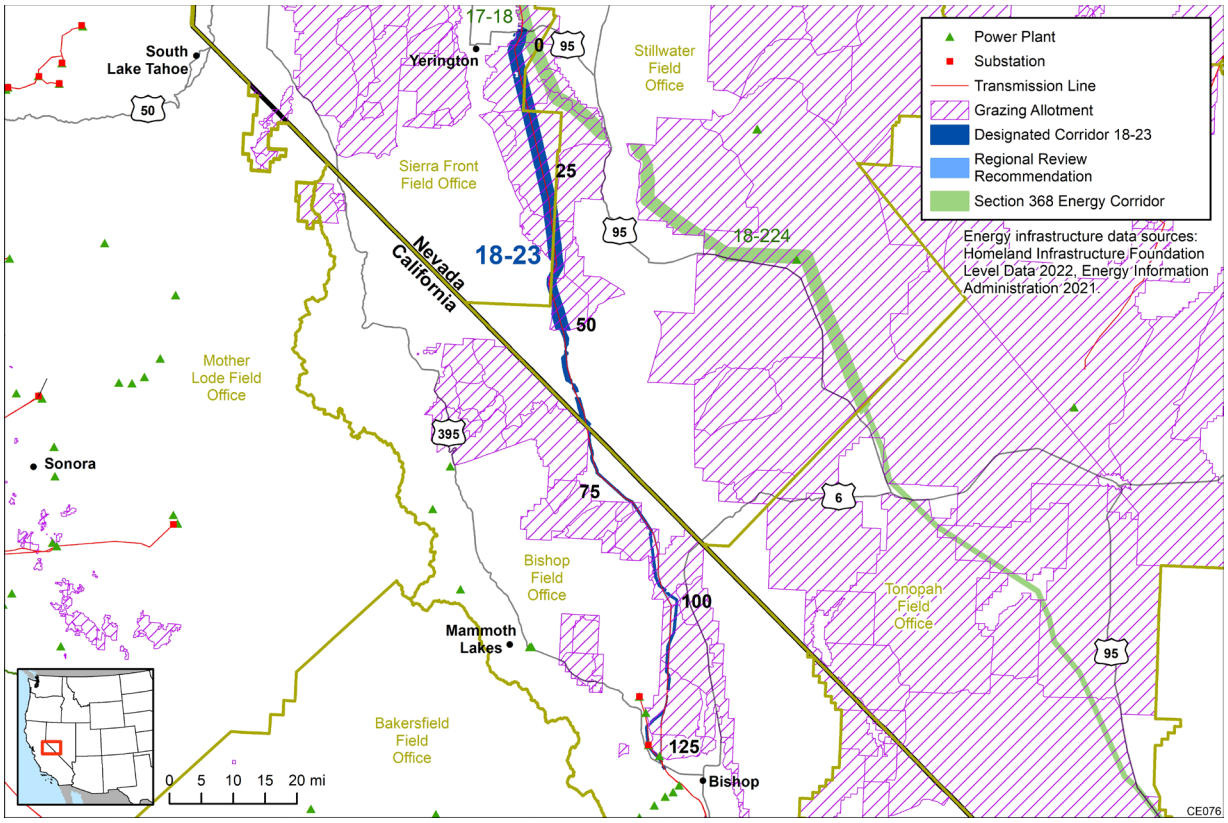

Figure 5.2-6a. Grazing Allotments in the Vicinity of the Decision Area.

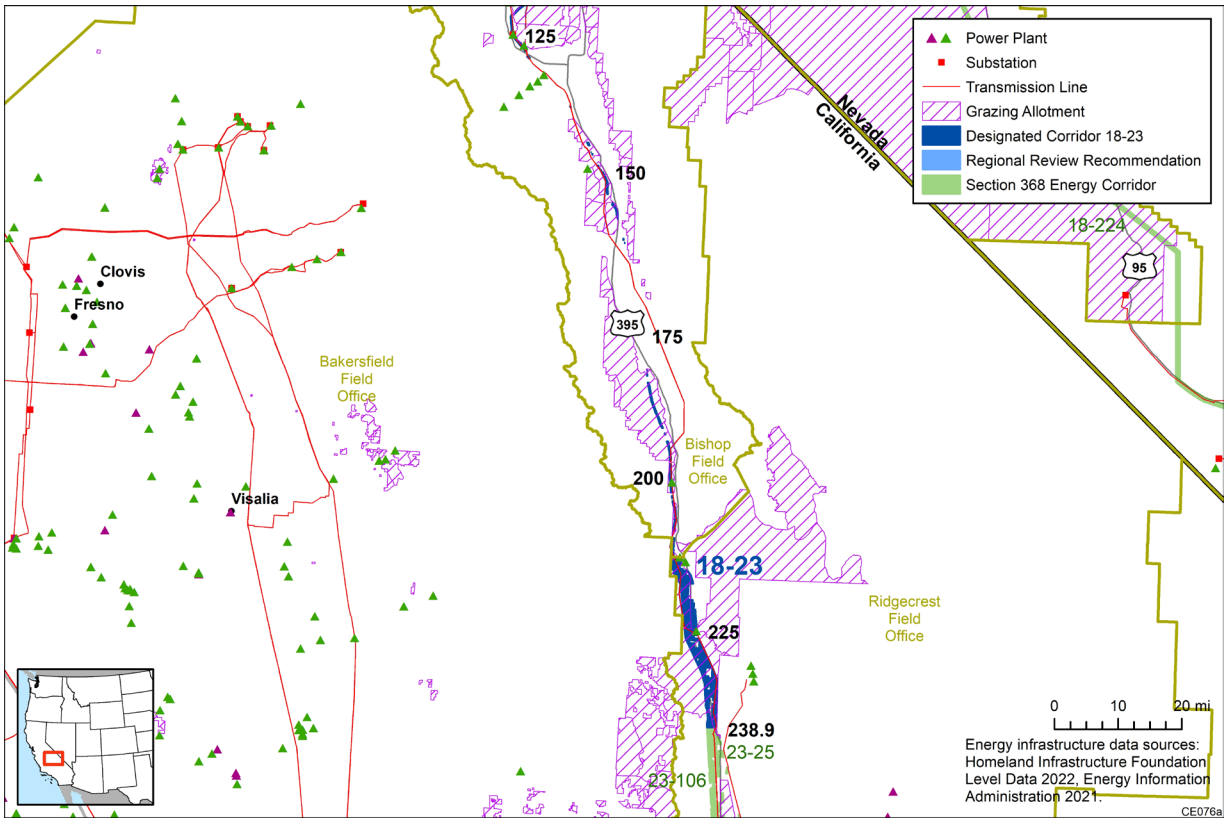

Figure 5.2-6b. Grazing Allotments in the Vicinity of the Decision Area

Trends and Forecasts

Livestock grazing will continue to be managed through existing laws, regulations, and policies. Appropriate BMPs will be followed to protect rangeland resources and, where necessary, to mitigate any conflicts with other uses and values. The BLM will continue to assure compliance with existing permit/lease requirements, modify permits and leases, monitor and supervise grazing use, and to remedy unauthorized grazing use. Management direction for livestock grazing comes primarily from the RMPs that provide current management for livestock grazing and rangeland health. Review of existing AUMs would be conducted on individual allotments through assessment of existing activity plans (i.e., allotment management plans, livestock grazing decisions, habitat management plans, watershed management plans, biological opinions, and multiple-use decisions). BLM enhances range conditions by controlling animal numbers, regulating season of use, regulating duration of use, and periodically resting rangelands as part of livestock management systems and following catastrophic events, such as fire (BLM 2008b).

The occurrence of weather extremes or shifts in climatic variables, such as the increase in frost-free days, change in the timing or amount of precipitation, and warmer summers, is often cited as a growing trend that may be the result of climate change (see Section 5.1.2). Increases in temperatures and shifts in precipitation patterns may reduce livestock forage production and may alter the livestock carrying capacity on BLM-administered lands. Season or timing of grazing use livestock numbers, distribution, intensity, and type of livestock that may need to be adjusted on a temporary of long-term basis in response to climatic factors.

5.2.11.2 Wild Horse and Burro

Current Conditions and Context

The decision area intersects or is near three wild horse and burro HMAs (Figures 5.2-7a and b). These include the Wassuk, Montgomery, and Centennial HMAs (BLM 2023e) (Table 5.2-11). The maximum AML for the HMAs is 41 wild horses and zero wild burros; however, the HMAs contain 1,707 wild horses and 56 wild burros (BLM 2023e).

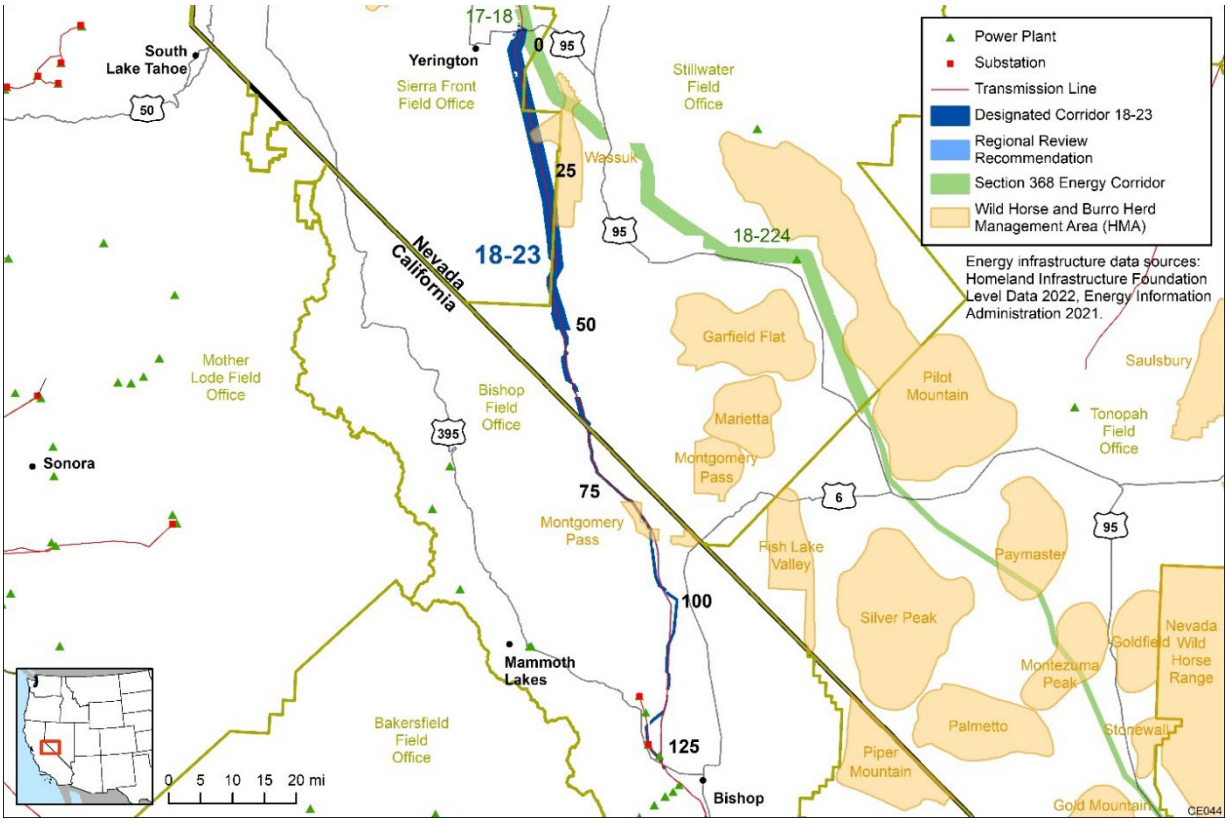

Figure 5.2-7a. HMAs in the Vicinity of the Decision Area

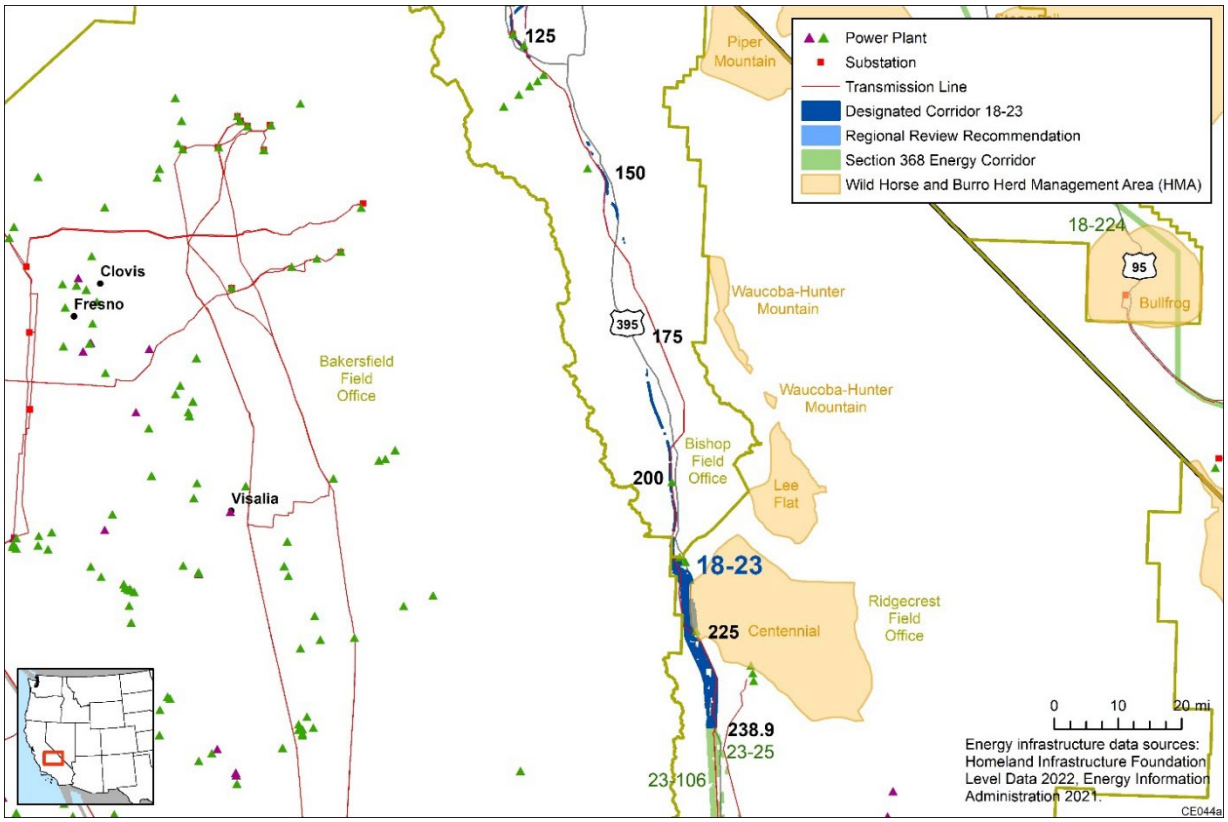

Figure 5.2-7b. HMAs in the Vicinity of the Decision Area

Table 5.2-11. HMAs Within or in Proximity to the Decision Area

HMA	State	Planning Area	Location within Decision Area
Wassuk	Nevada	Carson City	MP 16 to MP 19 MP 29.5 to MP 32
Montgomery	Nevada	Carson City	MP 80.5 to MP 87
Centennial	California	Bishop, Northern and Eastern Mojave Desert/ CDCA LUPA	MP 219 to MP 226

Centennial HMA (California)

HA size: 1,027,948 ac (356,267 ac on BLM-administered land)

HMA size: 318,499 ac (71,350 ac on BLM-administered land)

AML: 134-168, 2023 population estimate 749 (most recent population inventory Oct 2021)

Burro 2021 population estimate 56; Burro AML: 0-0

Most recent year at AML: 2008

Last gather: October 2021

Montgomery Pass HMA (Nevada)

HA size: 87,339 (84,500 ac on BLM-administered land)

HMA size: 50,815 ac (49,023 ac on BLM-administered land)

AML: 64-81, 2023 population estimate 642 (most recent population inventory Nov 2015)

Most recent year at AML: Not listed

Last gather: September 1998

Wassuk HMA (Nevada)

HA size: 51,743 ac (51,626 ac on BLM-administered land)

HMA size: 51,743 ac (51,626 ac on BLM-administered land)

AML: 109-165, 2023 population estimate 316 (most recent population inventory March 2022)

Most recent year at AML: 2017

Last gather: November 2012

Trends and Forecasts

Challenges to wild horse and burro management include controlling populations within HMAs to maintain herd and rangeland health. Wild horse and burro herds that are above their established AML are at increased risk for food and water scarcity and habitat degradation, especially as extreme drought conditions continue to threaten animal and land health across the West. BLM-wide population estimates from March 2022 indicate a two-year decline in wild horse and burro population; the population decreased by 3,805 animals between March 2021 and March 2022. As of March 2022, the estimated total wild horse and burro population was 82,384 animals, three times the BLM's goal of

approximately 27,000 animals (BLM 2022b). Climate change effects, including change in precipitation patterns and temperature, could further reduce water and forage availability and habitat for wild horses and burros.

5.2.12 Noise

General information for noise resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.12.

Current Conditions and Context

At a state level, both California and Nevada do not have regulatory standards limiting noise levels from sources associated with activities within the decision area (NPC 2022).

California state law requires a Noise Element as part of all city and county General Plans. The California Governor's Office of Planning and Research's noise element guidelines include recommended noise level standards for evaluating land use noise compatibility (State of California 2017). The guidelines contain a table that describes the compatibility of various land uses with a range of environmental noise levels in terms of CNEL/L_{dn}. These guidelines require a rather broad interpretation. The Mono County Noise Element provides a systematic approach to measuring and modeling noise, establishing noise standards, controlling major noise sources, and planning for the regulation of noise. This Noise Element provides background information about evaluating the effects of noise on communities and the current regulatory framework (Mono County 2015).

Noise Ordinance (Mono County Code, Chapter 10.16)[12] defines limits for excessive noise and sets noise level limits for land uses. For sensitive land uses such as residences or public uses (e.g., schools or libraries), maximum allowable sound levels are 55 dBA during the daytime and 50 dBA for nighttime. However, the Inyo County Code of Ordinances does not contain any noise standards or regulations applicable to the activities related to energy infrastructure development.

Lyon and Mineral counties in Nevada have no applicable quantitative noise limit regulations.

Noise sources around the decision area include road traffic, railroad traffic, aircraft flyover by military and civilian aviation, agricultural activities, animal noise from nearby wildernesses, industrial activities, and infrequent community activities and events. In addition, crackling or hissing corona noise from transmission lines and humming noise from substation transformers are additional noise sources along the corridor. Except small towns, including Bishop in California, where the designated corridor pass through,

[12] Available at https://library.municode.com/ca/mono_county/codes/code_of_ordinances?nodeId=TIT10PUPESAMO.

the decision area is mostly undeveloped, sparsely populated, and remote, the overall character of which is considered mostly pristine to rural.

Airports: The nearest airport is Lantana Ranch Airport in Lyon County, Nevada, about 2 mi (3 km) west of the designated corridor at MP 20. The next nearest airport is Yerington Municipal Airport in Lyon County, about 5 mi (8 km) west of the north end of the decision area. Eastern Sierra Regional Airport in Bishop, Inyo County is about 6 mi (10 km) east of the mid-portion of the designated corridor around MP 130. Near the south end of the decision area, Porter Ranch and Sacatar Meadows Airports in Tulare County are about 8 mi (13 km) west of the designated corridor around MP 230. Several public, private, and military airports along with heliports in these counties are scattered around the decision area.

Roads and Railroads: In Nevada, U.S. Route 95 Alternate crosses the north end of the decision area. At the Nevada-California state line, the designated corridor crosses the Nevada State Route 359 and California State Route 167. Then the designated corridor crosses the California State Route 120 and runs parallel to U.S. Route 6 to Bishop. From Bishop to the south end of the corridor, the corridor follows U.S. Route 395 along portions of the corridor, and California State Routes 168, 136, and 190 branch out from U.S. Route 395. In addition, many county roads and local roads are located around the corridor. UPRR – Hawthorne Branch is the only one railroad nearby, which runs parallel to the designated corridor from the north end of the decision area to Hawthorne in Nevada and is as close as 5 mi (8 km) from the designated corridor.

To date, no environmental noise survey has been conducted around the decision area. On the basis of the population density, the day-night average sound level (L_{dn} or DNL) is estimated to be 37 dBA for Lyon County in Nevada, 23 dBA for Mineral County in Nevada, 28 dBA for Mono County in California, and 25 dBA for Inyo County in California, all of which correspond to wilderness areas (Cavanaugh and Tocci 1998; Miller 2002).

Trends and Forecasts

Primary noise sources include roads, airports, railroads, and stationary sources. In general, doubling the number of noise sources of the same intensity increases the sound level only by 3 dB, which is a barely noticeable difference. For example, if the number of passenger cars increases from 1,000 to 2,000 vehicles per hour on any road, the noise level increases only by 3 dB. This level of drastic change in activities is not anticipated in the remote and unpopulated decision area. As a result, even with population and industrial growth in the region, noise level around the decision area is forecasted to increase slightly and unnoticeably in the near future unless new and noisy sources, to which the receivers have never been exposed before, come into the region.

5.2.13 Paleontology

General information for paleontological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.13.

Current Conditions and Context

Figures 5.2-8a and b depicts the PFYC Classes within the decision area. The PFYC Classes represent an estimate based on the available regional geologic data; they are not meant to replace project-specific evaluations of potential paleontological resources. The PFYC Classes within the Nevada portion of the decision area and the Ridgecrest Field Office in California are mostly Class 1 and 2 (very low and low, respectively), and these areas are scattered across various locations along the decision area. Where the PFYC classification is Class 1, the probability of impacting significant paleontological resources would be very low and further assessment of paleontological resources is likely unnecessary. Where the PFYC classification is Class 2, the probability of impacting significant paleontological resources would be low and further assessment of paleontological resources is would likely not be unnecessary, unless paleontological resources are known or found to exist. There are small portions along the corridor between MP 30 and MP 40 in Nevada that are assigned PFYC Class 5. PFYC Class 5 areas indicate a high probability for impacting significant paleontological resources. The area should be assessed prior to land tenure adjustments and pre-work surveys would likely be required. Within California, PFYC classes are unknown for most of the decision area and PFYC Class 2 at the southern end.

In general, within the DRECP planning area, exposed rock outcrops in Southern California's Mojave and Colorado desert regions have yielded a fossil record from the middle Proterozoic Eon, about 1.2 billion years ago. Within the Owens Valley region, fossil occurrences are primarily limited to those preserved in the Pleistocene lake beds associated with ancient Owens Lake. Vertebrate fossils, including remains of birds, rodents, extinct cats, proboscideans, horses, camels, and bison have been discovered at several sites (BLM 2015a).

In Nevada, paleontological resources are known to occur throughout the Carson City planning area. Based on a 1981 district-wide paleontological inventory, 331 locations were identified containing 225 vertebrates, 73 invertebrates, and 33 paleoflora fossils, ranging from the Triassic to the Quaternary/Ranch Labrean periods. Specifically, the areas with the highest paleontological diversity and of greatest importance are the Stewart Valley Fossil Area and the Pint Nut Range. The decision area is located west of the Stewart Valley Fossil Area and east of the Pine Nut Range (BLM 2014).

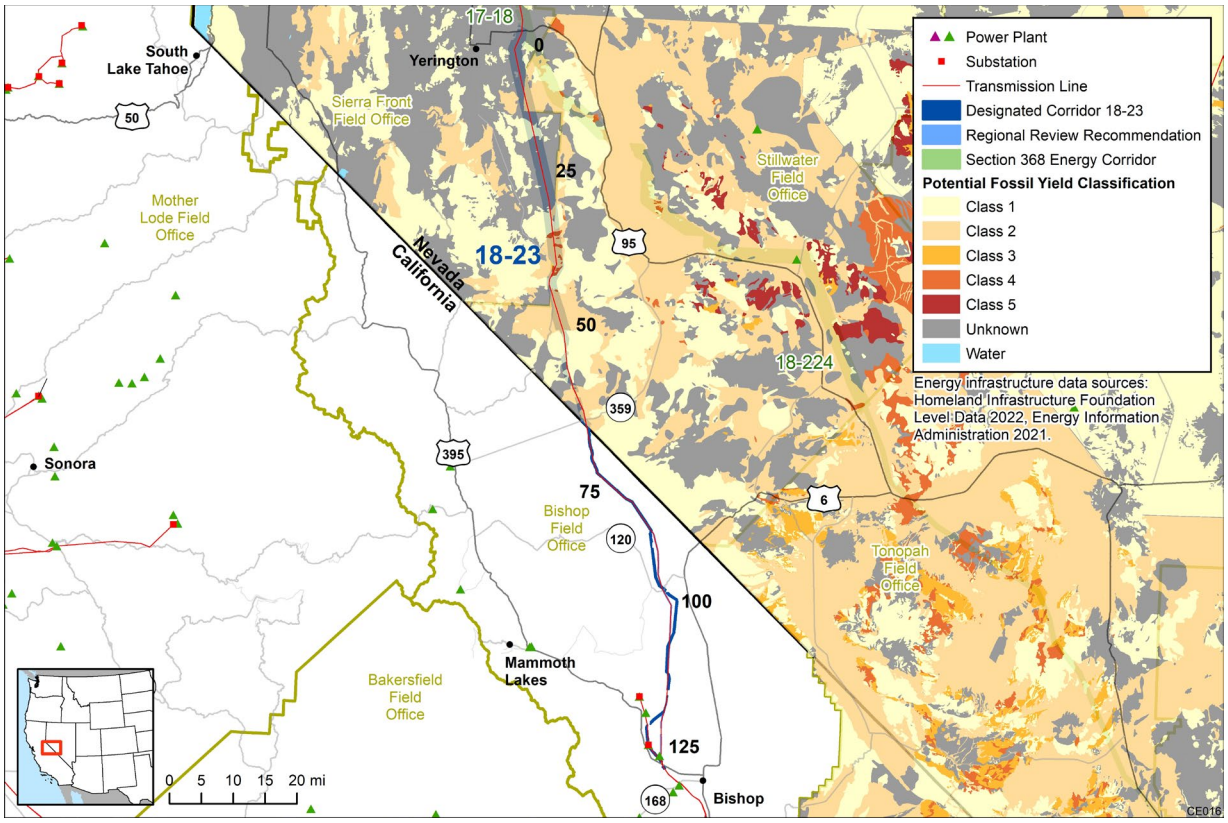

Figure 5.2-8a. Potential Fossil Yield Classification in the Vicinity of the Decision Area

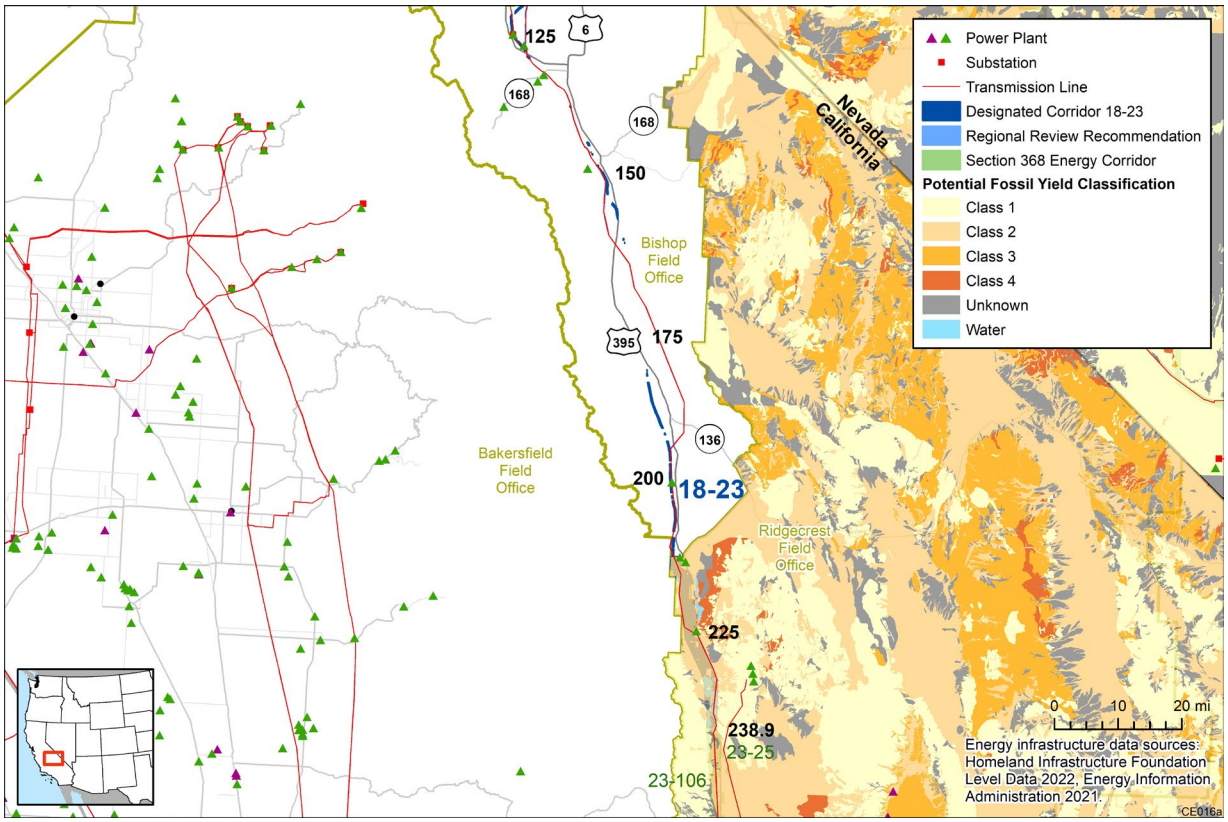

Figure 5.2-8b. Potential Fossil Yield Classification in the Vicinity of the Decision Area

Trends and Forecasts

Within the DRECP planning area, renewable energy development has increased in recent years, which could result in both the discovery of currently unknown paleontological resources as well as potential adverse impact on paleontological resources if renewable energy development results in the loss, damage, or destruction of any unique or significant paleontological resource (BLM 2015a). Increased recreation use often results in greater erosion and can increase the damage, removal or alteration of paleontological resources by people and equipment (BLM 2014).

5.2.14 Recreation

General information for recreation that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.14.

Current Conditions and Context

The WSAs, ACECs, and Alabama Hills NSA on BLM-administered lands and nearby Forest Service lands, particularly within the California-portion of the decision area provide numerous recreational opportunities. The designated corridor intersects the Alabama Hills SRMA in California from just before MP 184 to just past MP 192. Both the designated corridor and Regional Review Recommendation identified in the regional review intersect the Eastern Sierra SRMA in California from approximately MP 212 to MP 226 and MP 229 to MP 239 (based on the MPs of the designated corridor).

The Alabama Hills SRMA is managed to protect unique geologic features and scenic values and to provide compatible recreational opportunities. With its unparalleled scenic views, the Alabama Hills SRMA lends itself to recreational activities such as camping, wildlife viewing, rock climbing, sightseeing, hunting, fishing, horseback riding, driving for pleasure, picnicking, photography, wildflower viewing, hiking, mountain biking, jogging, running, walking, stargazing, finding the many historic filming locations where motion pictures and television series were shot, equestrian use, and simply enjoying the unique geology of the area (BLM 1993a, 2016a).

The primary recreational activities within the Eastern Sierra SRMA are picnicking, camping, hunting, hiking and backpacking, horseback riding, rock climbing, bird watching, wildflower viewing, mountain biking, and scenic vehicle touring. The area provides access to multiple wilderness trailheads, including the Pacific Crest National Scenic Trail (BLM 2016a).

SRMAs recognize unique and distinctive recreation values and are managed to enhance a targeted set of activities, experiences, benefits, and recreation setting characteristics, which become the priority management focus (BLM 2011). The SRMA management tool provides opportunities to make a long-term commitment that protects or enhances a set of activities, outcomes, and recreation settings (BLM 2011).

The “limited” off-highway vehicle designation which covers most of the resource area is necessary to prevent adverse impacts that would result from open (unrestricted) use (BLM 1993a).

Trends and Forecasts

A broad range of outdoor recreation opportunities will continue to be provided on all segments of BLM-administered lands, subject to the demand for such opportunities and the need to protect other resources. SRMAs will be among those areas that receive first priority for operation and maintenance funds (BLM 2001).

In part, recreational demand would be met by restoration and regular maintenance of existing recreation sites, creation of new recreational facilities, and more intensive management. However, the unspoiled character of natural landscapes must be preserved and vulnerable areas would be excluded from all development (recreational and otherwise) in order to preserve their pristine, natural condition **(**BLM 1993a, 1991, 1999, 2001, 2002a, 2016a, 2021a, 2021b).

OHV use has become a substantial issue because of the number of users who participate in this recreation opportunity and because of concerns related to the potential resource degradation that can result from high levels of unmanaged use in sensitive areas. OHV use has become one of the fastest growing recreation activities. Visitors are drawn to these areas to experience the numerous roads and trails available for OHV use, the diverse backcountry opportunities, the spectacular scenery, and the challenging OHV opportunities the landscape and terrain provide. This trend is expected to continue (BLM 2019a). Increasing OHV traffic on public lands has caused the uncontrolled proliferation of user-created, undesignated trails arising from repeated cross-country travel. Unauthorized motorized use causes natural resource damage (e.g., to soils and habitat) and increased public safety concerns (WAPA and BLM 2015). The development of field-office–wide OHV plans will help to control the social and environmental impacts related to this activity (BLM 2007a).

5.2.15 Socioeconomics

Current Conditions and Context

Socioeconomic data are presented for an ROI around the decision area, composed of the counties in which the corridor would be located. The ROI for the decision area includes Inyo and Mono counties in California and Lyons and Mineral counties in Nevada.

Population

Nevada towns located near the decision area include Yerington located about 9 mi (15 km) west of the designated corridor (MP 0), which had a 2021 population of about 3,200 and Carson City, located about 40 mi (65 km) northwest of the designated corridor (MP 0), which had a 2021 population of about 60,000. California towns located near the designated corridor include Bishop near MP 127 (2021 population of about

3,800), Big Pine near MP 147 (2020 population of about 1,400), Independence near MP 174 (2020 population of about 800), Lone Pine near MP 189 (2020 population of about 1,500), and Olancha near MP 211 (2020 population of about 200).

In 2020, the population of the four-county ROI was 96,000 people (Table 5.2-12). During the period 2010 to 2020, population increased in the ROI at a low annual average rate in Lyon County, and declined in the remainder of the ROI, also at low annual average rates. The population in the ROI as a whole increased at an average annual rate of 0.01% during this time, and is projected to reach 107,068 by 2040.

Employment and Income

Table 5.2-13 presents the average civilian labor force statistics for the ROI in 2021. About 39,700 people were employed in the ROI as a whole, and 2,360 were unemployed. Unemployment rates ranged from 3.8% for Mineral County to 6.8% for Mono County (Table 5.2-13). Wage and salary employment (not including self-employed persons) by industry for 2020 is provided in Table 5.2-14. More than 19,000 people in the ROI were employed in services (46.5% of the total), with 6,009 (14.7%) persons employed in wholesale and retail.

Table 5.2-12. ROI Population

County	Population		2040	Average Annual Growth Rate, 2010-2020 (%)
	2010	2020		
Inyo, California	18,546	19,016	17,552	>0.01
Mono, California	14,202	13,195	14,009	-0.01
Lyon, Nevada	51,980	59,235	69,687	0.01
Mineral, Nevada	4,772	4,554	5,820	-0.01
ROI Total	89,500	96,000	107,068	0.01

Sources: Nevada Department of Taxation, 2021; State of California 2022; U.S. Census Bureau 2022c, 2022d.

Table 5.2-13. ROI Civilian Labor Force Statistics, 2021

County	Employed, 2021	Unemployed, 2021	Unemployment Rate, 2021
Inyo, California	7,745	484	5.9
Mono, California	7,771	569	6.8
Lyon, Nevada	22,197	1,228	5.2
Mineral, Nevada	1,999	79	3.8
Total	39,712	2,360	5.6

Source: U.S. Department of Labor 2022.

Table 5.2-14. ROI Wage and Salary Employment by Industry, 2020

Sector	County				ROI Total	Share of ROI Total (%)
	Inyo, California	Mono, California	Lyon, Nevada	Mineral, Nevada		
Agriculture, forestry, fishing and hunting	286	162	204	5	657	1.6
Mining, quarrying, and oil and gas extraction	20	0	326	20	366	0.9
Utilities	396	83	183	10	672	1.6
Construction	791	449	1,918	94	3,252	8.0
Manufacturing	194	237	2,966	80	3,477	8.5
Wholesale and retail trade	764	840	4,237	168	6,009	14.7
Transportation and warehousing	221	77	1,653	74	2,025	5.0
Finance, insurance, and real estate services (FIRE)	378	708	748	54	1,888	4.6
Services, not incl. FIRE	3,886	5,208	9,222	706	19,022	46.5
Public Administration	1,125	287	1,821	301	3,534	8.6
Total	8,061	8,051	23,278	1,512	40,902	

Source: U.S. Census Bureau 2022e.

Table 5.2-15 details income in the ROI for 2020. Total personal income stood at $4.7 billion, generated primarily in Lyon County ($2.6 billion), while median annual income ranged from $31,500 for Mineral County to $64,924 for Mono County.

Table 5.2-15. ROI Personal Income, 2020

County	Total Personal Income ($ billions)	Median Income ($)
Inyo, California	1.2	59,296
Mono, California	0.8	64,924
Lyon, Nevada	2.6	58,814
Mineral, Nevada	0.2	31,500
ROI Total	4.7	

Sources: U.S. Census Bureau 2022f; U.S. Department of Commerce 2022.

Housing

Table 5.2-16 details the housing characteristics within the ROI in 2020. There were 1,238 vacant rental housing units in the ROI as a whole with rental vacancy rates ranging from 1.4% in Inyo County and Lyon County to 5.2% in Mono County.

Table 5.2-16. ROI Housing Characteristics, 2020

County	Housing Units		Rental Vacancy Rate (%)
	Total	Vacant Rental	
Inyo, California	9,514	134	1.4
Mono, California	14,092	726	5.2
Lyon, Nevada	23,697	329	1.4
Mineral, Nevada	2,697	49	1.8
ROI Total	50,000	1,238	2.5

Sources: U.S. Census Bureau 2022g, 2022h.

Trends and Forecast

In 2020, the population of the four-county ROI was 96,000 people, with the majority of people, (59,235), living in Lyon County (Table 5.2-12). Population is projected to decline slightly in Inyo County, at an annual rate of less than -0.01%, and to increase at a similar rate in Mono County, Mineral County and Lyon County, between 2020 and 2040. Population in the ROI is projected to reach 107,068 by 2040.

Given the lack of appropriate geographic-specific forecasts for changes in employment opportunities, business costs, cost of living, and consumer preferences, the effects of which may be more easily predicted at the regional or national level, forecasts of their effects on employment, employment by industry, unemployment, income, and housing at the county-level are not available. Preparing forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility, or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local economic activity that are difficult to forecast.

5.2.16 Special Designations

General information for special designations that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.16.

Special designations are addressed in this section only if they are intersected by or located within close proximity to the decision area (Figures 5.2-9a and b). These include:

- Excelsior WSA, Chidago Canyon WSA, Casa Diablo WSA, Fish Slough WSA, Volcanic Tableland WSA, and Crater Mountain WSA; and
- Fish Slough ACEC, Crater Mountain ACEC, Owens Lake ACEC, Olancha Greasewood ACEC, Mojave Ground Squirrel, Sierra Canyons ACEC, and Fossil Falls ACEC; and Alabama Hills NSA.

All of the special designations that intersect or are located in close proximity to the decision area are located in California. The California Desert Conservation Area (CDCA) is an NCA established by Congress at the time of the passage of FLPMA (BLM 2002a).

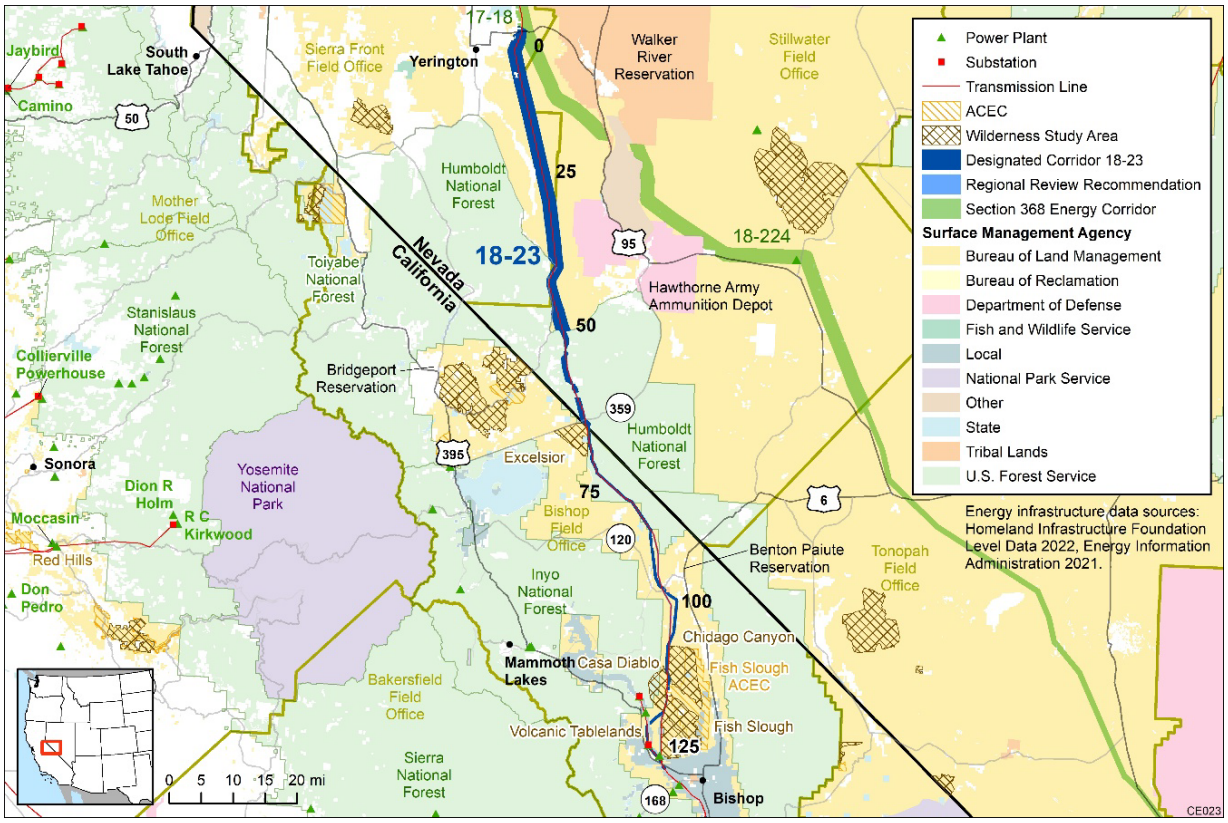

Figure 5.2-9a. Special Designations in the Vicinity of the Decision Area

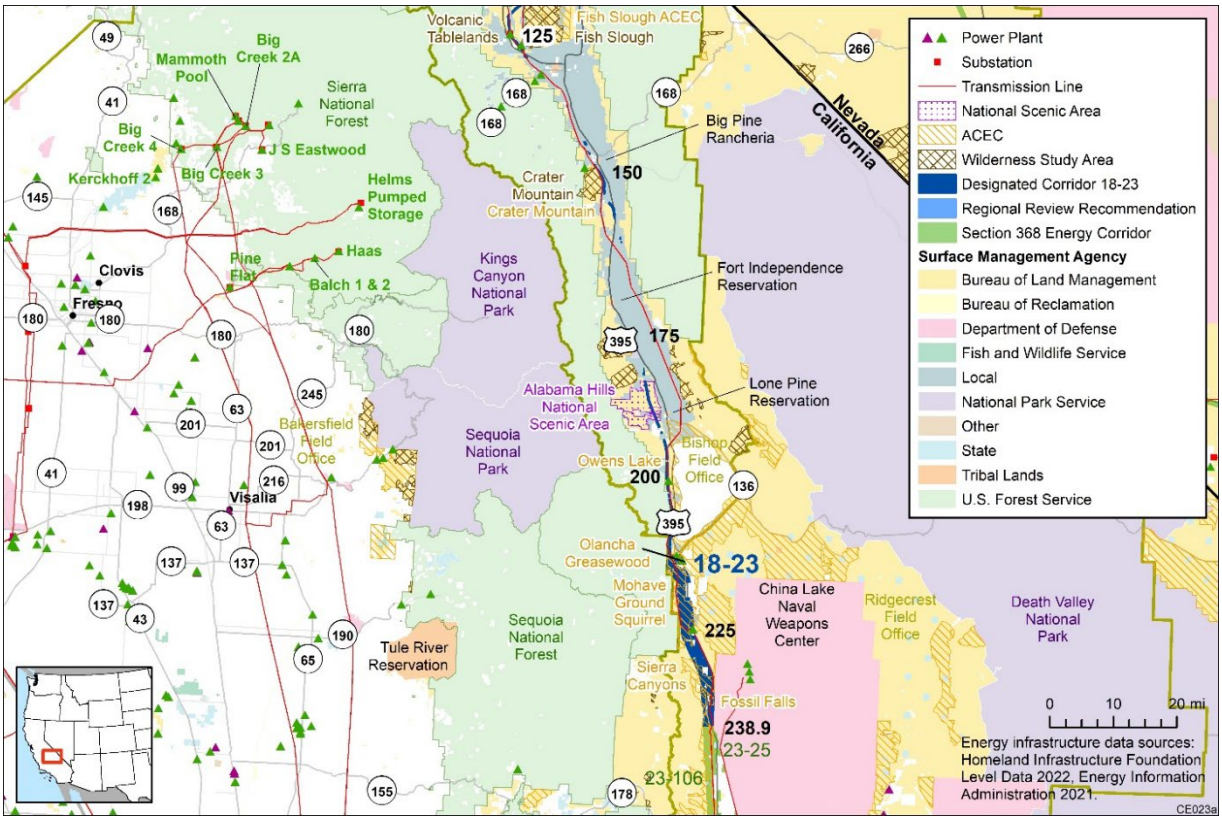

Figure 5.2-9b. Special Designations in the Vicinity of the Decision Area

The designated corridor intersects the DRECP California Desert Conservation Lands at MP 212 to MP 227 and at MP 229 to MP 239. The lands also overlap the ACECs discussed below, and therefore, they will not be discussed further. Visual resources associated with these special designations are described in Section 5.2.18.

5.2.16.1 Wilderness Study Areas

Current Conditions and Context

Excelsior WSA

The designated corridor abuts the 9,383-ac Excelsior WSA from MP 66 to MP 67 and is close to the WSA near MP 68. The landscape of the Excelsior WSA is uniform in character except for some small volcanic bluffs in the southeast corner of the WSA. As a result, the WSA terrain features are subdued and visually bland. Elevation ranges from 6,800 to 7,000 ft. The vegetation consists of Great Basin shrubs with some stands of pinyon pine and Utah juniper. The WSA is not recommended for a Wilderness Area because its potential for mineral occurrences outweighs its marginal wilderness values (BLM 1990).

Chidago Canyon WSA

The decision area is adjacent to or near the west side of the 19,702-ac Chidago Canyon WSA from approximately MP 106 to MP 112. Elevations within the Chidago Canyon WSA range from 4,400 to 6,000-ft. Volcanic terraces, rounded hills, echelon scarps (a series of parallel scarps formed by faulting activity), and Chidago Canyon contribute to the scenic and landform variety of the WSA. The vegetation, which is uniformly distributed throughout, consists mostly of Great Basin shrubs. The eastern half of the WSA is part of the Fish Slough ACEC. The ACEC management plan prescribes protection of the aquifer recharge source within the WSA in order to maintain the wetland habitat, which lies outside, and adjacent to the WSA. The WSA is not recommended for a Wilderness Area because its potential for mineral occurrence, motorized recreation, and future transmission line expansion needs outweigh the area's wilderness values (BLM 1990).

Casa Diablo WSA

The decision area is adjacent to or slightly overlaps the east side of the 5,325-ac Casa Diablo WSA from about MP 110 to MP 116. Elevations within the Casa Diablo WSA range from 5,400 to 7,912-ft. The landscape is dominated by Casa Diablo Mountain (7,912 ft). The mountain lies in the western portion of the WSA while the remainder of the unit is typified by volcanic terraces in the south, and rocky and rugged hills in the north-central section. Numerous canyons and sandy washes are located in the WSA. Vegetation in the WSA consists of Great Basin shrubs with pinyon trees occupying the upland slopes. The WSA is not recommended for a Wilderness Area because of its potential for mineral and geothermal occurrence, and future transmission line expansion needs outweigh the area's wilderness values. Naturalness has been adversely affected in a portion of the unit (BLM 1990).

Fish Slough WSA

The decision area is adjacent to or slightly within the west side of the 14,700-ac Fish Slough WSA from MP 114 to MP 116. Elevations within the Fish Slough WSA range from 4,382 to 5,800 ft. Numerous canyons and drainages dissect the eastern portion of the unit. Fumarolic mounds and ridges dot the landscape adding scenic variety. The pastel volcanic color tones provide striking visual effects by the sun's low angle during morning and evening hours. The vegetation, which is uniformly distributed throughout, consists mostly of Great Basin shrubs. No permanent water source exists in the WSA. The eastern three-fourths of the WSA is part of the Fish Slough ACEC. The ACEC management plan prescribes protection of the aquifer recharge source within the WSA in order to maintain the wetland habitat which lies outside and adjacent to the WSA. The WSA is not recommended for a Wilderness Area because of manageability concerns, the potential for mineral occurrence, and future transmission line expansion needs outweigh the area's wilderness values. Much of the WSA's relatively flat, broad topography renders it vulnerable to vehicle encroachment (BLM 1990).

Volcanic Tableland WSA

The designated corridor is adjacent to or near the northern tip of the 12,499-ac Volcanic Tableland WSA from MP 116 to MP 117. The recommendation in the regional review would be adjacent to the Volcanic Tablelands WSA for about 9 mi. Elevations within the Volcanic Tableland WSA range from 4,480 to 5,200 ft. Generally unaffected by erosion, the unit contains a few low rolling hills and numerous uplifted volcanic terraces and ridges in the southern half of the WSA. Several small bouldery canyons are located along the WSA's southern boundary. The pinkish and reddish volcanic landscape colors provide striking visual hues during the morning and evening hours. Vegetation consists mostly of Great Basin shrubs. No permanent water source exists in the WSA. The WSA is not recommended for a Wilderness Area because of its potential for geothermal and mineral occurrence, transmission-line corridor needs, and motorized/mechanized recreation that outweigh the area's wilderness values. The WSA's relatively flat, broad topography renders it vulnerable to vehicle encroachment (BLM 1990).

Crater Mountain WSA

The 7,069-ac Crater Mountain WSA is adjacent to the west side of the decision area MP 149 to MP 153 (based on the mileposts for the designated corridor). Elevations within the Crater Mountain WSA range from 4,200 to 6,055 ft. The primary landform feature of the WSA is Crater Mountain - a volcanic cone and associated basaltic lava flows. Topographical relief is fairly uniform around the volcano. The summit of Crater Mountain reaches an elevation exceeding 6,000 ft. The southwest portion of the WSA consists of sedimentary outwash from the Sierra Nevada mountain range. Several ephemeral drainages incise this portion of the unit. The WSA is uniformly blanketed with mixed desert shrubs below the volcanic cinder cone. Plant density is low to moderate. The WSA is not recommended for a Wilderness Area because its potential for mineral occurrence and moderate potential for geothermal resources outweighs the area's wilderness values (BLM 1990).

Trends and Forecasts

Demand for dispersed activities such as hiking, backpacking, hunting, wildlife-viewing, photography, and the study and contemplation of nature is expected to increase on BLM-administered lands. Preserving key wilderness characteristics of WSAs will help to ensure the preservation of lands suitable for these, and other, activities (BLM 2007a, 2007b).

Should any WSA, in whole or in part, be released from wilderness consideration, such released lands will be managed in accordance with the goals, objectives, and management prescriptions established in the relevant RMP, unless otherwise specified by Congress in its releasing legislation. The BLM will examine proposals in the released areas on a case-by-case basis but will defer all actions that are inconsistent with RMP goals, objectives, and prescriptions, until it completes a land use plan amendment (BLM 2015b).

5.2.16.2 ACEC

Current Conditions and Context

Fish Slough ACEC

The western-most portion of the Fish Slough ACEC is within the decision area from MP 112 to MP 113 (based on the mileposts for the designated corridor). The Fish Slough ACEC partially overlaps both the Casa Diablo and Fish Slough WSAs. For these designations, an ACEC (or portion thereof) that is encompassed by a WSA is governed under the Wilderness Interim Management Policy until such time as Congress makes a determination regarding wilderness designation. If the WSA does not receive a wilderness designation, then the ACEC (or portion thereof), would be managed under management actions prescribed for the ACEC in the appropriate RMP (BLM 2007a).

Crater Mountains ACEC

The Crater Mountains ACEC is adjacent to the west side of the decision area from MP 149 to MP 153 (based on the mileposts for the designated corridor). The Crater Mountain ACEC is located within the Crater Mountain WSA. For these designations, an ACEC (or portion thereof) that is encompassed by a WSA is governed under the Wilderness Interim Management Policy until Congress makes a determination regarding wilderness designation. If the WSA does not receive a wilderness designation, then the ACEC (or portion thereof), would be managed under management actions prescribed for the ACEC in the appropriate RMP (BLM 2007a). The objectives of the Crater Mountain ACEC are to protect scenic values, enhance recreation opportunities and provide for interpretation of geologic features (BLM 1993a).

Owens Lake ACEC

The Owens Lake ACEC is east of the designated corridor, bordering the east side of I-395 from MP 191 to MP 208. The Regional Review Recommendation would intersect the Owens Lake ACEC east of MP 194 (of the designated corridor) for less than 1 mi.

The Owens Lake ACEC includes significant historic and cultural values, including sensitive archaeological and cultural resources that are important to Native Americans and vulnerable to adverse change; and wildlife and plant resources including bird habitat of recognized national importance, sensitive species habitat and rare plant communities. The objectives for the Owens Lake ACEC include: stabilizing dunes for protection of cultural resources and to limiting PM_{10} emissions; maintaining/promoting rare and unique plant communities including alkali meadows and the Olancha Greasewood plant assemblage; managing habitats for special status wildlife species; and protecting biodiversity and managing for resilience (e.g., protecting climate refugia and providing for migration corridors) (BLM 2016a).

Olancha Greasewood ACEC

A small square of the Olancha Greasewood ACEC borders the decision area at MP 212 and is within the corridor from MP 214 to MP 215. The Olancha Greasewood ACEC contains an unusual greasewood-dominated plant assemblage and associated wildlife community, as well as the cultural values of greasewood. The objectives of the Olancha Greasewood ACEC include: maintaining the natural sand transport and the dune system; maintaining intact greasewood community and preventing its fragmentation; protecting wildlife associated with the this assemblage and enhancing habitat to maintain stable or increasing population trends of special status species and to ensure their persistence; protecting sensitive habitat while providing visitor access to the area; and providing dispersed opportunities for enjoyment of the ACEC attributes (BLM 2016a).

Mojave Ground Squirrel ACEC

The Mojave Ground Squirrel ACEC is adjacent to the decision area from MP 212 to MP 224 and from MP 230 to MP 234. The Mojave Ground Squirrel ACEC was established to protect the long-term survival of the Mojave ground squirrel (*Spermophilus mohavensis*). There are also healthy populations of the state and federally threatened desert tortoise found throughout ACEC. The objectives for the Mojave Ground Squirrel ACEC include maintaining intact vegetation communities and preventing their fragmentation; protecting and enhancing habitat to maintain stable or increasing population trends of special status species in order to ensure their persistence; and protecting biodiversity and managing for resilience (e.g., protecting climate refugia and providing for migration corridors) (BLM 2016a).

Sierra Canyons ACEC

The Sierra Canyons ACEC intersects the decision area from MP 224 to MP 226, MP 229 to MP 233, and MP 235 to MP 239. The Sierra Canyons ACEC provides outstanding habitat for golden eagles and other raptors, contains habitat for numerous special status plant species, and contains National cultural values including sites eligible for and listed on the National Register of Historic Places. The objectives for the Sierra Canyons ACEC include protect the flyway to ensure current safe passage of resident and migratory bird species in accordance with the Migratory Bird Treaty Act, preserving

and protecting other sensitive biological and cultural resources in the area (BLM 2016a).

Fossil Falls ACEC

The Fossil Falls ACEC intersects the decision area from about MP 234 to MP 236.5. The Fossil Falls ACEC was designated for relevant wildlife values, significant prehistoric and historic cultural values, unique geological formations east of the Sierra Nevada Mountains and west of the Coso Range Volcanic Field. The objectives for the Fossil Falls ACEC include protecting and enhancing habitat to maintain stable or increasing population trends of special status species to ensure their persistence; minimizing impacts on cultural resource values; protecting scenic values; limiting impacts of OHV use; and providing recreational opportunities that are consistent with resource protection (BLM 2016a).

Trends and Forecasts

Public lands in ACECs will be retained in federal ownership; while non-federal lands within or adjacent to an ACEC may be acquired for the purposes of conservation of relevance and importance values, through purchase, exchange, or donation. Acquired lands will be incorporated into the ACEC and managed in accordance with the prescriptions applied to the remainder of the ACEC (BLM 2016b).

Desired future conditions common for all ACECs are to provide protection for relevant and important resource values within designated ACECs, including special status species, wildlife, scenic, riparian, and significant cultural resources. Vegetation diversity within ACECs will be maintained in accordance with ecological site description guidelines. OHV access within designated ACECs will be managed in a manner that does not damage important cultural resources and wildlife habitat. The viewsheds and landscape character of ACECs is maintained to the extent practicable through the BLM's VRM system (BLM 2010a).

5.2.16.3 National Scenic Area

Current Conditions and Context

Corridor 18-23 was designated in 2009 along the western toe-slope of the ridge separating the Alabama Hills from the Owens Valley to the east. The 18,610-ac Alabama Hills NSA was designated in 2019 in the John D. Dingell Conservation Act (Dingell Act). Corridor 18-23 is currently located within the newly designated SRMA and NSA from MP 184 to MP 190 and is located within the SRMA from MP 183 to MP 192. The Regional Review Recommendation to re-route the corridor along the 1,000 kV DC transmission line would avoid the Alabama Hills NSA. Within the NSA, the corridor can be considered for utility uses, such as powerlines and pipelines. Potential proponents are not required to apply for or pursue use of this corridor, nor is the BLM required to authorize any applicants proposed use of this corridor. Any project proponent that intends to use this corridor would be informed of the issues associated with using the corridor including the fact that it is located within the NSA and SRMA (BLM 2021a).

There are 15 existing ROWs within the NSA and 12 ROWs within the SRMA. Existing ROWs include powerlines with attached communication cables and associated dirt and short-distance paved roads used for maintenance access, water diversion structures appurtenant to existing water rights, and flood control diversion structures. These ROWs have been authorized for decades (BLM 2021a).

The purpose of the Alabama Hills NSA is to conserve, protect, and enhance the area's nationally significant scenic, cultural, geological, educational, biological, historical, recreational, cinematographic, and scientific resources and to provide compatible recreational opportunities (BLM 2021a).

Trends and Forecasts

Public lands in the Alabama Hills NSA will be retained in federal ownership. Desired future condition for the NSA is to continue to conserve, protect, and enhance the significant scenic, cultural, geological, educational, biological, historical, recreational, cinematographic, and scientific resources and to provide compatible recreational opportunities for which the NSA was designated.

5.2.17 Tribal Interests

General information for tribal interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.17.

Current Conditions and Context

The BLM has identified 42 Federally recognized Tribes with cultural affiliation and an interest in the decision area for Corridor 18-23. There are 10 Federal Indian Reservations, Rancherias, and areas of Indian lands held in Trust in Inyo and Mono, County California, and Lyon and Mineral County, Nevada: Walker River Reservation, Campbell Ranch and Yerington Colony, Bridgeport Indian Colony, Benton Paiute Reservation, Bishop Paiute Reservation, Big Pine Reservation, Fort Independence Reservation, Lone Pine Reservation, Timbi-Shaw Shoshone Reservation, and Pyramid Lake Paiute Indian Reservation (BLM 2022c; HUD 2022; BIA 2022; Heizer 1978; Ortiz 1979; Ortiz 1983; Azevedo 1986). There are three Indian Reservations and Ranches outside of the designated corridor area: Fallon Paiute Reservation, Tule River Reservation, and Washoe Ranches (Carson Colony, Dresslerville Colony, Woodfords Community, Stewart Community, Washoe Ranches) (Table 5.2-17). Due to a history of removal and displacement since the early 1800s, it is difficult to identify all Tribes with affiliation to the project area. Any additional Tribes not mentioned in this document should be identified through ongoing formal outreach and consultation.

Table 5.2-17. Federal Indian Reservations in the Decision Area

Reservation, Tribe	Federally recognized Tribes	County, State
Walker River Reservation	Walker River Paiute Tribe of the Walker River Reservation, Nevada	Mineral County, Nevada, Churchill, Nevada, Lyon, Nevada
Campbell Ranch and Yerington Colony	Yerington Paiute Tribe of the Yerington Colony & Campbell Ranch, Nevada	Lyon, Nevada
Bridgeport Indian Colony	Bridgeport Indian Colony	Mono County, California
Benton Paiute Reservation	Utu Gwaitu Paiute Tribe of the Benton Paiute Reservation, California	Mono County, California
Bishop Paiute Reservation	Bishop Paiute Tribe	Inyo County, California
Big Pine Reservation	Big Pine Paiute Tribe of the Owens Valley	Inyo County, California
Fort Independence Reservation	Fort Independence Indian Community of the Paiute Indians	Inyo County, California
Lone Pine Reservation	Lone Pine Paiute-Shoshone Tribe	Inyo County, California
Timbisha Shoshone Reservation	Timbisha Shoshone Tribe	Inyo County, California
Pyramid Lake Paiute Indian Reservation	Pyramid Lake Paiute Tribe of the Pyramid Lake Reservation, Nevada	Washoe County, Nevada, Storey County, Nevada, Lyon County, Nevada
Fallon Paiute Reservation	Paiute-Shoshone Tribe of the Fallon Reservation and Colony, Nevada	Churchill County, Nevada
Tule River Reservation	Tule River Indian Tribe of the Tule River Reservation, California	Tulare County, California
Washoe Ranches (Carson Colony, Dresslerville Colony, Woodfords Community, Stewart Community, Washoe Ranches)	Washoe Tribe of Nevada & California	Douglas County, Nevada, Carson City, Nevada

The following Tribes have been identified as having cultural affiliation with the lands near the decision area:

- Agua Caliente Band of Cahuilla Indians
- Augustine Band of Cahuilla Indians
- Big Pine Paiute Tribe of the Owens Valley
- Bishop Paiute Tribe
- Bridgeport Indian Colony
- Cabazon Band of Mission Indians
- Cahuilla Band of Indians
- Campo Band of Diegueno Mission Indians
- Cold Springs Rancheria of Mono Indians
- Ewiiaapaayp Band of Kumeyaay Indian
- Fort Independence Indian Community of the Paiute Indians
- Fort Mojave Indian Tribe
- Iipay Nation of Santa Ysabel
- Inaja Band of Diegueno Mission Indians
- Jamul Indian Village
- La Posta Band of Diegueno Mission Indians
- Lone Pine Paiute-Shoshone Tribe

- Manzanita Band of Diegueno Mission Indians
- Mesa Grande Band of Diegueno Mission Indians
- Morongo Band of Mission Indians
- Northfork Rancheria of Mono Indians
- Paiute-Shoshone Tribe of the Fallon Reservation and Colony, Nevada
- Pala Band of Mission Indians
- Pauma Band of Luiseno Mission Indians of the Pauma & Yuima Reservation
- Pechanga Band of Indians
- Pyramid Lake Paiute Tribe of the Pyramid Lake Reservation, Nevada
- Ramona Band of Cahuilla
- Reno-Sparks Indian Colony, Nevada
- Rincon Band of Luiseno Mission Indians
- Yuhaaviatam of San Manual Nation
- San Pasqual Band of Diegueno Indians
- Santa Ynez Band of Chumash Indians
- Soboba Band of Luiseno Indians
- Sycuan Band of Kumeyaay Nation
- Table Mountain Rancheria
- Tejon Indian Tribe
- Timbisha Shoshone Tribe
- Tule River Indian Tribe of the Tule River Reservation, California
- Washoe Tribe of Nevada & California
- Walker River Paiute Tribe of the Walker River Reservation, Nevada
- Yerington Paiute Tribe of the Yerington Colony & Campbell Ranch, Nevada
- Utu Gwaitu Paiute Tribe of the Benton Paiute Reservation, California

Within the decision area, there is a wide variety of archaeological site types and areas that may be of significant cultural importance to Tribes affiliated with the designated corridor (see Section 5.2.3 on Cultural Resources)

Alabama Hills National Scenic Area is of significance for its historical and prehistoric cultural resources; some of these resources have been found on the Lone Pine Reservation. The Lone Pine Paiute-Shoshone Tribe and other Tribes with ancestral ties to the area, may have potential concerns related to the Alabama Hills National Scenic Area. Tribes have previously expressed interest in protecting petroglyph sites in this area and other sites that may have this component (BLM, Forest Service, and DOE 2022). More information on Alabama Hills and petroglyph sites can be found in Section 5.2.3.

Through previous outreach, the Bishop Paiute Tribe and other Paiute Tribes were interested in the area of the Volcanic Tablelands (BLM, Forest Service, and DOE 2022). Other Tribes have expressed interest in working with BLM to collect flat rock – volcanic decorative rock occurring in relatively thin (often less than an inch) layers in northeast California – that has commonly been used by some southeastern Tribes in sacred ceremonies and practices (BLM 2007b). The Volcanic Tablelands may include these resources of significance. There have also been previous Tribal interests in preservation

of pinyon, juniper, and sage-grouse habitats that are present within the decision area (see Section 5.2.4.4) (BLM 2007b; BLM 2015b; BLM 2020). Pinyon pine nuts are a traditional food source for several Native American groups and is considered an important resource in traditional ceremonies and festivals (BLM 2008b).

Viewsheds obstructed by any future proposed project within a Section 368 energy corridor may impact areas of traditional cultural importance (BLM, Forest Service, and DOE 2022). Native American Tribes may desire access to other BLM administered lands to practice traditional cultural ceremonies. The Alabama Hills National Scenic Area and Volcanic Tablelands have been mentioned for their cultural significance and visual impacts have the potential to occur in the area. More information on potential areas of viewshed concerns can be found in Section 5.2.18.

Not all Tribal cultural practices involving natural and cultural resources of religious and cultural importance are known. Tribes have a deep understanding and history with the land that has been passed down through generations that cannot be properly identified by archaeological fieldwork alone. Therefore, formal government-to-government consultation concerning future projects and resource management remains the best means for identifying and addressing Tribal land use concerns and interests.

Trends and Forecasts

Tribes have previously expressed interest in implementing a new IOP for Tribal concerns that includes a component to conduct ethnographic studies that would increase understanding of significant resources of concern to Tribes. The existing IOP from the 2009 WWEC PEIS ROD focused only on identifying sacred sites, sacred landscapes, gathering grounds, and burial areas, along with avoiding, minimizing, or mitigating impacts on these places through project proponents, consultation with Tribes, and relevant parties (BLM, Forest Service, and DOE 2022).

5.2.18 Visual Resources

General information for visual resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.18.

Current Conditions and Context

The decision area is located in a scenic region between California and Nevada. A significant portion of BLM-administered land along the corridor is classified as VRM Class II (Figures 5.2-10a and b). Table 5.2-18 lists the key features along the decision area.

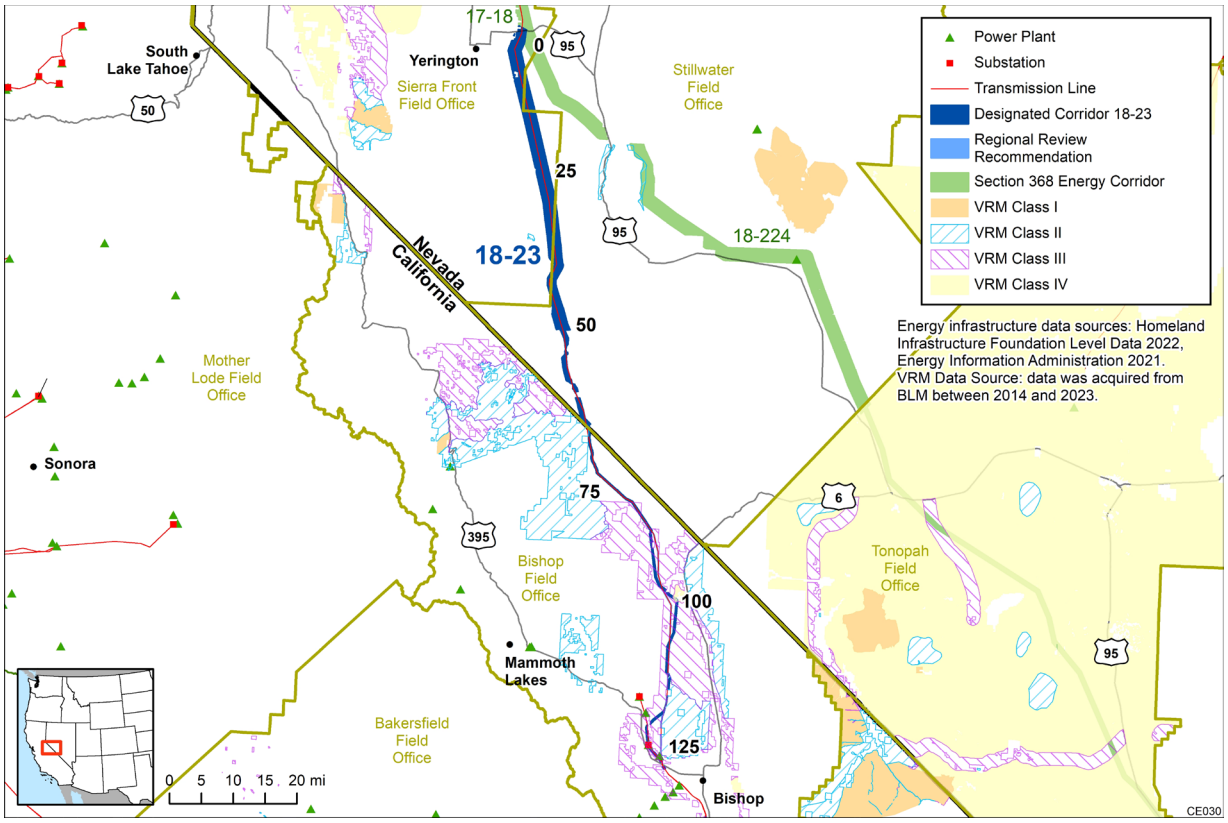

Figure 5.2-10a. VRM Classes in the Vicinity of the Decision Area

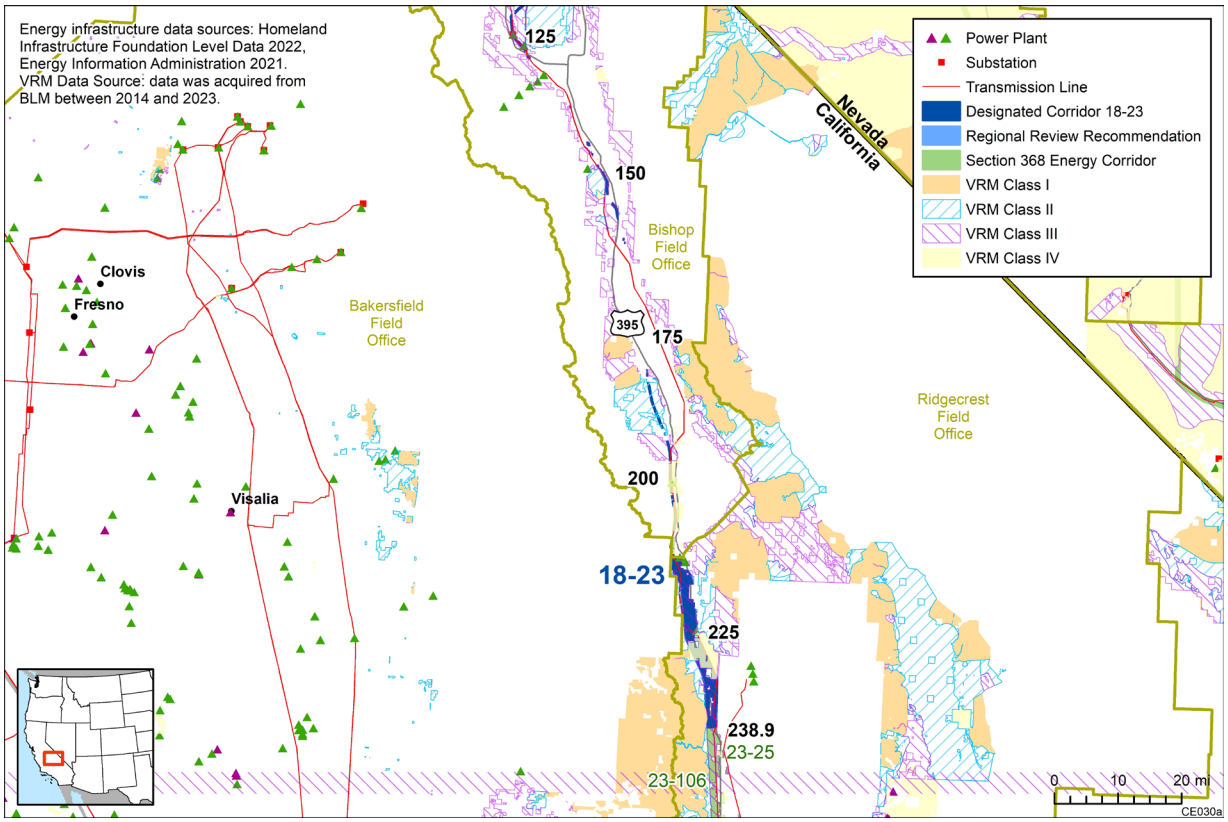

Figure 5.2-10b. VRM Classes in the Vicinity of the Decision Area

Table 5.2-18. Key Features in the Vicinity of the https://anl.app.box.com/file/1203620763122Decision Area

Key Feature	State	Agency	Physical Attributes	Viewer Groups and experiences	BLM VRM Class Designation
Excelsior WSA	California	BLM	Adjacent to Granite Mountain Wilderness and part of Excelsior Mountain range in Nevada with 7,000 ft elevation.	Rugged and remote recreation experiences.	Class II
Granite Mountain Wilderness	California	BLM	Geologically varied landforms comprised of alluvial basins, basaltic plateaus and granite ridges	Recreation and tourist activities such as camping, hiking, river rafting, biking. Cultural and traditional uses: hunting and gathering tribal ceremonies landscape features with traditional meaning	Class II
Chidago Canyon WSA	California	BLM	Unique geologic formations of smooth grey elongated basalt walls, flat elongated mesa's and flat desert valley bottoms with space low vegetation.	Recreation and tourist activities such hiking, climbing and mountain biking. Viewing ancient petroglyphs on some rock faces.	Class III
Fish Slough WSA and ACEC	California	BLM	Low homogonous vegetation and pockets of seasonal standing water within Marshes and wetlands	Fish Slough WSA is an area of critical concern and is a special place supporting diversity of plant and animal life. Scenic values are protected for public access where activities are commensurate with protection and conservation of resources.	Class II and III
Casa Diablo WSA	California	BLM	Mountain ranges and Long Valley Caldera. Valley bottoms consisting of hot springs, grass lands and forested hillsides. Steep mountain rise above the valley. Rock faces are reddish-brown irregular formed boulders	Recreation and tourism hiking, bouldering, camping, scenic photography, hunting, horseback riding, deer hunting, motor touring on designated roads Traditionally used as an obsidian mine and seed collection area used by the Paiute Indian Nation	Class III

Key Feature	State	Agency	Physical Attributes	Viewer Groups and experiences	BLM VRM Class Designation
Volcanic Tablelands WSA	California	BLM	The land between Mammoth Lakes, CA and Bishop, CA. Pastel color palettes adorn topography, ecology, and dramatic skies, giving a soft tone to the landscape Unique geologic features, providences. Steep mountainous hillsides surround expansive barren valley made up of shrubs and grasses intermixed with exposed gravel and sand surfaces. The Owen's river snakes its way through the valley bottom contrasting the blue gray water against the yellow and tan vegetation and sparse green stippled hillsides.	Extremely famous for recreation and tourism – hot springs and world-class fly fishing. The landscape is rugged and steep, with unsuspecting silt traps enveloping your wheels up to the hubs as winds flex their prowess as shape-shifting forces spanning eons. Yet its magnetism, beauty, indigenous, and geologic history make it prime for backpacking, touring, gravel riding, and road riding.	Class II
Crater Mountain WSA and ACEC	California	BLM	**Crater Mountain** is a 12,874-ft-elevation (3,924 m) prominent mountain summit located west of the crest of the Sierra Nevada mountain range. It is made up sparse forest vegetation culminating in steep craggy rock outcrops at the summit. Course rocky valley bottoms with mountain lakes surround the mountain peakhttps://peakvisor.com/range/great-basin-ranges.html	Outstanding opportunities for solitude scenic and cultural values for primitive and unconfined recreation activities.	Class II
Alabama Hills NSA	California	BLM	The Alabama hills are a geologic formation of rounded rocks and eroded hills set between the jagged peaks of the Sierra Nevada and the g Inyo Mountains. The highly scenic area is shaped by distinct weathered golden granite hills and boulders with the snowing Sierra Mountain range as a back drop to the setting.	Visitors enjoy touring film sites, photography, rock climbing, exploring natural arches, and viewing the swaths of wildflowers that bloom every spring.	Class II

Key Feature	State	Agency	Physical Attributes	Viewer Groups and experiences	BLM VRM Class Designation
California Desert National Conservation Area	California	BLM	Nationally significant desert landscape made of harsh desert environment of sand dunes, canyons, dry lakes, mountain ranges Geologically diverse with sand dunes, canyons, rocky peaks, sloping bajadas, dry lakes, saltscrub lowlands, and rich riparian corridors	Recreation and tourism actives focus on extensive opportunities to experience desert landscapes. Hiking wildlife viewing 4-wheel drive trails and hunting are popular activities	Class II
Sacatar Trail Wilderness Area	California	BLM	Topography ranges from valleys, canyons, and alluvial fans to steep hills that lead into granite peaks and ridgetops reaching elevations of more than 7,800 ft. The canyons are complemented by an abundance of springs, which support the health of riparian habitats of cottonwoods, willows, and grasses.	The Sacatar Trail is an old wagon road that is part of the scarce evidence of humans in this area, provides backcountry access into this wilderness.	Class I

Scenery is very important to visitors who travel to the eastern Sierra. Visitors are sensitive to impairment of the natural landscape, and visual resource management has increased protection for areas of high scenic quality (BLM 1993a). Viewer groups who enjoy the outdoor scenery in this area include tourists, recreationists, naturalists and even the movie industry.

Beginning at the north end, the Four Trails Feasibility Study crosses just above the decision area. As it continues south, the corridor runs through the Humboldt-Toiyabe National Forest. This is the largest National Forest in the lower 48 states, with mountains that change in elevation from 4,000 ft to over 12,000 ft (Forest Service 2017a).

The decision area is adjacent to several WSAs including Chidago Canyon, Fish Slough, Casa Diablo, and Volcanic Tablelands. The Excelsior WSA is adjacent to the west side of the decision area as it runs south, where it is less than 1 mi away from Granite Mountain Wilderness. This varied landscape of alluvial basins, basaltic plateaus and granite ridges offers excellent opportunities for day hiking, backpacking and horseback riding. Hiking up to Granite Mountain at almost 9,000 ft, or to Horse Peak, provides an expansive view that encompasses the Sierran scarp, the volcanic Mono Craters and Glass Mountain, the rugged White Mountains, Adobe Valley, the Excelsior Range in Nevada, the Bodie Hills, and Mono Lake (BLM n.d.a) (Wilderness Connect n.d.). Granite Mountain is also an important visual background for the Mono Basin National Scenic Area (BLM 1993a).

The corridor slightly overlaps Fish Slough WSA and ACEC (BLM 2019b). It is managed to protect scenic values in addition to sensitive plant habitats, meadows, wetlands, and geologic features (BLM 1993a). Located in the transition between the Mojave Desert and Great Basin biomes, Fish Slough represents one of the richest wetland floras in the Great Basin (BLM n.d.b).

The corridor also slightly overlaps the Volcanic Tablelands WSA, which is nestled between Fish Slough WSA and ACEC and the City of Bishop (BLM 2019b). The Volcanic Tableland offers exceptional bouldering opportunities (BLM n.d.e).

Traveling south of Bishop is a highly scenic area of national significance (BLM 2019b). The corridor is adjacent to Crater Mountain WSA and ACEC, and further south, is located between Owens Valley and Inyo National Forest. Hiking trails into nearby canyons are accessible from Bishop and Big Pine (Forest Service 2017b). The Manzanar National Historic Site, a relocation center during WWII, is also in this portion of the corridor.

The designated corridor intersects the newly designated Alabama Hills NSA, but the Regional Review Recommendation will avoid the newly designated Alabama Hills NSA. The Alabama Hills are a formation of rounded rocks and eroded hills set between the jagged peaks of the Sierra Nevada and the Inyo Mountains. The hills are located west of Lone Pine, and popular with the movie industry. Visitors enjoy touring film sites, photography, rock climbing, exploring natural arches, and viewing the swaths of wildflowers that bloom every spring (BLM n.d.a).

The Golden Trout Wilderness Area is located east of the Kern River, with meandering streams and tree-rimmed meadows. Elevations range from 4,800 ft at the Kern River to 12,900 ft at Cirque Peak. Golden Trout Wilderness is adjacent to Sequoia National Park, and the Pacific Crest Trail Runs along its western edge (Forest Service 2017c).

The southern end of the corridor enters the California Desert National Conservation Area, 25 million ac of desert land designated by Congress in 1976 (BLM 2002a). The landscape is vast and diverse, with sand dunes, canyons, mountains, and dry lakes. It is one of the largest intact landscapes in North America and is an attractive tourist destination for hiking, rock climbing and stargazing (Wilderness Society 2022).

VRM Class I is adjacent to the corridor in the Sacatar Trail Wilderness Area. The Sacatar Trail is an old wagon road that allows backcountry access to this rugged landscape. It includes valleys, canyons, and granite peaks that reach an elevation of 7,800 ft (BLM n.d.d).

Roadless areas are adjacent to the corridor, but do not intersect. The Pacific Crest National Scenic Trail is parallel to the corridor, and is about five mi away (BLM 2019b). The Pacific Crest National Scenic Trail runs 2,650 mi between Mexico and Canada, through California, Oregon and Washington. The trail includes deserts and forests, and attracts thousands of hikers and equestrians each year (Pacific Crest Trail Association 2022).

Portions of Corridor 18-23 follow US 395, which is designated as a Scenic Byway along BLM--administered land in Mono County (BLM 1993a). The valleys and surrounding mountains are known for their scenic qualities from dramatic mountain peaks, forest hillsides, grassy meadow and winding creeks and rivers. View groups visit the area to participate in both passive and active recreation experiences such as photography of the scenic views along with hiking, biking, camping, rock-climbing, and river rafting. The corridor is surrounded by BLM-administered land, National Forests, and National Parks. A number of public lands adjacent to the corridor are designated corridor contain WSA. The lands are also used by tribal nations for traditional and cultural uses of which the physical environmental qualities provide deep cultural meaning and importance.

Trends and Forecasts

The Covid-19 Pandemic has resulted in increased attendance on public lands. The increase in visitors to some of the national parks in 2021 broke the previous visitor records of 2020. The record turnout has particularly impacted parks out west. This affects the visitor experience, with crowds and timed entries at some locations (The Guardian 2022).

Over the past decade, visitation to the Alabama Hills has increased substantially. In the Annual Manager's Report for Alabama Hills National Scenic Area, visitation in 2021 increased to the highest on record (BLM 2021c). Current and predicted use levels present numerous management challenges including user conflicts, public health and safety risks associated with increased human waste and trash, and potential adverse impacts on the resources and values that contribute to the area's national significance (BLM 2021a).

In the early 1990s, the Volcanic Tableland was visited only by local climbers. By the late 1990s, thousands of climbers were coming from all over the world. With this dramatic increase in use, the BLM and the local climbing community has developed a climbing management philosophy to protect the natural resources while preserving access to climbing opportunities (BLM n.d. d).

Increased wildfires in the region due to climate change will have an impact on visual resources. As mentioned in the No Action Alternative for Alabama Hills Environmental Assessment, having minimal action for fuels treatments may increase the potential for large, uncontained wildfires. These could affect the scenic quality of the planning area by creating extensive, burned areas that change the vegetation, color and contrast immediately after the burn, as well as the likely conversion to invasive annual grasses (BLM 2021a).

5.2.18.1 Night Sky

The Scenic Resources Goal from the Alabama Hills Management Plan is to "conserve, protect, and enhance the quality of scenic resources including dark skies and soundscapes for the benefit, use, and enjoyment of current and future generations" and to "retain the predominantly natural setting of the planning area that provides high-

quality scenic resources and values, while recognizing and providing for human access and presence."

One of the key action items is to manage the planning area to meet VRM Class II objectives by using the VRM system to conserve, protect, and enhance scenic resources characterized as landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. In order to further meet VRM Class II objectives, the Management Plan has Inventory, Monitoring and Adaptive Management as an additional action item. This includes establishing a Dark Sky assessment and monitoring and following dark sky lighting guidelines to prevent light pollution in the planning area. Adaptive management actions will be based on the results of monitoring. An additional action item is to develop educational materials for semi-primitive camping on dark sky lighting. (BLM 2021a)

For Alabama Hills National Scenic Area, the dark night sky would remain mostly uninterrupted from light intrusion although some minimal light would continue to be produced from vehicles and campers. If visitation continues to increase, there could be more light intrusion. Night filming and special recreation permits may also have a minor, short-term impact on dark skies at discrete locations but would not impact the greater area (BLM 2021a).

In 2016, three National Monuments were designated in the California Desert National Conservation Area, Mojave Trails, Sand to Snow, and Castle Mountain. These monuments are expected to yield additional opportunities for environmental and astronomical tourism (International Dark Sky Association 2016).

Night sky can be impacted by required utility lighting. The FAA Advisory Circular 70/7460-1K (2007) requires that all airspace obstructions higher than 200 ft or close to an airfield have appropriate lighting. Some transmission towers will require obstruction warning lighting, and lights may be placed at higher elevations if blocked by trees or terrain. For very tall towers, this includes daytime strobe lighting as well as nighttime lighting (FAA 2007).

5.3 Corridor 27-41

Corridor 27-41

Designated Corridor:
Section 368 Energy Corridor 27-41 as designated in the 2009 *ARMPA/ROD for Designation of Energy Corridors on BLM-Administered Lands in the 11 Western States*

Regional Review Recommendation:
Revise the designated corridor at MP 130 to follow the existing 500-kV transmission line and extend the corridor to Laughlin, Nevada (10,560 ft width with the existing transmission line as the southern boundary)

Decision Area:
- The BLM-administered lands within the entire length of the designated energy corridor
- The BLM-administered lands that follow existing 500-kV transmission line from MP 130 to near Laughlin, Nevada

Planning Area:
The BLM-administered lands managed under the California Desert Conservation Plan as modified by the Northern and Eastern Mojave Desert/CDCA Plan Amendment and the DRECP LUPA and the Las Vegas RMP and lands under other administration within the vicinity of the decision area

Corridor 27-41 is located within the BLM California Barstow and Needles field offices (Table 5.3-1). The designated 148-mi (238-km) corridor provides an east-west pathway for energy transport from near Barstow, California to the Nevada state line. The designated energy corridor does not connect to other Section 368 energy corridor at the eastern end of the corridor and does not contain existing infrastructure where changes to the designated corridor are being considered. Corridor 27-41 has a width of 10,560 ft and is designated multi-modal to accommodate both transmission lines and pipeline infrastructure.

The designated corridor currently ends at the Nevada border (MP 148), about 19 km (12 mi) west of Bullhead City, Nevada. The corridor is intended to provide a link to Section 368 energy corridors in neighboring states; however, there is currently a gap of about 22 km (16 mi) between the end of Corridor 27-41 and MP 0 of Corridor 41-46 in Arizona, the nearest Section 368 corridor. There is no existing energy transport infrastructure within the designated corridor from MP 130 to MP 148. In addition, desert tortoise habitat and an ACEC designated to protect the desert tortoise is located within the designated corridor at this location. Therefore, the regional review recommended extending the designated Corridor 27-41 at MP 130 along the existing 500-kV transmission line to the east to facilitate a connection to Corridors 41-46 and 41-47 in Arizona, providing a contiguous energy corridor between California and Nevada and minimizing impacts on the desert tortoise (BLM, Forest Service, and DOE 2022).

The decision area (that is, the actual parcels under BLM management that could be affected by the change in the corridor designation) for Corridor 27-41 includes:

- the BLM-administered lands within the designated energy corridor from MP 130 to MP 148 and
- the BLM-administered lands that follow an existing 500-kV transmission line from MP 130 to near Laughlin, Nevada (10,560 ft width with the existing transmission line as the southern boundary (as recommended in the regional review final report).

The planning area (that is, the wider area that could be impacted by a change in the corridor designation, including both BLM-managed lands and lands under other administration) includes the BLM-administered lands managed under the California Desert Conservation Plan as modified by the Northern and Eastern Mojave Desert/CDCA Plan Amendment and the DRECP LUPA and the Las Vegas RMP (Figure 5.3-1).

Table 5.3-1. BLM Administration Boundaries for Corridor 27-41 Decision Area

State	District/Field Office	Milepost (MP)
California	BLM California, Needles Field Office	MP 130 to MP 148
Nevada	BLM Nevada, Las Vegas Field Office	Regional Review Recommendation-corridor extension

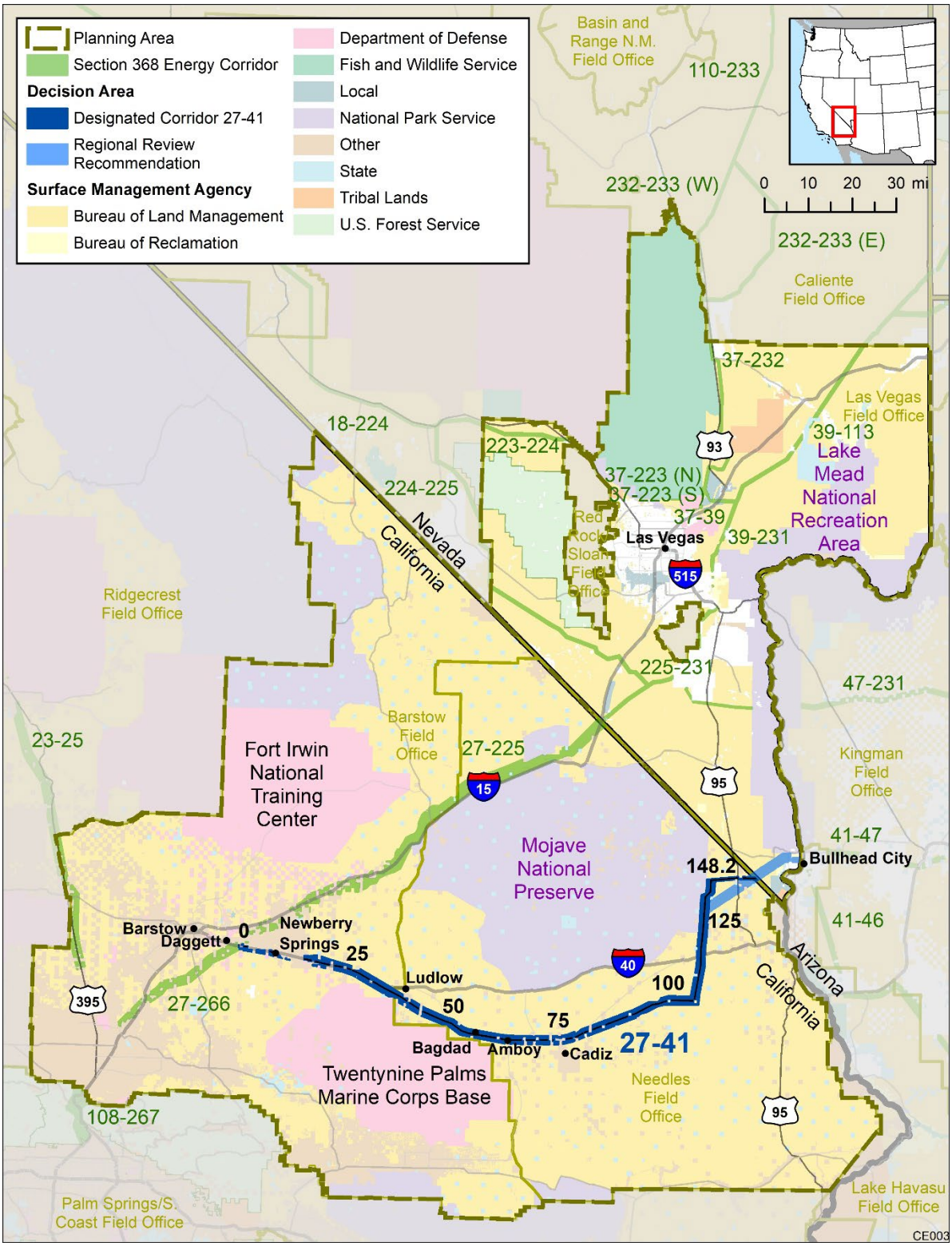

Figure 5.3-1. Corridor 27-41 Planning Area

Key Findings

Table 5.3-2 highlights the potentially affected resources that warrant analysis and summarizes the most important conclusions drawn from each of the Area Profile

resource sections within the Corridor 27-41 decision area. In general, these resources could be impacted from revisions to the designated Corridor 27-41 resulting from this planning effort.

Table 5.3-2. Key Findings for Corridor 27-41 Decision Area

Resource	Key Finding
Air Quality	No Federal and Tribal Class I areas are located within a range of 100 km (62 mi)[13] of Corridor 27-41 although Joshua Tree National Park and Grand Canyon National Park exist just outside the 100-km (62-mi) range. San Bernardino County, California and Clark County, Nevada are in nonattainment areas for PM_{10} and for 8-hr O_3 and are in unclassified/attainment all other criteria pollutants.
Climate	The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. In general, regional increasing temperatures and fluctuating precipitation influences soil moisture and snowpack, and, in turn, water supply, and fire and flood risk in the decision area
Cultural Resources	The DRECP ecoregion subareas contain 8,912 prehistoric/historic resources and the Northern and Eastern Colorado Desert (NECO) planning area contains 3,305 prehistoric/historic resources. There are potential cultural resource conflicts with the Mojave Trails National Monument and the Avi Kwe Ame National Monument.
Ecology	
Vegetation	The decision area is located within the MBR Ecoregion. Vegetation communities along the corridor are primarily creosotebush-white bursage desert scrub and desert scrub Mojave Mid-Elevation Mixed desert scrub and Joshua tree woodlands.
Invasive Species	Invasive vegetation species spread due to excessive grazing, drought, and wildfires, as well as along transportation corridors carried by vehicles or maintenance equipment.
Fire and Fuels	Fire has been historically infrequent in the southwestern deserts, but has increased in frequency and extent in recent decades, generally as a result of the spread of non-native species.
Terrestrial Wildlife	Desert bighorn sheep and mountain lion ranges are within the decision area, as well those of upland game birds and waterfowl. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways.
Fish and Aquatic Species	Aquatic habitat in the region includes high and low elevation perennial streams, riparian areas, springs and seeps, lakes and reservoirs, greasewood flats, washes and playa, Mohave tui chub, bonytail chub, razorback sucker, humpback chub, and Colorado River pikeminnow are federally listed native fish species within the vicinity of the decision area.
Special Status Species	The decision area intersects Desert Tortoise habitat.
Environmental Justice	The minority population in the 2 mi buffer in San Bernadino County exceeds 50%, but the percentage is not meaningfully greater than the countywide averages. The number of persons at or below twice the federal poverty rate within the buffer exceeds the county level in San Bernardino County, but does not exceed 50% in the buffer in either county.

[13] EPA has noted that a 100-km (62-mi) range is generally acceptable for AQRVs impact modeling but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Given the magnitude and schedule of the project along the corridor, these emissions are relatively small, and their release heights are at ground- or near-ground level, so potential impacts would be anticipated to be limited locally.

Resource	Key Finding
Geology, Soils, and Minerals	In California and much of Nevada, the geology mainly consists of various Precambrian granitic rocks. The eastern end of the decision area, in Nevada, is situation on alluvium.
Human Health and Safety	There is low earthquake and landslide potential within the decision area.
Hydrology	Water resources in the region are limited. There are numerous ephemeral washes within the decision area.
Lands and Realty	An existing transmission line is located within the Regional Review Recommendation (re-route along existing 500 kV transmission line beginning at MP 130 and extend into Nevada), although no existing energy transport infrastructure is located within the existing corridor from MP 130 to MP 148. California State Route 95 is the major road in the area. MTR-visual routes are located within the decision area.
Lands with Wilderness Characteristics	There are no managed lands with wilderness characteristics units within the decision area.
Livestock Grazing and Wild Horse and Burro	
Livestock Grazing	There are no livestock grazing allotments within the decision area.
Wild Horse and Burro	There are no Herd HMAs within the decision area.
Noise	On the basis of the population density, the L_{dn} or DNL is estimated to be 42 dBA for San Bernardino County in California and 47 dBA for Clark County in Nevada, which correspond to rural residential and quiet suburban residential areas, respectively.
Paleontology	Areas characterized for potential fossil yield are classified as very low and low potential (Classes 1 and 2).
Recreation	Dispersed recreation within the decision area includes hiking, biking, horseback riding, climbing, and camping, particularly within the Mojave National Preserve National Monument. The decision area is designated as limited or open OHV access.
Socioeconomics	In 2020, the population of the two-county ROI (San Bernardino County, California and Clark County, Nevada) was 4,447,115 and median income ranged from $61,048 in Clark County to $65,761 in San Bernadino County. In 2021, the unemployment rate ranged from 7.4% in San Bernardino County to 8.3% in Clark County, with the largest share of workers employed in wholesale and retail trade industries.
Special Designations	The Mojave Trails National Monument and Piute Fenner and Piute-Eldorado ACECs are within the decision area. The NPS-managed Dead Mountains Wilderness is adjacent to the designated corridor. The Avi Kwa Ame National Monument is located within the Regional Review Recommendation (along existing 500 kV transmission line).
Tribal Interests	There are 42 Federally recognized Tribes with cultural affiliation and an interest in the decision area. There are five Federal Indian Reservations and land held in Trust in San Bernardino County, California and Clark County, Nevada near the decision area: Chemehuevi Reservation, Fort Mojave Reservation, San Manual Indian Reservation, Moapa River Indian Reservation, and Las Vegas Indian Colony. The Mojave National Preserve and Avi Kwa Ame National Monuments have significance to Tribes in the area.
Visual Resources	The decision area is in close proximity to VRM Class I areas: California Desert Conservation Area, Mojave Trails National Monument, and Dead Mountains Wilderness Area. The decision area includes both VRM Class 2 and VRM Class 3 areas.

5.3.1 Air Quality

General information for air quality resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.1.

Current Conditions and Context

National parks and wilderness areas designated as mandatory Federal Class I areas under the CAA as well as other areas re-designated as Class I at the request of a state or Indian Tribe have special air quality protections under federal law. There are no Federal Class I areas within a range of 100 km (62 mi)[14] of the Corridor 27-41 decision area, although Joshua Tree National Park and Grand Canyon National Park are located just outside the 100-km (62-mi) range.

Each state can have its own SAAQS. The CARB, the clean air agency of the State of California, has established separate ambient air quality standards (CAAQS) (CARB 2022a). The CAAQS include the same six criteria pollutants as in the NAAQS but also include standards for visibility reducing particles, sulfates H_2S, and vinyl chloride. In general, the CAAQS are the same as or more stringent than the NAAQS, except for 1-hr NO_2 and for 1-hr SO_2 standards. Nevada has its own SAAQS (Nevada Administrative Code [NAC] 445B.22097) and has a standard for H_2S in addition to those included in NAAQS.

The CARB and the NDEP are responsible for monitoring ambient air quality and for ensuring that ambient air quality levels are maintained in accordance with federal and state standards. As with EPA's designations based on the NAAQS, the CARB designates areas as attainment or nonattainment based on the CAAQS. Ambient air quality monitoring refers to collecting and measuring samples of ambient air to evaluate the status of the air pollutants in the atmosphere as compared to clean air standards and historical information.

The decision area is located in San Bernardino County in California and in Clark County in Nevada. In California, San Bernardino is in nonattainment areas for PM_{10} and for 8-hr O_3 (2015 standard) and is in unclassified/attainment all other criteria pollutants. In addition, San Bernardino County is in unclassified/attainment areas for all air pollutants except in nonattainment for O_3 and for PM_{10}, for which CAAQS were established (CARB 2022b).

In Nevada, Clark County is in nonattainment areas for PM_{10} and for 8-hr O_3 (2015 standard) (limited to Las Vegas Valley) and is in unclassified/attainment all other criteria pollutants. Clark County is in maintenance areas for CO, for PM_{10} (limited to

[14] EPA has noted that a 100 km range is generally acceptable for AQRVs impact modeling, but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Given the magnitude and schedule of the project along the corridor, these emissions are relatively small and their release heights are at ground- or near-ground level, so potential impacts likely would be limited locally.

Las Vegas Valley), and for 8-hr O_3 (1997 standard) (encompassing the corridor) (EPA 2022a).

There are many air monitoring stations in San Bernardino County and Clark County for all criteria pollutants, but there are no stations near the decision area within these two counties. However, Bullhead City in Mohave County, Arizona, which is about 0.9 mi (1.4 km) east of the east end of the Regional Review Recommendation, collects PM_{10}. Based on 2019-2021 data, PM_{10} concentrations exceeded the standard twice although they do not violate the standard.[15] The other closest air monitoring station is Jean in Clark County, Nevada and is about 53 mi (85 km) north-northwest of the decision area, where O_3, PM_{10}, and $PM_{2.5}$ are collected. During the same period, O_3 concentrations exceeded the standard four times although they do not violate the standard. PM_{10} and $PM_{2.5}$ were exceeded once and twice, respectively (EPA 2022b). Considering both the decision area and Jean within the Mojave Desert are downwind of populous South Coast Air Basin under prevailing westerlies and there are only small local emission sources, ambient air quality around the decision area is more affected by outer sources.

Trends and Forecasts

For this section, the decision area is represented using available air monitoring data between 2012 and 2021 at Jean in Clark County, Nevada ("design values" [16] for O_3, PM_{10}, and $PM_{2.5}$) and Bullhead City in Mohave County, Arizona ("design values" for PM_{10}) (EPA 2022b). No air monitors are located in San Bernardino County, California. For 8-hr O_3, design values tend to increase slightly over time at Jean, where on average about five exceedances per year were reported during the ten-year period. For 24-hr PM_{10}, design values tend to increase slightly at both Jean and Bullhead City, and four exceedances at both sites were reported during the ten-year period. For 24-hr $PM_{2.5}$ design values at Jean show a slight increasing trend, and three exceedances were reported during the ten-year period. Since no large emission sources are located nearby, high ozone readings at Jean are related to transport from Southern California along with prevailing wind direction and some influence from Las Vegas. Accordingly, O_3 levels at Jean might be somewhat different from those around the corridor.

The decision area extends across the area that is generally remote and unpopulated. In the area along the corridor, new activities that could trigger air pollution issues are not identified as of now. Even if they occur in the near future, their emissions would be controlled under the permits designed to ensure that they are consistent with applicable regulations along with mitigation measures.

[15] Exceedances of the standard does not necessarily mean the violation of the standard. For example. PM_{10} standard is attained when the expected number of exceedances, averaged over a three-year period, is less than or equal to one. In other words, PM_{10} standard is attained if less than or equal to three exceedances over 3 years occur.

[16] "Design values" are the statistic used to compare ambient air monitoring data against the NAAQS to determine designations for each NAAQS.

Air quality in the decision area would be degraded by wildland fires (including prescribed burning) and/or windblown dust that mostly occur in upwind areas, rather than local emissions.

5.3.2 Climate

General information for climate that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.2.

Current Conditions and Context

Wide variations in elevation and topographic features within the decision area have an impact on wind patterns, temperatures, precipitations, and other meteorological parameters. The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. The prevailing wind direction aloft over the region is from the west (the westerlies), as it is in most of the U.S.; however, complex terrain in the area is responsible for deflecting these winds. Accordingly, wind patterns are sometimes dissimilar even over short distances. Elevation of the west end of the corridor at about 3,000 ft (914 m) slopes down to its east end at about 600 ft (183 m) over the 20-mi (32-km) distance. The decision area is relatively flat or gently sloped.

Per Local Climatological Data for Las Vegas, Nevada, the decision area is in the Mojave Desert and surrounded by mountains scattered over the desert floor. The area is characterized by hot summer temperatures but significant diurnal variations, abundant sunshine, scarce precipitation, and low relative humidity (NCEI 2022a).

Meteorological stations are at the east end of the decision area and are presented here.

Wind. Laughlin/Bullhead Airport is located in the river valley and about 1.3 mi (2 km) east of the east end of the decision area. Needles Airport and Kingman Airport are located about 23 mi (37 km) south of and 35 mi (56 km) east of the east end of the decision area, respectively. Average wind speeds were about 9.4 mph (4.2 m/s) at Laughlin/Bullhead Airport and Kingman Airport and 8.1 mph (3.6 m/s) at Needles Airport, (NCEI 2022b). Southwesterly winds prevail at both Needles Airport and Kingman Airport. In contrast, northerly and southerly winds are equally prevalent at Laughlin/Bullhead Airport, winds at which are more affected by the river valley, which is aligned in a north-south direction. Wind speeds categorized as calm (less than 1 mph [0.5 m/s]) occurred more frequently—ranging15 to 27% of the time, respectively—because of the stable conditions caused by strong radiative cooling in the arid environment.

Temperature. Historical annual average temperature was about 73.6 °F (23.1 °C) at Laughlin, which is located on near the east end of the decision area, as shown in Table 5.3-3 (WRCC 2022a). December was the coldest month, with an average minimum temperature of 42.5 °F (5.8 °C), and July was the warmest month with an average maximum of 110.6 °F (43.7 °C). Each year, about 175 days had a maximum temperature of ≥90 °F (32.2 °C), while about 2.5 days had minimum temperatures at or below freezing (32 °F [0 °C]), with no day below 0 °F (-17.8 °C). All temperature data at

Bullhead City, which is located about 3 mi (5 km) east of Laughlin, are quite similar as shown in Table 5.3-3.

Table 5.3-3. Temperature and Precipitation Summaries at Selected Stations in the Vicinity of the Decision Area[a]

Station	Temperature						Annual Precipitation	
	Monthly Averages[b]			Number of Days with:				
	Min.	Max.	Mean	Max. ≥90°F	Min. ≤32°F	Min. ≤0°F	Water Equivalent	Snowfall
Laughlin, Nevada	42.5°F (5.8°C)	110.6°F (43.7°C)	73.6°F (23.1°C)	174.8	2.5	0.0	5.38 in. (13.7 cm)	0.0 in. (0.0 cm)
Bullhead City, Arizona	43.0°F (6.1°C)	112.0°F (44.4°C)	74.3°F (23.5°C)	181.3	2.7	0.0	5.99 in. (15.2 cm)	0.0 in. (0.0 cm)

[a] Summary data presented in the table are based on the period of record: from 1988 to 2012 (Laughlin); and from 1977 to 2012 (Bullhead City).

[b] "Minimum Monthly Average" denotes the lowest monthly average of daily minimum during the period of record, which normally occurs in December. "Maximum Monthly Average" denotes the highest monthly average of daily maximum during the period of record, which normally occurs in July.

Source: WRCC 2022a.

Precipitation. The area lies on the eastern, lee side of the Sierra Nevada Range, a massive mountain barrier that markedly influences the climate of the area (WRCC 2022b). One of the greatest contrasts in precipitation found within a short distance in the U.S. occurs between the western slopes of the Sierras in California and the valleys just to the east of this range. Along with prevailing westerly winds, as the warm moist air from the Pacific Ocean ascends the western slopes of the Sierra Nevada Range, the air cools, condensation takes place and most of the moisture falls as precipitation. As the air descends the eastern slope, it is warmed by compression, and very little precipitation occurs. The effects of this mountain barrier are felt not only in the west but throughout the State of Nevada, with the result that the lowlands of Nevada are largely desert or steppes.

Historical annual precipitation ranged from about 5.38 in (13.7 cm) at Laughlin, to 5.99 in (15.2 cm) in Bullhead City, Arizona, as shown in Table 5.3-3 (WRCC 2022a). Precipitation is more frequent in winter (about 52%) and less frequent in summer (about 14%). No snowfall at Laughlin has been reported. in Bullhead City and Laughlin are located about 3 mi (5 km) from one another and precipitation data between the two locations is similar.

Trends and Forecasts

In the last century, southern California has experienced one of the largest increases in temperature in the continental U.S. (about 3 °F [1.7 °C]), although all of California is becoming warmer. The six warmest years have all occurred since 2014 (2014 through 2018, and 2020) in the 126-year period of record (1895–2020). Temperatures in California have risen almost 3 °F (1.7 °C) in California since the beginning of the 20th century. In the last century, the state of Nevada has warmed about 2 °F (1.1 °C). Temperatures in Nevada have risen almost 2.4 °F (1.3 °C), since the beginning of the 20th century. In Nevada, over the last 26 years, the annual number of very hot days has

been above average, with the highest 5-year average occurring during the 2015–2020 period, partly because of very high annual values in 2017, 2018, and 2020 (NCEI 2022c). For the decision area, annual average temperature has increased about 2 to 3°F (1.1 to 1.7°C) (EPA 2016a, 2016b).

Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others. The changing climate is likely to increase the need for water but reduce the supply. Rising temperatures increase the rate at which water evaporates into the air from soils and surface waters along with transpiration from plants. But less water is likely to be available, because precipitation is unlikely to increase as much as evaporation. Soils are likely to be drier, and periods without rain are likely to become longer, making droughts more severe (EPA 2016a, 2016b). Precipitation is highly variable from location to location and from year to year. In California, the driest consecutive 5-year interval was 1928–1932, and the wettest was 1979–1983. The late 1990s had the highest number of 2-in. extreme precipitation events, which show no overall trend. In Nevada, after wet conditions in the late 1990s, total annual precipitation has been near or below average since 2000 but shows no overall trend across the 126-year period of record. Seasonal precipitation patterns vary across the state, with most locations receiving the majority of their precipitation during the winter months (NCEI 2022c).

As the climate warms, less precipitation falls as snow, and more snow melts during the winter. That decreases snowpack—the amount of snow that accumulates over the winter. This snowpack melts during spring and summer, which provides water supply for cities and farms. Since the 1950s, the snowpack has declined in both California and Nevada that drain into the Colorado River. On average, about 4% and 5% of the land in California and Nevada, respectively, have burned per decade since 1984. Higher temperatures and drought due to global warming are likely to increase the severity, frequency, and extent of wildfires, which reduce air quality and harm human health and ecosystems (EPA 2016a, 2016b).

Over the next few decades, annual average temperature over the contiguous U.S. is projected to increase by about 2.2 °F (1.2 °C) relative to 1986-2015, regardless of future scenario (USGCRP 2018). As a result, recent record-setting hot years are projected to become common in the near future. Much larger increases in California and Nevada are projected by late century: 2 to 5 °F (1.1 to 2.8 °C) under a lower scenario (RCP4.5) and 5 to 8 °F (2.8 to 4.4 °C) under a higher scenario (RCP8.5) relative to 1986-2015.[17]

In the late twenty-first century, the greatest precipitation changes are projected to occur in winter and spring, with similar geographic patterns to observed changes: increases

[17] For climate projections, the international scientific community developed four RCPs, i.e., RCP2.6, RCP4.5, RCP6.0, and RCP8.5, in which radiative forcing is stabilized at 2.6, 4.5, 6.0, and 8.5 W/m^2 in the year 2100, respectively. RCP4.5, called as a lower scenario, is generally associated with lower population growth, more technological innovation, and lower carbon intensity of the global energy mix, while the reverse is true for RCP8.5, called as a higher scenario.

across the Northern Great Plains, the Midwest, and the Northeast (USGCRP 2018). In California and Nevada, precipitation projections decrease in spring through fall but increase in winter. Note that changes in average precipitation is much more difficult for climate models to predict than temperature. Surface soil moisture over most of the U.S. is likely to decrease, accompanied by large declines in snowpack in the western U.S. and shifts to more winter precipitation falling as rain rather than snow, which is conducive to more wildfires.

Associated with ongoing global warming, large wildfire frequency, fire duration, and fire season length have increased substantially in the western U.S. in recent decades and are projected to increase, especially in the Southwest (USGCRP 2018). This is due primarily to earlier spring snowmelt and warmer temperatures that increase evaporation rates (i.e., reduce the moisture availability) and thus dry out the vegetation that provides the fuel for fires. In addition, California and Nevada snowpack plays a critical role in water supply and flood risk. Projected earlier melting of the snowpack due to rising temperatures could have substantial negative impacts on water-dependent sectors and ecosystems (NCEI 2022c).

5.3.3 Cultural Resources

General information for cultural resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.3.

Current Conditions and Context

The following cultural resources are listed as generally representative of the decision area and are presented as a characterization of prehistoric and historic site types that may reasonably be expected to be affected in the absence of specific resource location data. In some cases (e.g., National Register sites), resources are not affected by the current corridor designation or revisions but are included as part of this regional characterization.

The NECO/CDCA LUPA/EIS covers the southern portion of the original CDCA boundary and encompasses a portion of the designated corridor from approximately MP 77 to MP 120. The NECO RMP indicates 3,305 historic and prehistoric archaeological sites across the planning area, dating back to 10,000-12,000 years BP. More than two thousand (2,539) of these sites are on BLM-administered land. One ACEC is noted southeast of the designated corridor at MP 78: Marble Mountain Fossil Bed with 48 cultural resource elements noted, although these are not individually specified (BLM 2002a). Traditional cultural properties including archaeological sites, plant collection areas, and ideologically significant places in the region present an ongoing concern for Native American tribes. However, their locations are often unassociated with easily identifiable features, and whose locations may be kept confidential by affiliated tribes (BLM 1980).

The NEMO planning area encompasses that portion of the corridor between MP 120 and MP 146. This corridor segment runs through the southeastern corner of the

planning area and does not relate to all cultural resource elements described in the NEMO plan, summarized here.

A number of sites within the decision area are listed or are determined eligible for listing on the National Register. In addition, several sites are listed as California Historic Landmarks and California Points of Historic Interest but may or may not have been evaluated for listing on the National Register. Within the NEMO planning area, the following sites (without locations) are listed or eligible for listing on the National Register (BLM 2002b):

- CA-SBr-3186 (Baker vicinity)
- Paiute Pass Archaeological District
- Cerro Gordo National Historic District
- Death Valley Junction Historic District
- National Old Trails Road (CA-SBr-2910H)
- Mormon Road/Trail (CA-SBr-4411H)
- AT & SF Railroad (CA-SBr-6693)
- Old Spanish Trail (CA-SBr-4272H)
- Tonopah & Tidewater Railroad (CA-INY-4772H)
- Hoover Dam to San Bernardino Transmission Line
- Boulder Transmission Lines 1, 2, 3
- Mormon Road Monument (Ca-SBr-4411H)
- Harry Wade Exit route
- Searles Lake Borax Discovery Site
- National Old Trails Monument
- Von Schmidt State Boundary
- Mojave Road (CA-SBr-3033H)
- California/Arizona Desert Training Center Maneuver Area
- Camp Ibis (Desert Training Center)
- Lanfair

Earliest European contact by the Spanish during the Mojave Desert crossing in 1776 encountered several Yuman and Shoshonean groups, characterized by adaptive strategies to the arid environment during the Late Prehistoric to Historic periods. Regions inhabited by the various sub-groups include the Mojave River Valley, San Bernardino Mountains, Colorado River Valley and adjacent Mojave Desert, and Western Shoshone. These groups were primarily seasonally migrating hunter-gatherers, relying on a variety of plants and animals. Trade networks extending outside the region are demonstrated by exotic goods and materials. Limited agriculture was practiced by the Mohave along the margins of the Colorado River.

Three ecoregion subareas are defined in the DRECP LUPA/ FEIS: Mojave and Silurian Valley, Providence and Bullion Mountains, and the Piute Valley and Sacramento Mountains (BLM 2015a).

ACECs with significant cultural resources are found only in the Mojave and Silurian Valley subarea and have designated management values including prehistoric human occupation, prehistoric values, cultural resources, prehistoric and historic values. These ACECs include Calico Early Man Site, Christmas Canyon, Cronese Basin, Denning Springs, Mesquite Hills/Crucero, Salt Creek Hills, Bedrock Spring, Steam Well, Squaw Spring. The designated corridor does not pass through any of these ACECs.

Of the total 1,625,500 ac surveyed within the DRECP area, a total of 36,262 known sites are present within all ecoregion subareas. The range of prehistoric and historic site types includes habitation sites, temporary camps, rock shelters, caves, milling stations, lithic scatters, chipping circles, quarries, ceramic scatters, cemeteries, cremation features, rock alignments, geoglyphs, petroglyphs pictographs, trails, roasting pits, cairns, isolated artifacts, mines, homesteads, historic-era campsites, and historic dumps. Resource counts specific to each ecoregion subarea are as follows (Note: counts include BLM, State, private, and other federal lands):

- Mojave and Silurian Valley (4,302 total):
    - 139 prehistoric
    - 247 historic
    - 14 multi-component
    - 3,890 unknown
    - 12 isolate
- Providence and Bullion Mountains (3,612 total)
    - 2 prehistoric
    - 6 historic
    - 1 multi-component
    - 3,603 unknown
- Piute Valley and Sacramento Mountains (998 total)
    - 3 prehistoric
    - 2 historic
    - 993 unknown

Sites listed on the National Register, California Landmarks, California Register of Historical Resources and Points of Interest within the DRECP in San Bernardino County include:

- National Register: 26 sites
- California Historical Landmarks: 12 sites
- California Register: 35 sites
- Points of Interest: 25 sites

Trends and Forecasts

Environmental conditions affecting cultural resources within the NECO planning area are referenced in the 2002 management plan which in turn references the original 1980 CDCA plan.

Standards and Guidelines indicate that livestock grazing near springs and streams, where archaeological sites tend to be located, promotes vegetation degradation which in turn leads to soil destabilization and erosion. In addition, grazing can directly damage surface artifacts and site integrity, compromising horizontal and stratigraphic information about such sites. Wild horses and burros continue to present similar issues in areas with water sources. While there are no HMAs within the decision area, within the NECO planning area, there are 816 cultural resources within HMAs that encompass approximately 930,906 ac.

Motorized vehicle routes and access points can result in ground disturbance from tires, camping, and off-roading. Additionally, such access tends to increase occurrences of looting and vandalism. The California Historic Resources Information System (CHRIS) and BLM records have provided site locations within a 600-ft-wide Area of Potential Effect (APE) for the NECO planning area and are categorized according to likelihood of impact by this ongoing threat. A total of 1,106 cultural resources are located on BLM-administered lands within the NECO APE for each route. According to the CDCA, routes designated “open” are accessible for non-competitive recreational activities. Existing routes that will eventually take this designation, including APEs, contain 554 known sites. Of these, 184 sites have been either listed, determined eligible, or potentially eligible for listing on the National Register. The remaining 167 sites are considered to have properties that may be adversely affected by recreational activities.

Land ownership changes through acquisition or disposal has variable effects on cultural resource protection. Acquisition of lands for the protection of multiple resources may have the indirect effect of conserving archaeological sites, particularly where natural resources such as water sources have the likelihood of corresponding to archaeological site presence. However, land disposal for low habitat qualities does not necessarily indicate low potential for cultural resources. Similarly, incorporation of Wilderness Areas into the CDCA plan would improve cultural resources protection (BLM 2002a).

The NEMO LUPA (BLM 2002b) states that California Desert District cultural resources will continue to be impacted general recreation activities, mineral exploration, grazing, unguided site visits and vandalism. Where mitigation measures reach the level of data collection, there will be gradual reduction in intact cultural resources.

The DRECP estimates potential impacts on cultural resources by technology type:

- Mojave and Silurian Valley
    - Transmission: 1,146 ac, 11 cultural resources impacted
- Providence and Bullion Mountains
    - Solar: 9,657 ac, 193 cultural resources impacted

    - Transmission: 850 ac, 17 cultural resources impacted
- Piute Valley and Sacramento Mountains
    - All values=0

Because of the difficulty in locating and quantifying Traditional Cultural Properties, these resource elements were not included in the DRECP LUPA and FEIS impact assessment, although it is presumed that this resource would be affected, commensurate with increases in acreage used for technology development (BLM 2002b).

5.3.4 Ecology

General information for ecological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.4.

5.3.4.1 Vegetation, Invasive Species, and Fire

Current Conditions and Context

The decision area is in the MBR ecoregion. The dominant vegetation communities are creosotebush-white bursage desert scrub and desert scrub Mojave Mid-Elevation Mixed desert scrub and Joshua tree woodlands (Figure 5.3-2) (Comer et al. 2013). Catclaw acacia (*Acacia* spp.), smoke trees, and desert willows are typical wash plant species. Higher elevations support grassland, sage brush, blackbrush, pinyon-juniper woodlands as well as unique remnant habitats containing small white fir forests, and pinyon-junipers with oak (NPS 2002). The Mojave National Preserve is considered a unique floristic area, with many plant species found only within its boundaries.

Many of the desert spring and riverine riparian areas within the NEMO planning area have been rated as nonfunctional or functioning-at-risk, due to water diversion, weed establishment, vehicle use, mining, burro use or livestock grazing, groundwater overdraft and/or the establishment of non-native tamarisk (BLM 2002b).

Invasive Species

Invasive grasses are of management concern throughout the MBR ecoregion and included such species as Russian olive (*Elaeagnus angustifolia*), cheatgrass, red brome, filaree, Mediterranean split grass, and a number of exotic weeds like mustards and thistle. Black locust and honey locust and tamarisk infest riparian or wetland areas (BLM 2002b; Comer et al. 2013).

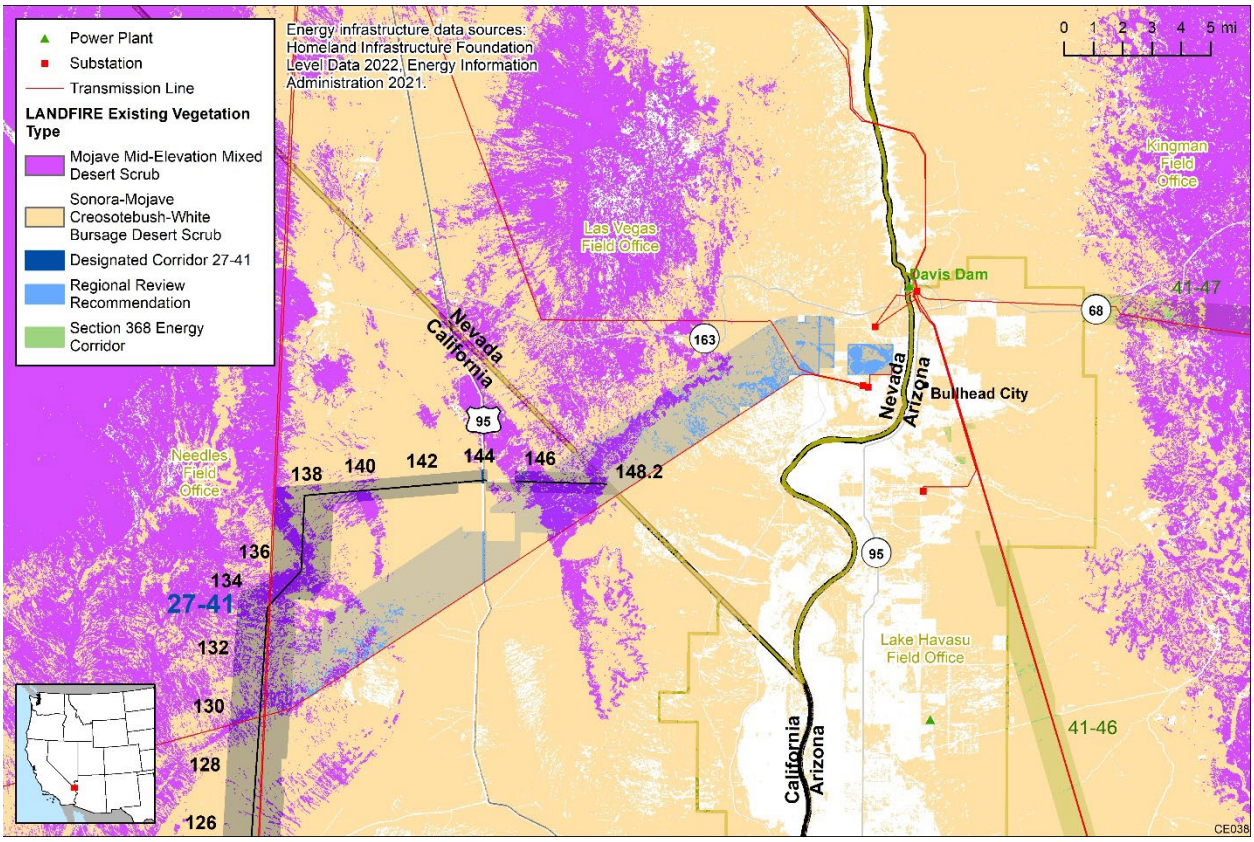

Figure 5.3-2. Vegetation Communities in the Vicinity of the Decision Area (2020 Landfire)

Trends and Forecasts

Deviation from the current baseline temperature and precipitation is modeled to increase through 2060. Greater summer temperatures are projected for the ecoregion and rainfall is also expected to increase in the summer months. Consequently, vegetation communities in the MBR are expected to change dramatically over the coming five decades. Some of the potential effects of these climate forecasts could include a decline in net primary productivity, expansion of invasive annual grasses and forbs a shift to drought tolerant, shallow-rooted species. For example, Climate envelope analysis indicates future contraction in characteristic bioclimates for Joshua tree-blackbrush communities, desert scrub, Sonora-Mojave creosotebush-white bursage desert scrub, and Great Basin pinyon-juniper woodland (Comer et al. 2013). The lowest-elevation warm desert scrub communities could become unvegetated desert landscapes and there is a projected shift of existing Joshua tree and blackbrush-dominated scrub to creosotebush-dominated scrub. (Comer et al. 2013).

Fire and Fuels

Wildfires of varying size and intensity occur throughout the ecoregion including the vicinity of the corridor (Comer et al. 2013). Based on data from 1980 to 2001 the fire frequency in the Mojave Desert was 2.1 fires per year, per 1,000 square kilometers. Within the DRECP planning area, the frequency and acreage burned is on an increasing trend (BLM 2015a).

While fire has been historically infrequent in the southwestern deserts, it has increased in frequency and extent in recent decades, generally as a result of the spread of non-native species, such as red brome, buffelgrass, and Russian thistle which provide a dry fuel source for wildfire in the Mojave National Preserve (NPS 2002). Bromes in particular are fire adapted and colonize burned areas faster than native plants, which facilitates the shift from native vegetation to non-native grasses by creating continuous fuel-beds that creates conditions for more intense and frequent fires.

5.3.4.2 Terrestrial Wildlife

Current Conditions and Context

The decision area crosses the border of California and Nevada. One challenge to wildlife management is the conflicting management goals across jurisdictions. California ranks first among the 50 states in overall biological diversity and Nevada ranks eleventh. A major threat to terrestrial wildlife in California is its rapidly growing human population and the resulting loss of suitable habitat (CDFW 2015). Nevada's arid climate and limited water resources present challenges for conservation. The most critical problems facing terrestrial wildlife in Nevada are the alteration of aquatic habitats due to the extraction and consumption of water, invasive, exotic, and feral species, and the impacts of wildfire and fire suppression (Wildlife Action Plan Team 2012).

The decision area is in the MBR Ecoregion. The MBR is comprised primarily (70%) of desert scrub habitat (Comer et al. 2013). In the MBR, the current landscape condition tends to be moderate to high across most of the wildlife species distributions. There are concentrated areas of low landscape condition which reflects the effects of roads and other development. Species concentrated at higher elevations are found in the highest landscape condition areas (Comer at al. 2013).

The following section focuses on game species (big game species, upland game birds, and waterfowl) and migratory birds. Other species may inhabit the decision area but are not directly discussed. Any management direction that affects the recovery, maintenance, or improvement of wildlife populations discussed in this section would also indirectly support other native species. Table 5.3-4 lists the managed big game species with habitat in the decision area.

Game species

Big Game Species

There are six big games species in California (CDFW 2022a) but only the range of one species intersects the decision area: desert bighorn sheep (Table 5.3-4). There are nine big game species in Nevada (NDOW 2022), but only two species have occupied habitat within the decision area: desert bighorn sheep and mountain lion. Population numbers for these big game species fluctuate annually and depend on conditions such as weather, hunting, forage quality, water availability, and cover (WAPA and BLM 2015).

The decision area contains big game habitats including year-round ranges, movement corridors, and suitable habitat.

Table 5.3-4. Managed Big Game Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Habitat Association and Life History	State
Desert bighorn sheep (*Ovis canadensis nelson*)	The decision area intersects the year-round range and movement corridors of desert bighorn sheep in Nevada and the year-long range of desert bighorn sheep in California. This species of bighorn sheep prefers the rough and rocky habitat of mountains in southern Nevada. Steep rocks offer protection against predators, who are unable to navigate and climb up after the bighorn sheep. Although residents of deserts, they do require freestanding water to help them get through the hot summers (NDOW 2022).	California & Nevada
Mountain lion (*Puma concolor*)	Roughly 45% of the state of Nevada is suitable mountain lion habitat. In Nevada, mountain lions are most likely found in areas of pinion pine, juniper, mountain mahogany, ponderosa pine and mountain brush (MLF 2022). Suitable habitat may be found within the decision area. Mountain lions mostly occupy remote and inaccessible areas. Their annual home range can be more than 560 square mi, while densities are usually not more than 10 adults per 100 square mi. The cougar is generally found where its prey species (especially mule deer) are located. In addition to deer, they prey upon most other mammals (which sometimes include domestic livestock) and some insects, birds, fishes, and berries. They are active year-round. Their peak periods of activity are within two hours of sunset and sunrise, although their activity peaks after sunset when they are near humans. They are hunted on a limited basis and are closely monitored basis in some states (DOE and BLM 2008).	Nevada

*Intersections with decision area was determined using GIS data or habitat range maps from NDOW (NDOW 2017) and CDFW (CDFW 2022b) when possible.

Upland Game Birds

Upland game bird species that may occur in the decision area include chukar, Gambel's quail, mourning dove, Eurasian-collared dove, and white-winged dove, Wilson's snipe. Chukar are not native to California and Nevada but are found as year-round residents in both states (DOE and BLM 2008). Chukar are found in dry, rocky terrain with abundant cheatgrass and can often be found near water sources in drainages that have sufficient escape cover (WAPA and BLM 2015). Mourning doves occur in a wide range of habitats from deciduous forests to shrubland and grassland communities (WAPA and BLM 2015). Eurasian-collared doves can be found in various habitats including neighborhoods, grasslands, agricultural fields, woodland edges, and roadsides (NDOW 2022). Gambel's quail occur in Nevada and California year-round. They occupy shrub habitats near riparian areas (WAPA and BLM 2015). Mourning doves occur in a wide range of habitats from deciduous forests to shrubland and grassland communities (WAPA and BLM 2015). White-winged doves occur in southern Nevada and southern California. They occupy a wide range of habitats including agricultural fields and residential areas but favor woodlands or desert habitats (NDOW 2022). Wilson's snipes are year-round residents in the decision area in California. They are found in wet pastures, canals and ditches, and other fresh emergent wetlands. Breeding occurs in wet areas adjacent to ponds and rivers (CWHR 2016b). Most upland game species

exhibit annual population fluctuations depending on weather and habitat conditions (WAPA and BLM 2015).

Waterfowl

Waterfowl are also popular game birds in California and Nevada. Some common waterfowl in California and Nevada include American coot, American wigeon, Canada goose, green-winged teal, ross's goose, snow goose, canvasbacks, gadwall, greater white-fronted goose, mallard, northern pintail, redhead, ring-necked duck, northern shoveler, wood duck, tundra swan, greater scaup and lesser scaup (CDFW 2022c; NDOW 2022). Species distributions are limited to the rivers, streams, lakes, reservoirs, ponds, and wetlands found within the decision area. Population numbers for these species vary annually depending on weather and habitat conditions (WAPA and BLM 2015).

Various conservation and management plans exist for waterfowl, including the 2018 NAWMP, signed by the U.S., Canada, and Mexico. The NAWMP is a model for international conservation of wetlands and waterfowl. It was first signed in 1986 and has been adapted through reviews and updates in response to changing science and conservation goals (NAWMP 2018). While waterfowl species are considered game birds, they also are protected under the MBTA.

Migratory Birds

Many bird species occurring in California and Nevada are seasonal residents and exhibit seasonal migrations. These birds include waterfowl, shorebirds, raptors, and neotropical songbirds. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways (DOE and BLM 2008).

The Pacific Flyway includes the Pacific Coast Route, which occurs between the eastern base of the Rocky Mountains and the Pacific coast of the U.S. This flyway encompasses the states of California, Nevada, Oregon, and Washington, and portions of Montana, Idaho, Utah, Wyoming, and Arizona. Birds migrating from the Alaskan Peninsula follow the coastline to near the mouth of the Columbia River, then travel inland to the Willamette River Valley before continuing southward through interior California. Birds migrating south from Canada pass through portions of Montana and Idaho and then migrate either eastward to enter the Central Flyway, or turn southwest along the Snake and Columbia River valleys and then continue south across central Oregon and the interior valleys of California. This route is not as heavily used as some of the other migratory routes in North America (DOE and BLM 2008).

Migratory birds encompass a variety of passerine and raptor species, most of which are protected under the MBTA of 1918 (16 USC 703-711) and Executive Order 13186.

Migratory birds include neotropical migrant species, raptors, waterfowl, shorebirds, and wading birds. A wide range of migratory birds occur within the corridor decision area. Approximately 150 species and 275 species of birds are found respectively within the

Northern and Eastern Mojave Desert Management Plan area and the Las Vegas Field Office planning area. Most of these species are neotropical migrants (BLM 2002b).

Trends and Forecasts

Climate forecasts indicate the potential for profound transformation in many ecosystems across the MBR during the next two to five decades. Climate change modeling for the MBR to 2060 suggest significant increases in maximum monthly temperatures forecasted for the decision area. These forecasts appear to be most intense along the south-western MBR. Looking out to 2060, there is potential for considerable changes to the current distributions of many wildlife species. Lowest-elevation basins throughout the MBR could transition from cool semi-desert into very warm and sparsely vegetated desert landscapes (Comer et al. 2013).

Climate change has the potential to impact wildlife communities by changes in temperature and precipitation and therefore in changes in their seasonal habitats. Some examples of potential climate change related impacts include:

- Both winter-only and summer-only ranges (the elevational extremes) of ungulates such as mule deer are forecasted to contract substantially within the MBR (Comer et al. 2013).
- Combined winter and summer ranges of desert bighorn sheep are predicted to remain fairly stable within the MBR, with contractions forecasted for lower-elevation transitions into the Sonoran Desert, and expansions expected along high-elevation margins of the ecoregion (Comer et al. 2013).
- Higher than normal summer temperatures are forecasted across most grazing allotments (Comer et al. 2013).

5.3.4.3 Fish and Aquatic Species

Current Conditions and Context

The decision area is in the MBR ecoregion. Aquatic habitat in the MBR include high and low elevation perennial streams, riparian areas, springs and seeps, lakes and reservoirs, greasewood flats, washes, and playas. Dead Mountains Wilderness contains alluvial fans draining toward the Colorado River and springs and large washes in Picture Canyon. Wash habitat supports smoketrees in the CDCA.

Major perennial aquatic habitats in the region include the Colorado River and Piute Creek. Native fish communities in the Lower Colorado River are primarily in the minnow and sucker families. There are also groundwater springs and seeps in the region (NPS 2002). These perennial water sources are critical to plants, wildlife.

The Mohave tui chub is a USFWS listed endangered species endemic to the Mojave River basin in California and is found in constructed ponds at Soda Lake, Camp Cady, and China Lake Naval Air Weapons Station. (NPS 2002). Four endangered fishes have been designated for the Colorado River in the vicinity of the decision area: bonytail chub (*Gila elegans*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and

Colorado River pikeminnow (*Ptychocheilus lucius*), and portions of the Colorado River in the vicinity of the decision area are considered critical habitat for the razorback sucker. However, the decision area crosses intermittent washes that would not be suitable for these species.

Based on urban density and agricultural conversion within the MBR, the stream and riparian zones in the decision area region have moderate to high Landscape Condition Index scores (Comer et al. 2013). Springs in the region have been altered by the installation of retention dams, pipelines, and troughs for livestock use. Groundwater and surface water use in the area was moderate for the ecoregion. Water quality in the decision area region is considered moderate relative to the MBR ecoregion (Comer et al. 2013).

Both terrestrial and aquatic invasive species are of management concern throughout the MBR ecoregion. While data on invasive species distribution is limited, invasive exotic aquatic species in the MBR include Asian clam (*Corbicula fluminea*), quagga mussel (Dreissena rostriformis), tilapia, common carp (*Cyprinus carpio*), and non-native guppies (*Poecilia spp*.) (Comer et al. 2013).

Trends and Forecasts

Based on regional climate models, monthly maximum and minimum temperatures are expected to increase through 2060, particularly in the summer months (Comer et al. 2013). Rainfall is also expected to increase in the summer months. Deviation from the current baseline temperature and precipitation increase through 2060, the latest decade modeled. Greater summer precipitation would increase in the frequency and/or intensity of summer monsoonal storm events. However, future projected winter precipitation, which is important to groundwater recharge, did not show any significant deviation from the present baseline (Comer et al. 2013).

Future climate change in the MBR alter aquatic habitat and communities in several ways including:

- reduced stream flow depth and duration in playas, intermittent stream and perennial streams and the waterbodies into which they flow;
- greater stress to aquatic communities due to higher water temperatures over a greater portion of the year;
- greater erosion due to an increase in intense flows; and
- loss of riparian and groundwater dependent aquatic habitat due to reduced groundwater discharge to springs and seeps.

5.3.4.4 Special Status Species

Current Conditions and Context

The decision area intersects habitat for the Desert Tortoise (*Gopherus agassizii*), a federally threatened species. This species is discussed below and summarized in

Table 5.3-5 (Figure 5.3-3). The Desert Tortoise inhabits regions of the Mojave and Colorado Deserts of California, Nevada, Arizona, and Utah. It is almost exclusively associated with creosote bush (*Larrea tridentata*) vegetation characteristic of the Upper Sonoran life zones of the Mohave and Colorado Deserts. Specific habitat associations vary geographically, as do substrate preferences. In the Mojave Desert, the tortoise occurs in creosote scrub, creosote bursage (*Ambrosia dumosa*), shadscale (*Atriplex*) scrub, Joshua tree (*Yucca brevifolia*), and, more rarely (in the northern periphery of their range), in mixed blackbush scrub between 3,500-5,000 ft elevation. In general, Desert Tortoise habitats are associated with well drained sandy loam soils in plains, alluvial fans, and bajadas. Desert Tortoises spend most time inactive in subterranean burrows that they excavate.

Table 5.3-5. Special Status Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Species Status and Habitat Association	Habitat within the Decision Area
Desert Tortoise (Mojave Population) (*Gopherus agassizii)*	The Mojave Desert Tortoise is a federally threatened species with designated Critical Habitat. It occurs throughout the Mojave Desert region in areas associated with creosote bush (*Larrea tridentata*) vegetation.	Designated Critical Habitat intersects the decision area between MP 130 and MP 148.

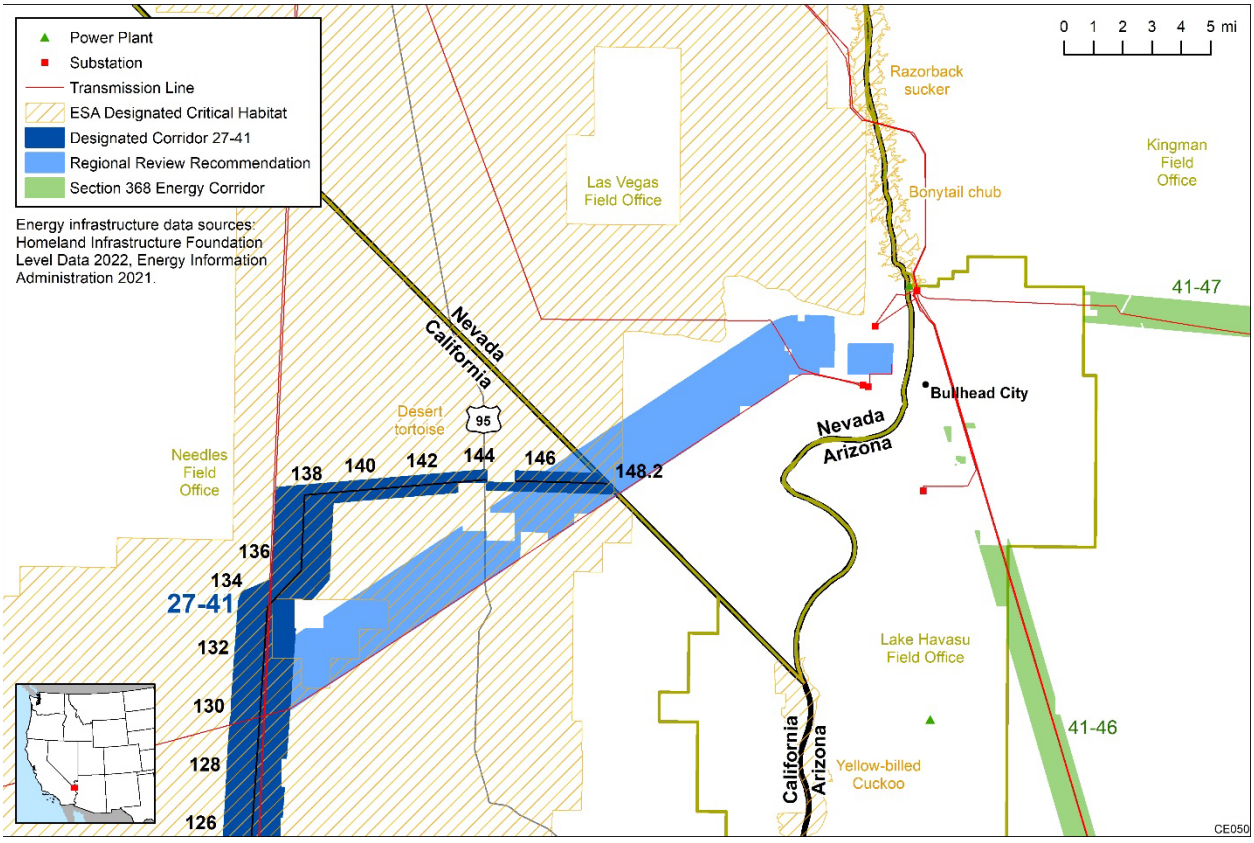

Figure 5.3-3. SSS Habitat in the Vicinity of the Decision Area

The Desert Tortoise was listed as Threatened under the ESA beginning on August 20, 1980 for the Beaver Dam Slope population in Utah. Critical Habitat for the species was also designated at that time. The Mojave population was listed as Threatened under the ESA on April 2, 1990. Critical Habitat for the Desert Tortoise was designated by the USFWS on over 6,000,000 ac in portions of the Mojave and Colorado Deserts. Portions of the Chemehuevi Critical Habitat Unit in California intersect the corridor beginning at MP 81 and continuing through the end of the corridor at MP 148.

Trends and Forecasts

The Mojave population of the Desert Tortoise has declined between 2004 and 2014. Range-wide, it is estimated that the Mojave population has declined by a total of 124,050 adult tortoises in that decade (USFWS 2022). For example, in the Chemehuevi Tortoise Conservation Area (also designated Critical Habitat Unit) that intersects the designated corridor, adult tortoises have declined by approximately 10.8% per year during the decade between 2004 and 2014 (USFWS 2022).

5.3.5 Environmental Justice

General information for environmental justice that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.5.

Current Conditions and Context

For environmental justice, a 2 mi buffer area was used to evaluate minority and low-income populations, 1 mi on either side of the decision area. The geographic distribution of minority and low-income groups within the buffer area was based on census block group data from the 2020 Census (U.S. Census Bureau 2022a, 2022b,2023).

Table 5.3-6 lists the minority and low-income composition within the 2 mi buffer in the three counties on the basis of 2020 census data. For two of the counties, the total minority population (those not listed as White alone, not Hispanic or Latino) in the buffer does not exceed 50% and is not meaningfully greater (10 percentage points or more) than the countywide average. Although the total minority population in that part of the buffer located in San Bernadino County exceeds 50%, it is not meaningfully greater (10 percentage points or more) than countywide averages. The number of persons at or below twice the federal poverty rate in the buffer exceeds the county level in San Bernadino County, but does not exceed 50% in the buffer in either county (Table 5.3-6).

The 2 mi buffer had a population of 13,218 in 2020 (U.S. Census Bureau 2022b). Countywide median household income was $61,048 in 2020 in Clark County and $65,761 in San Bernadino County, while the average unemployment rate in the two counties was 7.9% in 2021.

Table 5.3-6. Minority and Low-Income Population Within Decision Area Buffer, 2020

Population Category	County and State	
	San Bernadino, California	Clark, Nevada
Racial Groups		
Number of persons:		
Hispanic or Latino	455	1,316
White alone, not Hispanic or Latino	770	5,489
Black or African American alone	90	249
American Indian and Alaska Native alone	192	61
Asian alone	477	187
Native Hawaiian and Other Pacific Islander alone	7	30
Two or more races	68	376
Minority percent	62.7	29.2
County Minority percent	74.1	60.6
Low-income Population		
Number of persons	704	2,258
Low-income percen***t***	44.4	32.0
County Low-income percent	34.4	32.4

Sources: U.S. Census Bureau (2022a, 2022b,2023).

Trends and Forecasts

Forecasts of the effects of changes in employment opportunities, cost of living, social and cultural values, and consumer preferences, on population growth and migration are undertaken only at the regional or national level for the population as a whole, with detailed forecasted data on minority and low-income populations at the census block group level not available. Preparing demographic forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local employment, unemployment, income, population growth and migration, and the characteristics of minority and low-income populations, that are difficult to forecast, particularly at the census block group level.

5.3.6 Geology, Soils, and Mining and Mineral Resources

Current Conditions and Context

At the southwest end of the decision area in California, the geology consists of various Precambrian granitic rocks of Homer Mountain (Jennings 2010). These contain a normal fault and other faults of unspecified displacement. Straddling the state line, rocks are mainly fractured Precambrian granitic rocks, with some gneiss and schist (Crafford 2007; Jennings 2010), of the Dead Mountains, though the hard rock is partially

obscured by alluvium. The eastern end of the decision area, in Nevada, is situation on alluvium (Crafford 2007).

Soil is poorly developed in alluvial materials in the low areas of the decision area, and it is generally absent in the upland areas of exposed bedrock.

Trends and Forecasts

The east end of the decision area is within 100 m of several developed areas of Laughlin, Nevada, and it abuts the Laughlin Landfill and a school campus. Otherwise, the decision area extends across an area that is essentially unpopulated. Despite a nearby population, negligible change is expected in the geologic, mineralogic, and soil conditions.

5.3.7 Human Health and Safety

General information for hazardous materials and human health that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.7.

Current Conditions and Context

Volcanic Hazards – The volcanic hazard is low for the decision area. The closest nearby active volcano is the Lavic Lake volcanic field, which is located about 60 mi (97 km) from the decision area.

Seismic Hazards – The decision area has a low earthquake potential. Within the decision area there is a 2% probability of horizontal shaking exceeding 8 - 16%g within 50 years (USGS 2022a). If an earthquake with a PGA in this strength range were to strike near a transmission line or pipeline within the decision area, significant damage to the infrastructure would be unlikely.

Fault Crossings – Faults in which a slip has occurred within the past 10,000 years (Holocene faults) are commonly considered active (USGS 2022b). The decision area is not near any known fault lines (USGS 2021).

Liquefaction Potential – The decision area is not located in an area rated for risk of liquefaction (not rated as low, intermediate, or high liquefaction potential) (California State Geoportal 2022). This indicates that the risk of liquefaction is low.

Landslide Potential – The decision area does not intersect with any areas classified for landslide susceptibility (DOE and BLM 2008 Figure 3.14-5). The risk of landslide at any location near the decision area is low.

Trends and Forecasts

The decision area has a low probability of experiencing a relatively powerful earthquake and/or landslide within the next 50 years.

5.3.8 Hydrology

Current Conditions and Context

The decision area is located in an area of rugged mountainous zones and intervening broad, flat alluvial plains. The alluvium on the California side consists of unconsolidated sand and gravel and is considered a basin-fill aquifer (USGS 2000). The bedrock areas do not generally serve as aquifers.

In California, the decision area crosses the ephemeral Piute Wash (USGS 2022c). In Nevada, the decision area crosses various unnamed ephemeral drainages that are tributary to the Colorado River. At its closest point, the decision area is within 1 km of the Colorado River.

The decision area is not located on a sole source aquifer (EPA 2022c) and does not cross any Wild and Scenic Rivers (USGS 2022c) or any perennial rivers.

Trends and Forecasts

The decision area extends across an area that is essentially unpopulated. Changes in hydrologic conditions are expected to occur on short time scales in response to precipitation events. The current or future effect of the Laughlin Landfill on the groundwater quality of the alluvial aquifer beneath the corridor is unknown.

5.3.9 Lands and Realty

General information for lands and realty that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.9.

Current Conditions and Context

Lands and realty management is guided by decisions made in existing RMPs. For Corridor 27-41, the planning area includes the BLM-administered lands managed under the California Desert Conservation Plan (BLM 1996b) as modified by the Northern and Eastern Mojave Desert/CDCA Plan Amendment (BLM 2002c) and the DRECP LUPA (BLM 2016a) and the Las Vegas RMP (BLM 2019a). The lands and realty program consists generally of land use authorizations (e.g., ROWs) and land tenure (purchases and acquisitions, sales and exchanges, and withdrawals of public land).

Trends and Forecasts

In general, current management trends for land tenure indicates that the BLM will pursue a long-term program for repositioning public lands toward improved manageability and increased public benefits. Lands may be acquired to provide access or facilitate management, or to protect or enhance natural resources (BLM 2007a). Future opportunities for land acquisitions would be contingent on willing sellers, the condition of proposed acquired lands, and the availability of funding (BLM 2023a).

In general, the BLM will continue to consider land exchanges if such exchanges enhance public resource values and improve land ownership patterns and management capabilities of both private and public lands by consolidating ownership and reducing the potential for conflicting land use. Small, isolated parcels of public lands, especially those surrounded by large blocks of individually owned private parcels, are most likely to be considered for disposal in the future. Generally, the BLM would also consider the disposal of some isolated parcels near communities, if those parcels are deemed necessary for community expansion and economic development. The BLM anticipates an increase in requests from private individuals and communities to acquire public lands in the future (BLM 2019b).

The lands and realty program responds to requests for ROWs, permits, leases, withdrawals, and land tenure adjustments from other programs or outside entities. The frequency of such requests is anticipated to increase as neighboring communities grow, and as the demand for use of public lands increases. As a result, future management of the lands and realty program may become more intense, complex, and costly (BLM 2019b).

The main land use topics addressed in this section focus on renewable energy; ROWs, particularly utility corridors and, as applicable, roads and railroads; and military flight operations. While military flight operations are not an actual use of BLM-administered lands, they could have potential effects on energy corridors, particularly those involving above-ground transmission lines.

5.3.9.1 Renewable Energy

Current Conditions and Context

In 2005, the BLM signed a ROD implementing a wind energy development program. BLM-administered lands were categorized into areas having a low, medium, or high potential for development of wind energy production based on wind power classifications. Lands categorized as having low potential fall in wind power Classes 1 and 2, lands with a medium potential fall in wind power Class 3, and lands with a high potential fall in wind power Class 4 and higher. Wind resources in Class 4 and higher are generally considered to be economically developable with current technology. Class 3 wind resources are expected to become more economical as low-wind-speed turbines become increasingly available (BLM 2005).

The Nevada portion of the decision area is located within an area of low wind energy production. The California portion the decision area east of MP 144 also has low wind production potential, while the portion of the decision area west of MP 144 has medium-to-high wind energy production potential (BLM 2005). The Wilderness Areas in the vicinity of the corridors are exclusion areas for wind energy production.

In 2012, the BLM approved the Western Solar Plan, implementing RMP amendments for a solar energy development program in six southwestern states, including California and Nevada. The Solar PEIS ROD designated SEZs, areas that the BLM prioritizes for utility scale production of solar energy as well as variance areas, areas that are not

prioritized but not excluded from solar energy development. On December 8, 2022, the BLM published a NOI to prepare a PEIS and conduct scoping to evaluate the environmental effects of potential improvements and expansions to the BLM's utility-scale solar energy planning (BLM 2022a). No SEZs occur near the decision area. Solar variance areas occur within much of the Nevada portion of the decision area (Regional Review Recommendation), especially in the area of Laughlin. No solar variance areas occur within the California portion of the decision area as they are within an ACEC, which is a solar exclusion area (DOE and BLM 2014).

Trends and Forecasts

Renewable energy production on BLM public lands has increased in recent years. As of November 2021, permitted renewable energy projects on BLM-managed lands include 36 wind, 37 solar, and 48 geothermal projects with a total combined capacity of more than 12 gigawatts of power (BLM 2023b). Continued growth of responsible renewable energy has recently been supported by Executive Order 14008, the Energy Act of 2020, and Congressional direction to seek to permit at least 25 gigawatts of solar, wind and geothermal energy production on public lands no later than 2025 (BLM 2023c). In addition, laws enacted in most of the western states require energy companies and utilities to provide a portion of their energy from renewable energy sources. As a result, the BLM anticipates an increased interest in the use of public lands for renewable energy development.

The placement of renewable energy facilities depends on a number of factors are not always addressed in BLM land use plans such as economics, proximity to the electrical grid, project design, current technology, and potential resource impacts. However, BLM land use plans can be amended through the public process to accommodate such uses if necessary (BLM 2008a).

Under the Western Solar Plan, areas that are not included as part of the SEZs or variance areas (areas potentially available for utility-scale solar energy development located outside of SEZs) are to be considered as potential exclusion areas for utility-scale solar energy development. Exclusion areas are identified based on the potential for resource conflicts (e.g., Greater Sage-grouse habitat) or because lands are not well suited for utility-scale solar energy development (e.g., areas with slopes greater than 5%) (BLM 2012). The upcoming Solar PEIS may identify additional areas as suitable for utility-scale solar energy development, potentially increasing future solar energy development on BLM-administered land.

As the potential for wind and solar resources are somewhat limited within the decision area, coupled with the extent of specially designated areas within the area, it is unlikely that utility-scale renewable energy projects would be extensively developed within the decision area. However, transmission line development within the decision area could provide opportunities for electrical transmission from renewable energy generation between California and Nevada.

5.3.9.2 Rights-of-Way

Current Conditions and Context

Section 503 of FLPMA provides for the designation of energy corridors and encourages use of ROW collocation to minimize environmental impacts and the proliferation of separate ROWs.

An existing transmission line is located within the area of the Regional Review Recommendation, although no existing energy transport infrastructure is located within the designated corridor from MP 130 to MP 148 (Figure 5.3-4). California State Route 95 is the major road in the area, and crosses the decision area. The Regional Review Recommendation would allow connectivity on public land between Bullhead City and the California state line (BLM, Forest Service, and DOE 2022).

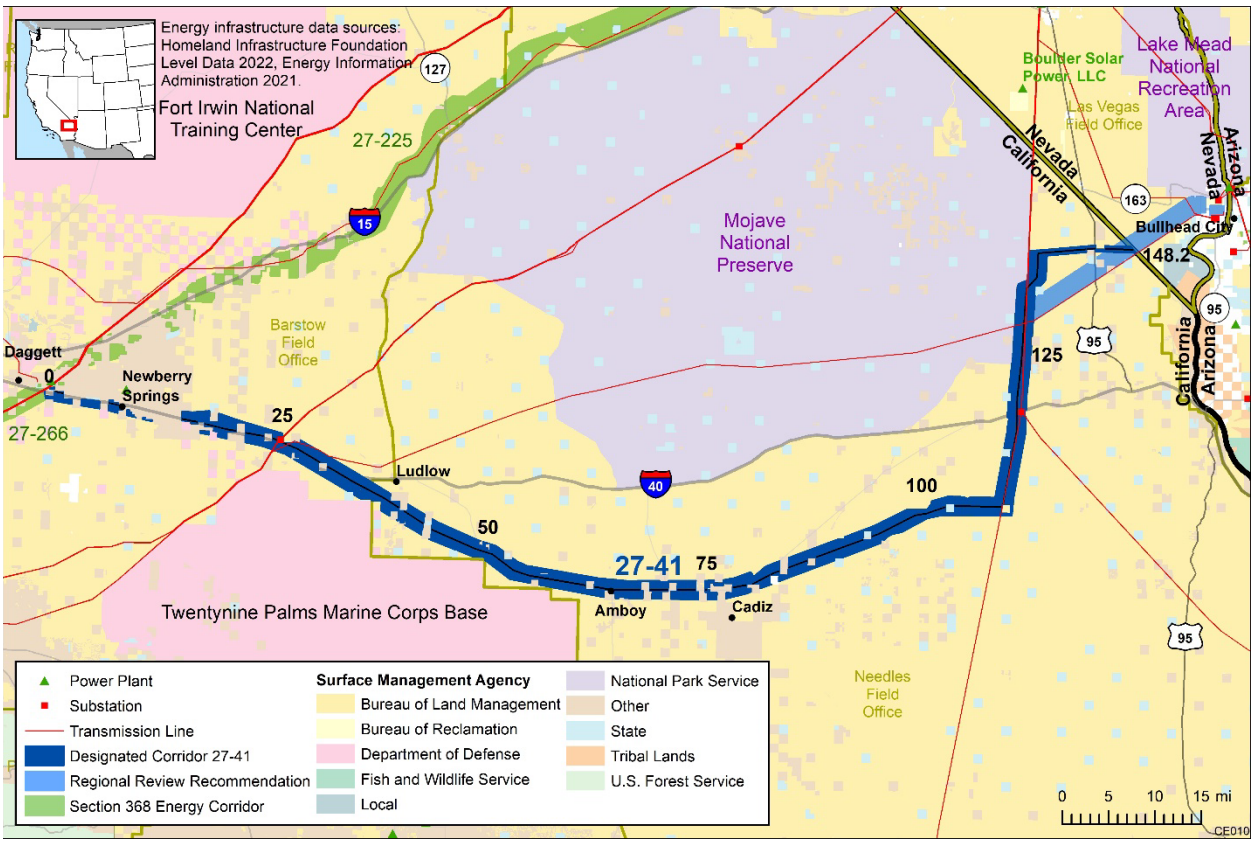

Figure 5.3-4. Transmission Lines in the Vicinity of the Decision Area

Trends and Forecasts

In general, requests for ROWs will continue to increase due to increasing population growth and urban development, which in turn, will increase demand for energy and the need for improved electric transmission grid reliability. Demand for ROWs may increase within areas that have potential for wind, solar, and geothermal energy. Existing or designated corridors could provide grid connectivity to accommodate for the anticipated growth in renewable energy production. The BLM will continue to process

and grant ROWs, consistent with national, state, and local plans. The BLM will continue to encourage colocation of ROWs to minimize environmental impacts and proliferation of separate ROWs.

As with past and present development, designated energy corridors or colocation with existing infrastructure will continue to be preferred for future development of linear utility infrastructure projects (particularly large, interstate energy transport projects). Colocation of utility infrastructure could continue to concentrate development, and associated surface disturbance, to certain areas, including areas adjacent to highways and major county roads, railroads, Section 368 energy corridors, and other existing or proposed energy corridors (BLM 2019b).

5.3.9.3 Military Training Flight Operations

Current Conditions and Context

The decision area (both the designated corridor and the Regional Review Recommendation) is located within an MTR-VR in California. The Nevada portion of the decision area is not located within any MTRs.

The decision area is also located within the US Naval Air System Risk of Adverse Impact on Military Operations and Readiness Area, an area identified by the US Navy as an area where low level flights can be impacted by wind development.

Trends and Forecasts

The trends and forecasts for military training flight operations are not under the purview of BLM. DoD would consult with BLM if any significant changes or increases in military training flights over BLM-administered lands were planned for the future.

5.3.10 Lands with Wilderness Characteristics

There are no managed lands with wilderness characteristics units within the decision area. Lands with wilderness characteristics are not expected to be affected during this planning effort and will not be discussed further.

5.3.11 Livestock Grazing and Wild Horse and Burro

General information for livestock grazing and wild horse and burros that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.11

5.3.11.1 Livestock Grazing

There are no livestock grazing allotments within the decision area. Livestock grazing is not expected to be affected during this planning effort and will not be considered further.

5.3.11.2 Wild Horse and Burro

There are no wild horse or burro HMAs within the decision area. Wild horse and burro management is not expected to be affected during this planning effort and will not be considered further.

5.3.12 Noise

General information for noise resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.12.

Current Conditions and Context

At a state level, both California and Nevada do not have regulatory standards limiting noise levels from sources associated with activities within the decision area (NPC 2022).

California State law requires a Noise Element which is the County's approach to controlling environmental noise and limiting community exposure to excessive noise levels. The California Governor's Office of Planning and Research's noise element guidelines include recommended noise level standards for evaluating land use noise compatibility (State of California 2017). The guidelines contain a table that describes the compatibility of various land uses with a range of environmental noise levels in terms of CNEL/L_{dn}. These guidelines require a rather broad interpretation. The County of San Bernardino General Plan (County General Plan) Noise Element identifies noise-sensitive land uses and noise sources, defines areas of noise impact, and establishes goals and policies to ensure that County residents are protected from excessive noise (URS Corporation 2007). The San Bernardino County's Development Code (Division 3, Countywide Development Standards; Chapter 83.01, General Performance Standards, Section 83.01.080, Noise)[18] sets interior and exterior noise standards from adjacent mobile noise sources, such as roadways or railways, for specific land uses. Noise standards for stationary sources are summarized in Table 5.3-7. The Code exempts noise from temporary construction, maintenance, repair, or demolition activities between 7 a.m. and 7 p.m., except Sundays and Federal holidays.

Table 5.3-7. San Bernardino County's Noise Standards for Stationary Noise Sources

Affected Land Uses (Receiving Noise)	7 a.m. – 10 p.m. L_{eq} (dBA)	10 p.m. – 7 a.m. L_{eq} (dBA)
Residential	55	45
Professional Services	55	55
Other Commercial	60	60
Industrial	70	70

Source: San Bernardino County's Development Code: Division 3, Countywide Development Standards; Chapter 83.01, General Performance Standards, Section 83.01.080, Noise. Available at https://codelibrary.amlegal.com/codes/sanbernardino/latest/sanberncty_ca/0-0-0-169172.

[18] Available at https://codelibrary.amlegal.com/codes/sanbernardino/latest/sanberncty_ca/0-0-0-169172.

Clark County, Nevada Code of Ordinances establish the maximum permissible sound levels by octave-band frequency and by type of zoning district (Title 30 – Unified Development, Code 30.68 – Site Environmental Standards, 30.68.020 – Noise, Table 30.68-1 for non-impulsive noise and Table 30.68.2 for impulsive noise).[19] The Code exempts construction and/or demolition activities when conducted during daytime hours.

Noise sources in the decision area include road traffic, railroad traffic, aircraft flyover by military and civilian aviation, agricultural activities, animal noise from nearby wildernesses, industrial activities, and infrequent community activities and events. In addition, crackling or hissing corona noise from transmission lines and humming noise from substation transformers are additional noise sources along the corridor. Except east end of the decision area near Laughlin and Bullhead City, the area around the designated corridor is mostly undeveloped, sparsely populated, and remote – the overall character of which is considered mostly pristine to rural.

Airports: The nearest airport is Laughlin-Bullhead International Airport in Mohave County, Arizona, about 1.2 mi (2 km) east of the east end of the decision area. The next closest airport is Sun Valley Airport in Mohave County, Arizona, which is located about 10 mi (16 km) south of the east end of the decision area. Several public, private, and military airports along with heliports in these counties are scattered around the decision area.

Roads and Railroads: In California, north-south running U.S. Route 95 pass through the designated corridor and Interstate 40 runs as close as 9 mi (14 km) near the west end of the designated corridor. Nevada State Route 163, which runs in the east-west direction, is located as close as 0.3 mi (0.5 km) from the designated corridor. Arizona State Route 95 is about 0.8 mi (1.3 km) east of the east end of the corridor. In addition, several county roads and local roads are located around the decision area. The Southwest Chief, an Amtrak route that connects Chicago with Los Angeles, runs to the south as close as 5 mi (8 km) from the west end of the designated corridor.

To date, no environmental noise survey has been conducted around the decision area. On the basis of the population density, the day-night average sound level (L_{dn} or DNL) is estimated to be 42 dBA for San Bernardino County in California and 47 dBA for Clark County in Nevada, which correspond to rural residential and quiet suburban residential areas, respectively (Cavanaugh and Tocci 1998; Miller 2002).

Trends and Forecasts

Primary noise sources include roads, airports, railroads, and stationary sources. In general, doubling the number of noise sources of the same intensity increases the sound level only by 3 dB, which is a barely noticeable difference. For example, if the number of passenger cars increases from 1,000 to 2,000 vehicles per hour on any road,

[19] Available at https://library.municode.com/nv/clark_county/codes/code_of_ordinances?nodeId=TIT30UNDECO_30.68SIENST_30.68.020NO.

the noise level increases only by 3 dB. This level of drastic change in activities is not anticipated in the remote and unpopulated area around the decision area. As a result, even with population and industrial growth in the region, noise level around the decision area is forecasted to increase slightly and unnoticeably in the near future unless new and noisy sources, to which the receivers have never been exposed before, come into the region.

5.3.13 Paleontology

General information for paleontological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.13.

Current Conditions and Context

Figure 5.3-5 depicts the PFYC Classes within the decision area. The PFYC Classes represent an estimate based on the available regional geologic data; they are not meant to replace project-specific evaluations of potential paleontological resources. The PFYC Classes within the decision area in California is mostly Class 2 (low), with small portions of Class 1 (very low). Where the PFYC classification is Class 2, the probability of impacting significant paleontological resources would be low and further assessment of paleontological resources is would likely not be unnecessary, unless paleontological resources are known or found to exist. The PFYC classification in Nevada is PFYC Class 1. Where the PFYC classification is Class 1, the probability of impacting significant paleontological resources would be very low and further assessment of paleontological resources is likely unnecessary.

In general, within the DRECP planning area, exposed rock outcrops in Southern California's Mojave and Colorado desert regions have yielded a fossil record extending back to the middle Proterozoic Eon, about 1.2 billion years ago. Within the Piute Valley and Sacramento Mountains ecoregion, fossil occurrences are very limited and are primarily associated with the Chemehuevi Formation, older Pleistocene alluvial fan deposits and correlative fluvial sediments where fossils consist of sparse remains of freshwater fish. However, fossils including freshwater mollusks and ostracods, birds, and land mammals (horses, antelopes, and mammoths) could occur in the region based on the discovery of Pleistocene vertebrate fossils found in strata assigned to the Chemehuevi Formation elsewhere along the Colorado River drainage (BLM 2015a).

Outstanding paleontological resources can be found throughout the Mojave Trails National Monument area, which intersects the decision area (Proclamation No. 9395). Areas determined to have paleontological resources could be prohibited from new development.

There was little paleontological research within the Las Vegas RMP planning area through the 1990s. However, potential areas for paleontological finds are the dry lake beds and shorelines of Pleistocene age Ivanpah and Roach Lakes, located southwest of Las Vegas, both north of the decision area. Trace fossilized imprints of birds, a complete skeleton of a Shasta ground sloth, invertebrate fossils, and fossilized trees

have been discovered within the Las Vegas planning area, but none are located within or in close proximity to the decision area (BLM 1998a).

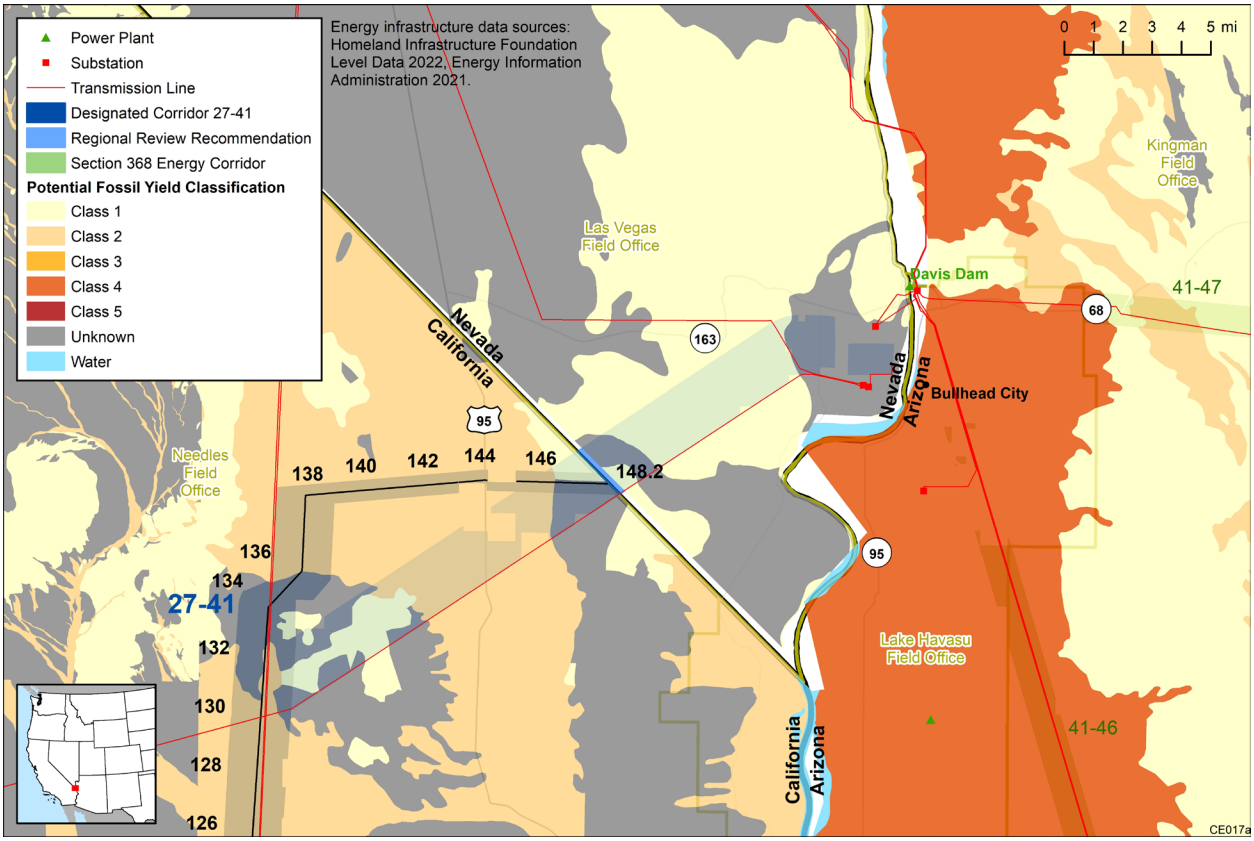

Figure 5.3-5. Potential Fossil Yield Classification in the Vicinity of the Decision Area

Trends and Forecasts

Within the DRECP planning area and the Las Vegas planning area, renewable energy development has increased in recent years, which could result in both the discovery of currently unknown paleontological resources as well as potential adverse impact on paleontological resources if renewable energy development results in the loss, damage, or destruction of any unique or significant paleontological resource (BLM 2015a).

5.3.14 Recreation

General information for recreation that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.14.

Current Conditions and Context

Wilderness Areas, the Mojave Trails National Monument, and ACECs on BLM-administered lands within the decision area provide numerous recreational opportunities throughout the area. Both the designated corridor and the Regional Review Recommendation identified in the regional review intersect the Natural Trails SRMA within the California portion of the decision area. The Nevada portion of the

decision area (within the Regional Review Recommendation) intersects the Laughlin SRMA. However, the portion of the SRMA just north and east of Laughlin are identified as available for disposal (BLM 2019a).

The National Trails SRMA is managed for its outstanding scenic and historic recreational opportunities. It encompasses the longest unspoiled section of Route 66 (a National Scenic Byway); the Atchison, Topeka and Santa Fe Railroad Line; the Mojave Trail; and a relatively unknown section of the Old Spanish National Historic Trail. The Needles Field Office has developed a system of designated trails entitled the Mojave Adventure Routes, a network of 4x4 vehicle backcountry touring routes for motorized recreation in areas not often seen by many people. This network is a shared-use trail system providing recreation opportunities for all persons, including those who OHV vehicles, hikers, bicyclists, and equestrians. It also provides a backcountry opportunity for non-traditional trail users such as persons with disabilities, senior citizens, and families with small children. Other historic significance of the SRMA includes railroad, mining, ranching, and military training sites of the past (BLM 2016a).

As with other SRMAs within the Las Vegas RMP (BLM 1998b; 2019a), the Laughlin SRMA is managed so as to ensure that a wide range of recreation opportunities are available for recreation users in concert with protecting the natural resources on public lands that attract users. The BLM provides a higher level of management emphasis through increased use monitoring, ranger patrols, increased BLM presence at permitted events, and increased coordination with local government and businesses for recreational uses within the SRMA (BLM 2019a). BLM works closely with the Nevada Division of Wildlife to protect habitat areas and riparian resources of concern within the SRMA. RC-8-b. Up to two OHV events, with a maximum of 200 participants are allowed in the SRMA yearly. It is closed to OHV use from May 1 to the Saturday following opening of upland game bird season (usually the second Saturday in October) (BLM 2019a).

The OHV use designation within the Nevada portion of the decision area is limited; while that within the California portion of the decision area is open (BLM 2016a).

Trends and Forecasts

A broad range of outdoor recreation opportunities will continue to be provided on the BLM-administered lands in the decision area, subject to the demand for such opportunities and the need to protect other resources. SRMAs will receive first priority for operation and maintenance funds (BLM 2001).

As population pressures increase, and with them the demand for quality outdoor recreation, the BLM field offices will retain and develop its ability to provide a wide variety of recreational opportunities. In part, this demand would be met by restoration and regular maintenance of existing recreation sites, creation of new recreational facilities, and more intensive management. However, the unspoiled character of natural landscapes must be preserved and vulnerable areas would be excluded from all development (recreational and otherwise) in order to preserve their pristine, natural condition (BLM 1998a, 1998b; 2007a; 2016a). Public lands within the planning area

contain ecologically diverse landscapes that include mountains, dry lake playas, Joshua tree forests, sand dunes, sandstone bluffs, and riparian areas. This diversity offers outstanding opportunities for casual and organized recreational activities. Demand for such opportunities is increasing due to the expansion of the Las Vegas metropolitan area (BLM 1998a).

The use of developed recreation sites is on an upward trend, following growth trends in adventure tourism and heritage tourism, and increased populations in communities. It is reasonable to expect that there will be a continuing need to construct recreation facilities in response to community and tourism industry growth. With visitation to BLM-administered public lands continuing to increase (and with present visitation already creating the need for additional facilities), facilities to provide for these visitors must keep pace, so as to protect the land and to provide for human sanitation. Current use levels continue to degrade resources, and additional facilities are needed to accommodate visitation and to stabilize resource values (BLM 2019b).

OHV use has become a substantial issue, because of the number of users who participate in this recreation opportunity, and because of concerns related to the potential resource degradation that can result from high levels of unmanaged use in sensitive areas. OHV use has become one of the fastest growing recreation activities. Visitors are drawn to these areas to experience the numerous roads and trails available for OHV use, the diverse backcountry opportunities, the spectacular scenery, and the challenging OHV opportunities the landscape and terrain provide. This trend is expected to continue (BLM 2019b). Increasing OHV traffic on public lands has caused the uncontrolled proliferation of user-created, undesignated trails arising from repeated cross-country travel. Unauthorized motorized use causes natural resource damage (e.g., to soils and habitat) and increased public safety concerns (WAPA and BLM 2015). The development of field office wide–OHV plans will help to control the social and environmental impacts related to this activity (BLM 2007b).

5.3.15 Socioeconomics

Current Conditions and Context

Socioeconomic data are presented for an ROI around the decision area, composed of the counties in which the corridor would be located. The ROI for the decision area includes San Bernardino County, California and Clark County, Nevada.

Population

The population of the nearest city (Bullhead City) is about 40,000 and this area is about 100 mi south of Las Vegas Nevada, which has a population of 645,000.

In 2020, the population of the two-county ROI was 4,447,115 people (Table 5.3-8). During the period 2010 to 2020, population increased in the ROI at low annual average rates in both counties, increasing at an average annual rate of 0.01% in the ROI as a whole. The population in the ROI is projected to be 5,338,770 by 2040.

Table 5.3-8. ROI Population

County	Population			Average Annual Growth Rate, 2010-2020 (%)
	2010	2020	2040	
San Bernadino, California	2,035,210	2,181,654	2,536,592	0.01
Clark, Nevada	1,951,269	2,265,461	2,802,178	0.02
ROI Total	3,986,479	4,447,115	5,338,770	0.01

Sources: Nevada Department of Taxation 2021; State of California 2022; U.S. Census Bureau 2022c, 2022d.

Employment and Income

Table 5.3-9 presents the average civilian labor force statistics for the ROI in 2021. More than 1,924,100 people were employed in the ROI as a whole, and 164,759 were unemployed. Unemployment rates were 7.4% in San Bernadino County and 8.3% in Clark County (Table 5.3-9). Wage and salary employment (not including self-employed persons) by industry for 2020 is provided in Table 5.3-10. More than 1,060,750 people in the ROI were employed in services (53.8% of the total), with 290,930 (14.8%) persons employed in wholesale and retail.

Table 5.3-9. ROI Civilian Labor Force Statistics, 2021

County	Employed, 2021	Unemployed, 2021	Unemployment Rate, 2021
San Bernadino, California	915,089	73,515	7.4
Clark, Nevada	1,009,020	91,244	8.3
Total	1,924,109	164,759	7.9

Sources: U.S. Department of Labor 2022.

Table 5.3-10. ROI Wage and Salary Employment by Industry, 2020

Sector	County		ROI Total	Share of ROI Total (%)
	San Bernadino, California	Clark, Nevada		
Agriculture, forestry, fishing and hunting	5,217	1,497	6,714	0.3
Mining, quarrying, and oil and gas extraction	1,101	1,543	2,644	0.1
Utilities	8,218	6,128	14,346	0.7
Construction	70,815	72,716	143,531	7.3
Manufacturing	75,144	38,489	113,633	5.8
Wholesale and retail trade	150,415	140,515	290,930	14.8
Transportation and warehousing	88,686	59,536	148,222	7.5
Finance, insurance, and real estate services (FIRE)	42,481	60,781	103,262	5.2
Services, not incl. FIRE	433,786	626,968	1,060,754	53.8
Public Administration	51,014	36,178	87,192	4.4
Total	926,877	1,044,351	1,971,228	

Table 5.3-11 details income in the ROI for 2020. Total personal income stood at $216.8 billion, while median annual income was $61,048 in Clark County and $65,761 in San Bernadino County.

Table 5.3-11. ROI Personal Income, 2020

County	Total Personal Income ($ billions)	Median Income ($)
San Bernadino, California	98.1	65,761
Clark, Nevada	118.7	61,048
ROI Total	216.8	

Source: U.S. Census Bureau 2022f; U.S. Department of Commerce 2022.

Housing

Table 5.3-12 details the housing characteristics in the ROI in 2020. There were 41,938 vacant rental housing units in the ROI as a whole, with rental vacancy rates of 1.4% in San Bernadino County and 3.5% in Clark County.

Table 5.3-12. ROI Housing Characteristics, 2020

County	Housing Units		Rental Vacancy Rate (%)
	Total	Vacant Rental	
San Bernadino, California	721,376	9,805	1.4
Clark, Nevada	912,465	32,133	3.5
ROI Total	1,633,841	41,938	2.6

Source: U.S. Census Bureau 2022g, 2022h.

Trends and Forecasts

In 2020, the population of the two-county ROI was 4,447,115, fairly evenly distributed between San Bernadino County and Clark County (Table 5.3-8). Population is projected to grow slightly in both counties, at an annual rate of 0.01%, between 2020 and 2040. As noted above, the population in the ROI is projected to be 5,338,770 by 2040.

Given the lack of appropriate geographic-specific forecasts for changes in employment opportunities, business costs, cost of living, and consumer preferences, the effects of which may be more easily predicted at the regional or national level, forecasts of their effects on employment, employment by industry, unemployment, income, and housing at the county-level are not available. Preparing forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local economic activity that are difficult to forecast.

5.3.16 Special Designations

General information for special designations that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.16.

Special designations are addressed in this section only if they are intersected by or located within close proximity to the decision area (Figure 5.3-6). These include:

- Mojave Wilderness Area;
- Bridge Canyon and Spirit Mountain Wilderness Areas;
- Dead Mountains Wilderness Area;
- California Historic Route 66 Needles to Barstow Scenic Byway
- Mojave Trails National Monument; and
- Proposed Avi Kwa Ame National Monument
- Piute Fenner and Piute-Eldorado ACECs.

5.3.16.1 Wilderness Areas

Current Conditions and Context

Mojave Wilderness Area

A small portion of the designated corridor in California (Needles Field Office) is adjacent to the 695,200-ac NPS-managed Mojave Wilderness Area at MP 138. The Regional Review Recommendation would not be located adjacent to or near the Mojave Wilderness Area. The Mojave Wilderness contains desert lands, mountain ranges (e.g., Granite Mountains), sand dunes (e.g., Kelso Dunes), unique volcanic features, and a diverse assemblage of plant and animal species (including special status species). The area was the traditional territory of the Chemehuevi people. Copper, iron, gold, and silver mines were established throughout the area. Recreational use of the area include a variety of hiking trails (PeakVisor 2023).

Dead Mountains Wilderness Area

The Dead Mountains Wilderness is located within the Needles Field Office in California. The change recommended in the regional review would locate the corridor adjacent to the 47,158-ac Dead Mountains Wilderness for about 2 mi just west of the California-Nevada border. The area encompasses the jagged, steep, rust-colored Dead Mountains and the alluvial fans sweeping to the west towards Piute Valley and east towards the Colorado River. Mount Manchester, centered in the northern half of the Wilderness Area, has an elevation of 3,598 ft. Picture Canyon (a spring location and major wash) transects the wilderness in the north and Piute Wash borders the wilderness on the west. Vegetation is predominantly creosote bush desert scrub and desert wash scrub. The northern most occurrence of smoke trees in the CDCA is found within the area's washes. Wildlife is typical for the Mojave Desert. The eastern and northeastern portions

of the wilderness provide critical habitat for the threatened desert tortoise (Wilderness Connect 2023).

The designated corridor is near the Dead Mountains Wilderness where it terminates at MP 148. The 47,158-ac Dead Mountains Wilderness was designated in 1994.

Bridge Canyon and Spirit Mountain Wilderness Areas

The 7,761-ac Bridge Canyon Wilderness, established in 2002, is managed by the NPS. All of the Wilderness is in the state of Nevada. The 33,518-ac Spirit Mountain Wilderness, also established in 2002, is managed by the BLM and the NPS. The wilderness areas contains challenging recreational activities and extraordinary opportunities for solitude. Motorized equipment and equipment used for mechanical transport are generally prohibited on all federal lands designated as wilderness (US-Parks.com Inc. 2023a, 2023b). The Bridge Canyon Wilderness contains sculpted granite rock formations. The Wilderness Area contains a cross-section of Sonoran, Mojave, and Great Basin plant communities; including one of the northernmost populations of smoke trees and special status species. It lies directly south of Avi Kwa Ame (or Spirit) Mountain, the spiritual birth of Fort Mojave and other native tribes of the region. Grapevine Canyon, at the southeast edge of the Wilderness Area contains one of the more significant petroglyph sites in Nevada (Friends of Nevada Wilderness 2023).

The Spirit Mountain Wilderness contains granite boulders and steep canyons in the Newberry Mountains along the western shore of Lake Mohave. Sacred to tribes of the lower Colorado River as a spiritual birthplace, the Spirit Mountain Wilderness is home to a number of archaeological resources. The Spirit Mountain Wilderness provides a unique and beautiful backdrop for hiking, horseback riding, wildlife viewing, and camping. Hunting is allowed with proper licensing; however, target practice is prohibited. Motorized vehicles, mechanized equipment, and mechanical transport are not permitted in designated wilderness (BLM 2022b).

The Bridge Canyon and Spirit Mountain Wilderness Areas are north of the Regional Review Recommendation in the Laughlin area of Nevada within the Las Vegas Field Office. At its closest point the Spirit Mountain Wilderness is located more than 0.5 mi from the Regional Review Recommendation (re-route along existing 500 kV transmission line beginning at MP 130 and extend into Nevada).

Trends and Forecasts

There will be an ongoing long-term protection and preservation of the Wilderness Areas under the principle of non-degradation. The naturalness and untrammeled condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational, scenic, or historic value will be managed so that they remain unimpaired (BLM 2007c, 2010).

5.3.16.2 National Scenic Byway

On February 24, 2021 the FHWA's National Scenic Byways Program designated the 178-mi section California Historic Route 66 Needles to Barstow Scenic Byway. The byway follows segments of the National Old Trails Highway and the Santa Fe Trail and connects with Arizona Route 66 All American Road at the Colorado River. The byway route heads west through undeveloped land and desert towns of Needles, Goffs, Amboy, Ludlow, Newberry Springs, Daggett, and ends in Barstow. The byway route encompasses historic sites including two Harvey Houses, a 1914 schoolhouse, museums, mining areas, three WWII Desert Training Center camps and bisects the Mojave Trails National Monument (BLM n.d. a). A bill was introduced in July 2023 to amend the National Trails System Act and designate Route 66 as a National Historic Trail (U.S. House of Representatives 2023). The National Scenic Byway intersects the designated corridor south of the decision area.

5.3.16.3 National Monument

Current Conditions and Context

Mojave Trails National Monument

On February 12, 2016, President Obama signed a proclamation creating the Mojave Trails National Monument under the management of the BLM. The monument is comprised of a stunning mosaic of rugged mountain ranges, ancient lava flows, and spectacular sand dunes. The monument protects irreplaceable historic resources including ancient Native American trading routes, World War II-era training camps, and the longest remaining undeveloped stretch of Route 66. Additionally, the area has been a focus of study and research for decades, including geological research, paleontological research, and ecological studies on the effects of climate change and land management practices on ecological communities and wildlife (Proclamation No. 9395). According to the proclamation:

"Nothing in this proclamation shall be construed to preclude the renewal or assignment of, or interfere with the operation or maintenance of, or with the replacement, modification, or upgrade within or adjacent to an existing authorization boundary of, existing flood control, utility, pipeline, or telecommunications facilities that are located within the monument in a manner consistent with the care and management of the objects identified above. Existing flood control, utility, pipeline, or telecommunications facilities located within the monument may be expanded, and new facilities may be constructed within the monument, but only to the extent consistent with the care and management of the objects identified above" (Proclamation No. 9395).

The California portion of the decision area is within the 1.6-million-ac Mojave Trails National Monument. No existing utility infrastructure is located within the designated corridor, between MP 130 and MP 148, but the Regional Review Recommendation follows an existing 500-kV transmission line.

The DRECP LUPA includes conservation management actions for the BLM-administered lands within the Mojave Trails National Monument (BLM 2016a).

Avi Kwa Ame National Monument

On March 21 2023, the Avi Kwa Ame (Spirit Mountain) National Monument was designated by Proclamation 10533 (Proclamation No. 10533). The National Monument spans more than 500,000 ac on lands managed by the BLM, Bureau of Reclamation, and National Park Service. The designation protects and preserves the rich ecological, historic, cultural, and scenic values of this unique desert landscape. The monument designation protects sacred Nevada landscape and its historically and scientifically important features, while conserving our public lands and growing America's outdoor recreation economy. Avi Kwa Ame (Spirit Mountain) is designated as a Traditional Cultural Property on the National Register of Historic Places in recognition of its religious and cultural importance. The National Monument also includes the world's largest Joshua tree forests, and provides continuous habitat or migration corridors for species such as the desert bighorn sheep, desert tortoise, and Gila monster (Proclamation No. 10533).

The proclamation states:

"Nothing in this proclamation shall be construed to preclude the renewal or assignment of, or interfere with the operation, maintenance, replacement, modification, upgrade, or access to, existing flood control, utility, pipeline, and telecommunications facilities; roads or highway corridors; seismic monitoring facilities; or other water infrastructure, including wildlife water developments or water district facilities, within or adjacent to an existing authorization boundary. Existing flood control, utility, pipeline, telecommunications, and seismic monitoring facilities, and other water infrastructure, including wildlife water developments or water district facilities, may be expanded, and new facilities of such kind may be constructed, to the extent consistent with the proper care and management of the objects identified above and subject to the Secretary's authorities and other applicable law" (Proclamation No. 10533).

The Regional Review Recommendation intersects the National Monument, bisecting the National Monument at its southern end along an existing 500-kV transmission line (Figure 5.3-6). The existing designated corridor would not intersect the National Monument because the designated corridor ends at the Nevada state line.

Trends and Forecasts

There will be an ongoing long-term protection and preservation of the National Monuments under the principle of non-degradation. The naturalness and untrammeled condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational, scenic, or historic value will be managed so that they remain unimpaired (BLM 2015b; 2017).

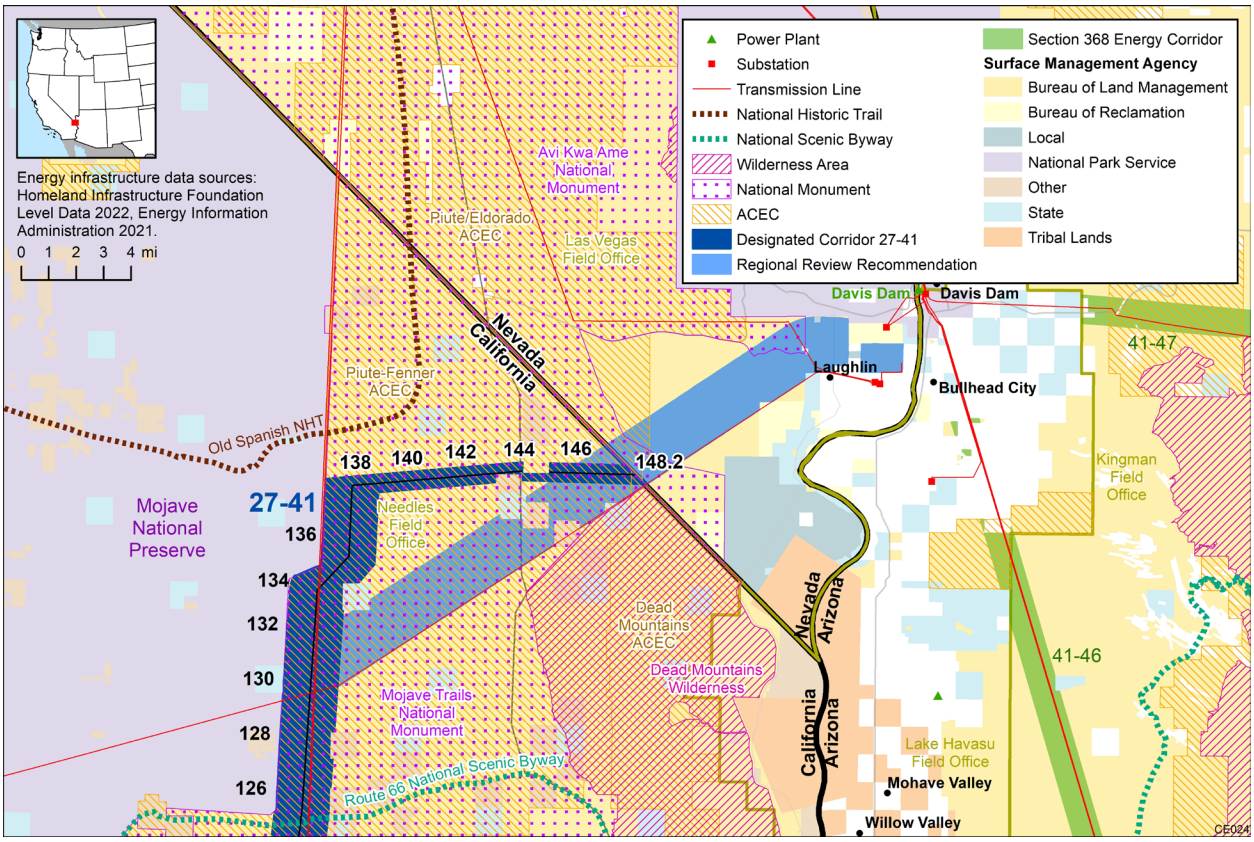

Figure 5.3-6. Special Designations in the Vicinity of the Decision Area

5.3.16.4 ACEC

Current Conditions and Context

In California, the DRECP established conservation and management actions (CMAs) for resource protection especially within ACECs and contain CMAs that specifically address actions within utility corridors (BLM 2016a).

Piute Fenner ACEC

The decision area intersects the Piute Fenner ACEC in California. Because of the need to manage and protect outstanding natural and cultural values, the Piute-Fenner was designated an ACEC in the CDCA Plan (BLM 1999). The ACEC is contiguous with lands managed for viable Desert Tortoise populations to the west in Mojave National Preserve and to the east on public lands managed by the Las Vegas BLM Field Office. This area is a critical portion of the Piute Valley Tortoise Management area which provides examples of the best Desert Tortoise habitat remaining in the southern portion of the East Mojave Desert. The ACEC is managed for outstanding cultural resources and in accordance with the Desert Tortoise Recovery Plan. Over 145,000 ac (BLM 2016a).

Piute-Eldorado ACEC

In Nevada, a portion of the Regional Review Recommendation is located within the Piute-Eldorado ACEC. The ACEC consists of approximately 329,440 ac. The Piute-

Eldorado ACEC was designated to preserve critical habitat for the Mojave desert tortoise. In addition, the ACEC designation is intended to protect functional corridors of habitat between blocks of tortoise habitat, in order to enhance long-term persistence of tortoise populations. The ACEC designation also benefits cultural resources by restricting ground disturbing activities. The primary recreational activities within the ACEC consist of motorized recreation (motorcycle/dirt bike, ATV, and other 2-track vehicles). Other recreational activities include hiking, camping, nature study, rock collecting, sight-seeing, hunting, horseback riding, and mountain biking. Human uses affecting habitat quality include unauthorized cross country OHV use, highways, mining, utility corridors, and historic grazing activities. Invasive weeds and grasses are becoming an increasing concern (BLM 2022b). The ACEC is a ROW avoidance area except within designated corridors (BLM 1998a).

Dead Mountains ACEC

A very small portion of the decision area is within the Dead Mountains ACEC (approximately MP 148 of the designated corridor). Some areas within the ACEC provide a combination of meteorological, geological, hydrological, topographical features that have been identified as important climate refugia (slow/minimized climate changes) for wildlife species. Cultural resources within the ACEC include petroglyphs and trails. The ACEC provides protection of Native American values. The area has been identified by both the Mojave and Chemehuevi tribes to be of religious and cultural significance. It contains areas of both sacred and ritual importance that are associated with traditional cosmogony, delineate religious events, embody religious figures, and define burial places (BLM 2016a).

Trends and Forecasts

Public lands in ACECs will be retained in federal ownership; while non-federal lands within or adjacent to an ACEC may be acquired for the purposes of conservation of relevance and importance values, through purchase, exchange, or donation. Acquired lands will be incorporated into the ACEC and managed in accordance with the prescriptions applied to the remainder of the ACEC (BLM 2016b).

Desired future conditions common for all ACECs are to provide protection for relevant and important resource values within designated ACECs, including special status species, wildlife, scenic, riparian, and significant cultural resources. Vegetation diversity within ACECs will be maintained in accordance with ecological site description guidelines. OHV access within designated ACECs will be managed in a manner which does not damage important cultural resources and wildlife habitat. The viewsheds and landscape character of ACECs is maintained to the extent practicable through the BLM's VRM system (BLM 2010).

5.3.17 Tribal Interests

General information for tribal interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.17.

Current Conditions and Context

The BLM has identified 42 Federally recognized Tribes with cultural affiliation and an interest in the decision area for Corridor 27-41. There are five Federal Indian Reservations and land held in Trust in San Bernardino County, California and Clark County, Nevada near the decision area: Chemehuevi Reservation, Fort Mojave Reservation, San Manual Indian Reservation, Moapa River Indian Reservation, and Las Vegas Indian Colony (BLM 2022c; HUD 2022; BIA 2022; Heizer 1978; Ortiz 1983; Azevedo 1986) (Table 5.3-13). Due to a history of removal and displacement since the early 1800s, it is difficult to identify all Tribes with affiliation to the project area. Any additional Tribes not mentioned in this document should be identified through ongoing formal outreach and consultation.

Table 5.3-13. Federal Indian Reservations in the Decision Area

Reservation, Tribe	Federally Recognized Tribes	County, State
Chemehuevi Reservation	Chemehuevi Indian Tribe of the Chemehuevi Reservation	San Bernardino County, California
Fort Mojave Reservation	Fort Mojave Indian Tribe	San Bernardino County, California, Clark County, Nevada, Mojave County, Arizona
San Manual Indian Reservation	Yuhaaviatam of San Manual Nation	San Bernardino County, California
Moapa River Indian Reservation	Moapa Band of Paiute Indians	Clark County, Nevada
Las Vegas Indian Colony	Las Vegas Tribe of Paiute Indians	Clark County, Nevada

The following Tribes have been identified as having cultural affiliation with the lands near the decision area:

- Agua Caliente Band of Cahuilla Indians
- Augustine Band of Cahuilla Indians
- Big Pine Paiute Tribe
- Bishop Paiute Tribe of the Owens Valley
- Cabazon Band of Mission Indians
- Cahto Tribe of the Laytonville Rancheria
- Cahuilla Band of Indians
- Campo Band of Diegueno Mission Indians
- Capitan Grande Band of Diegueno Mission Indians
- Chemehuevi Indian Tribe of the Chemehuevi Reservation
- Cheyenne River Sioux Tribe
- Ewiiaapaayp Band of Kumeyaay Indians
- Fort Independence Indian Community of Paiute Indians
- Fort Mojave Indian Tribe
- Inaja Band of Diegueno Mission Indians
- Jamul Indian Village
- La Posta Band of Diegueno Mission Indians
- Las Vegas Tribe of the Paiute Indians

- Lone Pine Paiute-Shoshone Tribe
- Manzanita Band of Diegueno Mission Indians
- Mesa Grande Band of Diegueno Mission Indians
- Moapa Band of Paiute Indians
- Morongo Band of Mission Indians
- Northfork Rancheria of Mono Indians
- Pala Band of Luiseno Mission Indians
- Pauma Band of Luiseno Mission Indians of the Pauma & Yuima Reservation Pahrump Paiute Tribe
- Pechanga Band of Indians
- Picayune Rancheria of Chuckchansi Indians
- Rincon Band of Luiseno Mission Indians
- San Pasqual Band of Diegueno Indians
- Santa Rosa Band of Cahuilla Indians
- Santa Ynez Band of Chumash Indians
- Soboba Band of Luiseno Indians
- Sycuan Band of Kumeyaay Nation
- Table Mountain Rancheria
- Tejon Indian Tribe
- Timbisha Shoshone Tribe
- Torres-Martinez Desert Cahuilla Indians
- Tule River Indian Tribe
- Twenty-Nine Palms Band of Mission Indians
- Yuhaaviatam of San Manual Nation
- Utu Gwaitu Paiute Tribe

The NECO planning area covers the eastern portion of the designated corridor and identifies a wide variety of archaeological site types and areas that may be of significant cultural importance to Tribes affiliated with the decision area (see Section 5.3.3).

The CDCA LUPA identifies the Fenner Valley as having religious and secular importance to several Tribes; the area is just south of MP 81. It contains permanent and temporary habitation sites, rock shelters, lithic manufactures sites, trails, rock alignments and rock art sites. Just east of the valley is the Fort Paiute Fenner Valley area in the Mojave National Preserve which contains associated petroglyphs (BLM 2002b). The Section 368 Energy Corridor Review Final Report identifies this area as having potential significance based on stakeholder and Tribal input (BLM, Forest Service, and DOE 2022). The recently designated 500,000 ac Avi Kwa Ame (Spirit Mountain) National Monument has significance to Tribes and was designated to protect and preserve ecological, historic, cultural, and scenic values. The Avi Kwa Ame National Monument is designated as a Traditional Cultural Property on the National Register of Historic Places in recognition of its religious and cultural importance.

Wild free roaming burros roam onto federal land in the Havasu National Wildlife Refuge – managed by the Havasu and Needles BLM field offices – and on Tribal lands

belonging to the Chemehuevi and Colorado River Indian Tribes (BLM 2002a, 2000b). These areas are near the designated Corridor 27-41 and may be of significance to Tribes.

Tribes previously have been interested in working with BLM to collect flat rock — volcanic decorative rock occurring in relatively thin (often less than an inch) layers in northeast California — that has commonly been used by some southeastern Tribes in sacred ceremonies and practices (BLM 2007b). There previously also have been tribal interests in preservation of pinyon, juniper, and sage-grouse habitats that are present within the decision area (see Section 5.3.4.4) (BLM 2007b; BLM 2015c; BLM 2020). Pinyon pine nuts are a traditional food source for several Native American groups and is considered an important resource in traditional ceremonies and festivals (BLM 2008b).

Viewsheds obstructed by any future proposed project within a Section 368 energy corridor may impact areas of traditional cultural importance (BLM, Forest Service, and DOE 2022). Native American Tribes may desire access to other BLM administered lands to practice traditional cultural ceremonies. Of visual significance near the designated corridor may be the Old Spanish NHT; according to the Section 368 Energy Corridor Review Final Report (BLM, Forest Service, and DOE 2022). The Ute Trail was first established by the Ute Tribes as a prominent trade route and was also used by other Tribes for trade between New Mexico and California, it was later used by Spanish explorers and became known as the Old Spanish Trail (Southern Ute Indian Tribe 2022; NPS 2022).

Beale's Wagon Road Historic Trail stretches from Fort Smith, Arkansas to the Colorado River and was used by European ranchers and immigrants in the late 1800s. The road includes scenery of high mountain peaks and broad vistas. A portion of the trail encompasses the Mojave Trail – a prehistoric trail used by the Mojave People to access lands and resources between the black mountains and Colorado River (BLM 2006; Forest Service 2022). More information on potential areas of viewshed concerns can be found in Section 5.3.18.

Not all Tribal cultural practices involving natural and cultural resources of religious and cultural importance is known. Tribes have a deep understanding and history with the land that has been passed down through generations that cannot be properly identified by archaeological fieldwork alone. Therefore, formal government-to-government consultation concerning future projects and resource management remains the best means for identifying and addressing Tribal land use concerns and interests.

Trends and Forecasts

Tribes have previously expressed interest in implementing a new IOP for Tribal concerns that includes a component to conduct ethnographic studies that would increase understanding of significant resources of concern to Tribes. The existing IOP from the 2009 WWEC PEIS ROD focused only on identifying sacred sites, sacred landscapes, gathering grounds, and burial areas, along with avoiding, minimizing, or mitigating impacts on these places through project proponents, consultation with Tribes, and relevant parties (BLM, Forest Service, and DOE 2022).

5.3.18 Visual Resources

General information for visual interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.18.

Current Conditions and Context

The decision area is in a scenic region between California and Nevada. A significant portion of BLM-administered land along the corridor is classified as VRM Class II (Figure 5.3-7). Table 5.3-14 lists the key features and Figure 5.4-7 depicts VRM classes within the vicinity of the decision area.

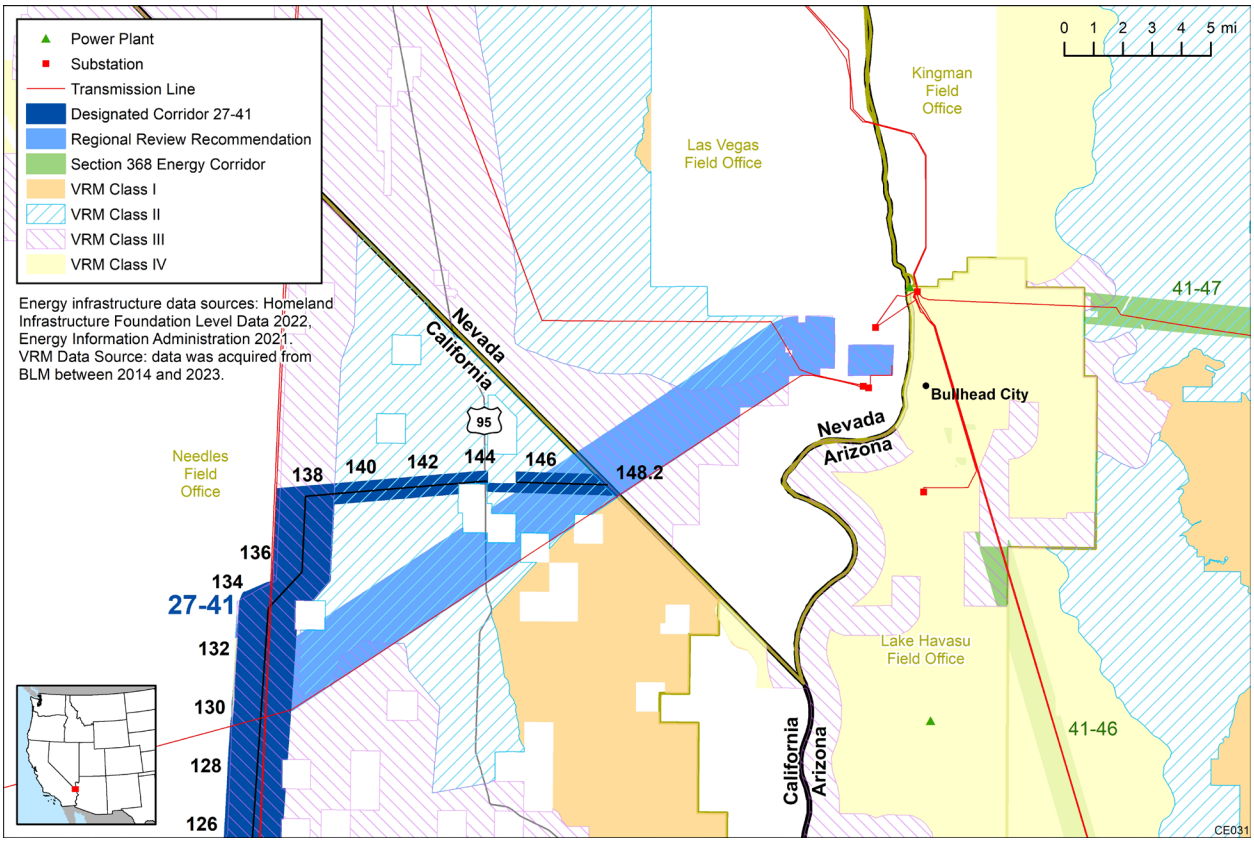

Figure 5.3-7. VRM Classes in the Vicinity of the Decision Area

Table 5.3-14. Key Features in the Vicinity of the Decision Area

Key Feature	State	Agency	Physical Attributes	Viewer Groups and experiences	BLM VRM Class Designation
California Desert Conservation Area	California	BLM	Nationally significant desert landscape made of harsh desert environment of fine textured sand dunes, steep rocky canyons, flat cracked dry lakes, barren mountain ranges.	Recreation and tourism activities focus on extensive opportunities to experience desert landscapes. Hiking, wildlife viewing, 4-wheel drive trails, and hunting are popular activities.	VRM Class I, II and III
Mojave Trails National Monument	California	BLM	Geologically diverse with rugged mountain ranges, irregular angular rocky lava flows, and fine textured rolling sand dunes. Water uplifts from springs providing pockets of vegetation amongst the sparse landscape.	Recreation and tourism are popular. Within the Mojave Trails National Monument is Amboy Crater, a dormant cinder cone volcano, which was a popular sight for travelers in the heyday of U.S. Route 66, a National Scenic Byway.	VRM Class I, II and III
Old Spanish NHT	California	BLM	The Old Spanish NHT transects diverse landscape settings. Key features include mountain ranges, vast deserts, pine mountain forests and sinuous river valleys.	Old Spanish NHT is popular for recreation and tourism. Visitors drive along scenic section of highways the parallel sections of the trail, visit historic outposts and hike. Interpretive sections of the trail are delineated with trail markings and managed for visitation and use.	VRM Class II and III
Boulder/Balancing Rock Camp	California	BLM	Vast rocky, sandy desert with sparse shrubby vegetation. The landform is flat to rolling with prominent landforms along the margins of the low valleys.	Primitive camping and historic photo point of the Mojave Trail. Camping, hiking, 4 wheel drive trails, rock hounding, and viewing of scenery.	VRM Class II
Dead Mountains Wilderness Area	California	BLM	The landform encompasses the jagged, steep, rust-colored Dead Mountains and the alluvial fans sweeping to the west towards Piute Valley and east towards the Colorado River. Scrub shrub vegetation is found along the margins of the desert washes.	Recreation is comprised of dispersed camping, 4–wheel drive recreation, rock hounding and traditional uses such as hunting and trapping. OHV intrusions are common along the eastern and northern boundaries.	VRM Class I

Key Feature	State	Agency	Physical Attributes	Viewer Groups and experiences	BLM VRM Class Designation
Nevada Recreation Management Area	Nevada	Nevada Field Office	The landforms encompasses the jagged, steep, rust-colored Dead Mountains and the alluvial fans sweeping to the west towards Piute Valley and east towards the Colorado River. Rough scrub shrub vegetation is found along the margins of the desert washes.	Recreation is comprised of dispersed camping, 4–wheel drive recreation, rock hounding and traditional uses such as hunting and trapping.	

The decision area is adjacent to the Mojave National Preserve. The Mojave National Preserve is 1.6 million ac and one of the nation's largest preserves. It features canyons and mountains, mesas, rose-colored sand dunes, desert riparian zones, and volcanic cinder cones. The Joshua tree forests, carpets of wildflowers, and abandoned mines, homesteads, and rock-walled military outposts are also important to visitors (NPS n.d.). The corridor follows the Preserve's southern edge at MP 125. At MP 130, the Regional Review Recommendation (re-route along existing 500 kV transmission line beginning at MP 130 and extend into Nevada), veers away from the designated corridor to the east where it follows an existing transmission line.

The decision area is located in the Mojave Trails National Monument, which is a mosaic of rugged mountain ranges, ancient lava flows, and striking sand dunes. The monument contains the longest remaining undeveloped stretch of Route 66 and some of the best-preserved sites from the World War II-era Desert Training Center. Traditional uses such as hunting and off-highway vehicle recreation are important features of this area (BLM n.d. b). The DRECP LUPA includes conservation management actions for the BLM-administered lands within the Mojave Trails National Monument (BLM 2016b).

The Regional Review Recommendation begins southwest of Homer Mountain and runs eastward through its southern foothills. Homer Mountain stands at an elevation of 3,739 ft with steep slopes and a local relief of 300 meters or more (NPS n.d.; Mindat.org n.d.). On the eastern side of the mountain, the landscape opens into a basin where the corridor crosses the Piute Wash and Interstate 95 near the Dead Mountains Wilderness Area. This recommended alignment avoids an intersection with the Old Spanish National Historic trail which passes through the basin approximately 4 mi north along the Piute Wash.

The Regional Review Recommendation does not intersect the Wilderness Area but runs approximately 215 ft to the north of its border for 2.25 mi. The Dead Mountains Wilderness Area encompasses the jagged, steep, rust-colored Dead Mountains and the alluvial fans sweeping to the west towards Piute Valley and east towards the Colorado River. Centered in the northern half of the wilderness is its highest point, Mount

Manchester, at an elevation of 3,598 ft. Vegetation is predominantly desert scrub (BLM n.d. c).

Near the California border and approximately 1.35 mi to north of the decision area is Balancing Rock, which includes a primitive camping area on a rocky outcrop and historic photo point at an elevation of 2,559 ft (BLM n.d. d; Campendium n.d.). Across the border into Nevada, the corridor approaches the Colorado River north of Laughlin, Nevada and descends to an elevation of around 700 ft. To the north is Lake Mead National Recreation Area.

The decision area is in the California Desert Conservation Area, which includes 90 mountain ranges and 65 wilderness areas (Center for Biological Diversity n.d.; Mojave Desert Land Trust 2017). Its landforms range from dunes, to canyons, rocky peaks, sloping bajadas, dry lakes, salt scrub lowlands, and rich riparian corridors (Conservation Lands Foundation n.d.). This diverse landscape provides iconic broad, expansive views that are often an important reason why people visit the region's parks and trails. Hunting, hiking, and off-highway vehicle recreation attract tourist and recreationist to the area (BLM n.d. b). While the decision area avoids intersection with the surrounding wilderness areas and adjacent Mojave National Preserve, the scenic views from these areas extend beyond their boundaries (BLM 2019c). Tourists and recreationists to these areas are sensitive to visual changes to the surrounding natural landscape.

Trends and Forecasts

The decision area is within the California Desert National Conservation Area. The landscape is vast and diverse, with sand dunes, canyons, mountains, and dry lakes. It is one of the largest intact landscapes in North America and is an attractive tourist destination for hiking, rock climbing and stargazing (Wilderness Society 2022). The Covid-19 Pandemic has resulted in increased attendance on public lands. The increase in visitors to some of the national parks in 2021 broke the previous visitor records of 2020. The record turnout has particularly impacted parks out west (The Guardian 2022).

5.3.18.1 Night Sky

Night sky can be impacted by required utility lighting. The FAA Advisory Circular 70/7460-1K (2007) requires that all airspace obstructions higher than 200 ft or close to an airfield have appropriate lighting. Some transmission towers will require obstruction warning lighting, and lights may be placed at higher elevations if blocked by trees or terrain. For very tall towers, this includes daytime strobe lighting as well as nighttime lighting (FAA 2007).

5.4 Corridor 30-52

Corridor 30-52 is located within the BLM California Palm Springs-South Coast Field Office, and the BLM Arizona Yuma, Lake Havasu, Lower Sonoran, and Hassayampa Field Offices (Table 5.4-1). The designated 200-mi (322-km) corridor provides an east-west pathway for energy transport from Palm Springs, California to west of Phoenix, Arizona. In general, the designated corridor follows Interstate 10 but does not follow existing energy infrastructure from MP 152 to MP 200. The designated Corridor 30-52 has a variable width, ranging from 3,500 ft in Arizona to 10,560 ft in California and is designated multi-modal to accommodate both transmission lines and pipeline infrastructure.

Corridor 30-52

Designated Corridor:
Section 368 Energy Corridor 30-52 as designated in the 2009 *ARMPA/ROD for Designation of Energy Corridors on BLM-Administered Lands in the 11 Western States* (BLM 2009)

Regional Review Recommendation:
- Add a corridor braid from MP 94 to MP 200 along the Ten West Link Project authorized ROW
- Realign corridor between MP 190 and MP 200 with the existing powerline as the northern boundary of the corridor to avoid the Big Horn Mountain Wilderness Area.
- Widen the corridor at MP 169 to maintain corridor width where a land conveyance to La Paz County was identified.

Decision Area:
- The BLM administered lands within the designated corridor east of MP 94
- The BLM-administered lands along the Ten West Link Project authorized ROW
- The BLM-administered lands near MP 169 and between MP 190 and MP 200 where small shifts would be made to avoid wilderness and a land conveyance.

Planning Area:
BLM-administered lands managed under the:

- Bradshaw-Harquahala RMP
- California Desert Conservation Plan, as modified by the Northern and Eastern Colorado Desert/CDCA Plan and the DRECP LUPA
- Lake Havasu RMP
- Yuma RMP

and lands under other administration within the vicinity of the decision area.

The regional review recommended adding a corridor braid along the designated corridor from MP 94 to MP 200 along the recently authorized ROW for the Ten West Link Project, a 500-kV transmission line project between Tonopah, Arizona and Blythe, California (BLM, Forest Service, and DOE 2022). In California, only a few miles between MP 94 and MP 100 have BLM-managed lands under the administration of the BLM California Desert District, Palm Springs-South Coast Field Office. The BLM issued a Notice to Proceed to construction to the Ten West Link Project proponent in July 2022. The regional review also recommended realigning Corridor 30-52 between MP 190 and MP 200 along the existing powerline facility as the northern boundary of the corridor to avoid the Big Horn Mountain Wilderness Area. Lastly, the regional review recommended widening the designated corridor at MP 169 to maintain corridor width where a land conveyance to La Paz County was identified. The regional review concluded that the changes would maximize utility through collocation with planned infrastructure and would increase capacity within the corridor for future energy transport projects.

Table 5.4-1. BLM Administration Boundaries for Corridor 30-52 Decision Area

State	District/Field Office	Milepost (MP)
California	BLM California, California Desert District, Palm Springs-South Coast Field Office	MP 94 to MP 109
Arizona	BLM Arizona, Colorado River District, Yuma Field Office	MP 110 to MP 174
Arizona	BLM Arizona, Colorado River District, Lake Havasu Field Office	MP 143 to MP 191
Arizona	BLM Arizona, Phoenix District Office, Hassayampa Field Office	MP 192 to MP 199
Arizona	BLM Arizona, Phoenix District Office, Lower Sonoran Field Office	MP 192 to MP 199

The decision area (that is, the actual parcels under BLM management that could be affected by the change in corridor designation) for Corridor 30-52 includes the BLM-administered lands within the designated energy corridor from MP 96 to the end of the corridor as well as the Ten West Link Transmission Line Approved Route. The planning area (that is, the wider area that could be impacted by a change in the corridor designation, including both BLM-managed lands and lands under other administration) includes the BLM-administered lands managed under the California Desert Conservation Plan, as modified by the Northern and Eastern Colorado Desert/CDCA Plan and the DRECP LUPA, the Bradshaw-Harquahala RMP, the Lake Havasu RMP, the Lower Sonoran RMP, and the Yuma RMP (Figure 5.4-1).

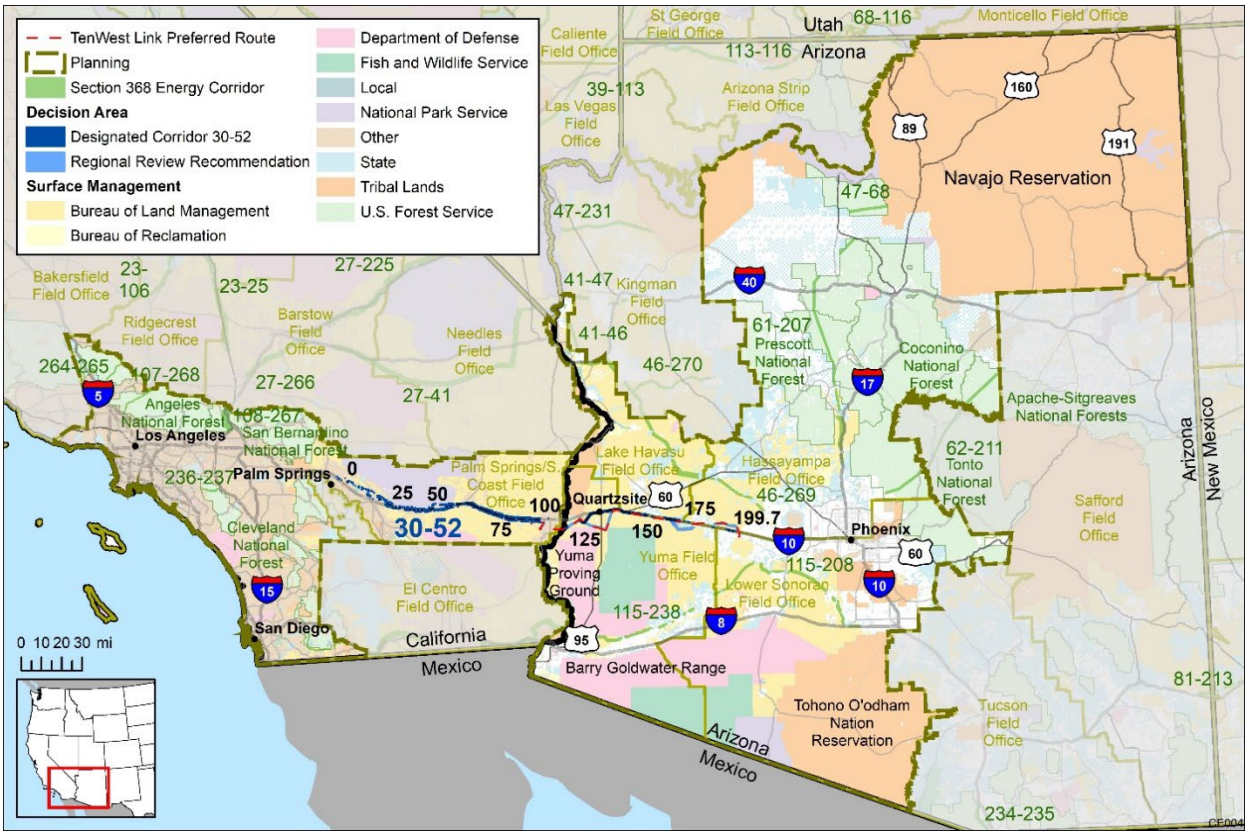

Figure 5.4-1. Corridor 30-52 Planning Area

Key Findings

Table 5.4-2 highlights the potentially affected resources that warrant analysis and summarizes the most important conclusions (key findings) drawn from each of the Area Profile resource sections within the Corridor 30-52 decision area. In general, these resources could be impacted by changes to the designated Corridor 30-52 resulting from this planning effort.

Table 5.4-2. Key Findings for Corridor 30-52 Decision Area

Resource	Key Finding
Air Quality	Joshua Tree National Park is the only Federal Class I area within a range of 100 km (62 mi)[20] of the decision area. There are no Tribal Class I areas in the 100-km (62-mi) range. Current air quality measurement data indicates that ambient air quality is generally good; both CO and NO_2 concentrations were well below the standards, while both O_3 and PM_{10} concentrations have approached but are just below the standard.
Climate	The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. In general, regional increasing temperatures and fluctuating precipitation influences soil moisture and snowpack, and, in turn, water supply, and fire and flood risk in the decision area.
Cultural Resources	The region contains numerous historic and prehistoric archaeological sites. The Dripping Springs ACEC is in close proximity to Regional Review Recommendation along Ten West Link authorized ROW and bears significant archaeological and historic features that are eligible for listing on the National Register.
Ecology	
Vegetation	The decision area is located within the Sonoran Basin and Range Ecoregion. Vegetation communities along the corridor are primarily desert-shrubland.
Invasive Species	Human development, recreation, and livestock grazing have altered vegetation communities in the ecoregion. Mediterranean grass, cheatgrass, buffelgrass, red brome, fountain grass, wild oat, prickly Russian thistle, and Sahara mustard have become widespread throughout the Sonoran Desert. In riparian areas, salt cedar is the most widespread and invasive species.
Fire and Fuels	The Lower Colorado River subdivision of the Sonoran Desert is poorly adapted to fire and the occurrence of wildfires in the region has historically been low.
Terrestrial Wildlife	Mule deer, Desert bighorn sheep, Javelina, and mountain lion ranges are within the decision area, as well as upland game birds and waterfowl. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways.
Fish and Aquatic Species	Aquatic habitat in the region consists of springs and washes that flow intermittently, which contain mollusks, fish, amphibians, and aquatic insects. Razorback sucker is a federally listed native fish species with critical habitat along or near the Regional Review Recommendation (Ten West Link authorized ROW).
Special Status Species	The decision area intersects sensitive habitat for the Sonoran population of the Desert Tortoise.

[20] EPA has noted that a 100-km (62-mi) range is generally acceptable for AQRVs impact modeling but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Given the magnitude and schedule of the project along the corridor, these emissions are relatively small and their release heights are at ground- or near-ground level, so potential impacts would be anticipated to be limited locally.

Resource	Key Finding
Environmental Justice	The minority population in the 2 mi buffer in Riverside County exceeds 50%, but the percentage is not meaningfully greater than the countywide averages. The number of persons at or below twice the Federal poverty rate within the buffer exceeds the county rate in Maricopa County, Arizona and Riverside County, California, and exceeds 50% in the buffer in both of these counties.
Geology, Soils, and Minerals	Soil is poorly developed in alluvial and colluvial materials in the low areas of the decision area, and it is generally absent in the upland areas of exposed bedrock.
Human Health and Safety	The decision area is considered to have low hazard potential.
Hydrology	Water resources in the region are limited. There are numerous ephemeral channels and alluvial basin-fill aquifers within the decision area.
Lands and Realty	The decision area extends along Interstate 10. Parts of the designated corridor are also occupied by several transmission lines and a gas pipeline as well as the Ten West Link authorized ROW. The decision area is in close proximity to potential solar energy development (Brenda SEZ and a Renewable Energy Development Area [REDA]). MTR-visual routes and SUA routes are located within the decision area.
Lands with Wilderness Characteristics	There are no managed lands with wilderness characteristics units within the decision area.
Livestock Grazing and Wild Horse and Burro	
Livestock Grazing	There are 10 grazing allotments within the designated corridor and seven grazing allotments within the Regional Review Recommendation. There are zero AUMs permitted in the Palm Springs South Coast Field Office in California.
Wild Horse and Burro	The Cibola-Trigo HMA intersects the decision area. The AML for wild horses is set at a maximum total of 150 (estimated population 307) and 285 for wild burros (estimated population 378 burros).
Noise	On the basis of the population density, the L_{dn} or DNL is estimated to be 47 dBA for Riverside County in California, 28 dBA for La Paz County in Arizona, and 49 dBA for Maricopa County in Arizona, which correspond to quiet suburban, wilderness, and quiet suburban residential areas, respectively.
Paleontology	The decision area is mostly PFYC Class 1 and 2; on the western end of the decision area near the Colorado River, there are small areas with PFYC Class 4 and 5.
Recreation	Dispersed recreation within the decision area includes hiking, biking, horseback riding, climbing, and camping, particularly within the Kofa and Big Horn Mountains Wilderness Areas and Dripping Springs ACEC. Most of the decision area is designated as limited or open OHV access.
Socioeconomics	In 2020, the population of the three-county ROI (La Paz and Maricopa Counties in Arizona and Riverside County California) was 6,855,310 and median income ranged from $34,956 in La Paz County to $70,732 for Riverside County. In 2021, the unemployment rate ranged from 4.5% in Maricopa County to 7.3% for Riverside County, with the largest share of workers employed in wholesale and retail.
Special Designations	The Kofa Wilderness Area, Big Horn Mountains Wilderness Area, and Dripping Springs ACEC are in close proximity to the decision area.
Tribal Interests	There are 57 Federally recognized Tribes with cultural affiliation and an interest in the decision area. There are 12 Federal Indian Reservations and lands held in trust near the decision area. There are tribal concerns near the Colorado River Indian Reservation (MP 119 to MP 128), particularly at Copper Bottom Pass (MP 123) and near the town of Quartzsite (MP 132 to MP 135). Other concerns include protecting water and visual resources.
Visual Resources	The decision area is in close proximity to VRM Class I areas: New Water Wilderness, Little Harquahala Mountains Wilderness, Eagletail Mountains Wilderness, Big Horn Mountains Wilderness, and Hummingbird Springs Wilderness. The decision area includes mainly VRM Class 3 areas and some VRM Class 2 areas.

5.4.1 Air Quality

General information for air quality resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.1.

Current Conditions and Context

National parks and wilderness areas designated as mandatory Federal Class I areas under the CAA, as well as other areas re-designated as Class I at the request of a state or Indian Tribe have special air quality protections under federal law. Joshua Tree National Park is the only Federal Class I area within a range of 100 km (62 mi)[21] of the Corridor 30-52 decision area, and there are no Tribal Class I areas in the 100-km (62-mi) range.

Each state can have its own SAAQS. The CARB, the clean air agency of the State of California, has established separate ambient air quality standards (CAAQS) (CARB 2022a). The CAAQS include the same six criteria pollutants as in the NAAQS but also include standards for visibility reducing particles, sulfates, H_2S, and vinyl chloride. In general, the CAAQS are the same as or more stringent than the NAAQS, except for 1-hr NO_2 and 1-hr SO_2 standards. Arizona does not have its own SAAQS (ADEQ 2019).

The CARB and the Arizona Department of Environmental Quality (ADEQ) are responsible for monitoring ambient air quality and for ensuring that ambient air quality levels are maintained in accordance with federal and state standards. As with the the EPA's designations based on the NAAQS, the CARB designates areas as attainment or nonattainment based on the CAAQS. Ambient air quality monitoring refers to collecting and measuring samples of ambient air to evaluate the status of the air pollutants in the atmosphere as compared to clean air standards and historical information.

The decision area is in Riverside County, California and in La Paz and Maricopa counties in Arizona. In California, part of Riverside County is in an unclassified/attainment area for all criteria pollutants (EPA 2022a) and part of Riverside County is in nonattainment for 8-hr O_3 and PM_{10}, for which CAAQS were established (CARB 2022b). There are many air monitoring stations in Riverside County, California for all criteria pollutants but there are no air monitoring stations in the decision area except Blythe, California, where O_3 concentrations are collected and is about 6 mi (10 km) from the western portion of the designated corridor.

La Paz County, Arizona decision area is in unclassified/attainment areas for all criteria pollutants (EPA 2022a). Maricopa County, Arizona is in nonattainment for 8-hr O_3 and for PM_{10} and in maintenance areas for CO. Buckeye in Maricopa County, Arizona, a westernmost suburb in the Phoenix metropolitan area, collects CO, NO_2, O_3, and PM_{10}

[21] EPA has noted that a 100 km range is generally acceptable for AQRVs impact modeling, but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Given the magnitude and schedule of the project along the corridor, these emissions are relatively small and their release heights are at ground- or near-ground level, so potential impacts likely would be limited locally.

and about 27 mi (43 km) to the east end of the designated corridor. In Arizona, the east end of the decision area is within 8-hour O_3 nonattainment area but outside of the PM_{10} nonattainment area and CO maintenance area.

In general, ambient air quality in the decision area is good. Based on 2019-2021 data, both CO and NO_2 concentrations were well below the standards, while both O_3 and PM_{10} concentrations have approached just below the standard (EPA 2022b).

Trends and Forecasts

Since 1970, implementation of the CAA and technological advances have drastically lowered combined emissions of the criteria and precursor pollutants, and thus have improved air quality in the U.S.

This section uses available air monitoring data between 2012 and 2021 at air monitoring stations at Buckeye in Maricopa County, Arizona ("design values" [22] for CO, NO_2, O_3, and PM_{10}) and at Blythe in Riverside County, California (for O_3) to represent the decision area (EPA 2022b). There is no air monitor collecting data in La Paz County, Arizona. For 8-hr CO, design values show a slight decreasing trend and are well below the standard during the ten-year period. For 1-hr NO_2, design values show a slight decreasing trend over time, which showed one exceedance during the ten-year period. For 8-hr O_3, design values tend to increase slightly at Buckeye but to decrease at Blythe. On average, the O_3 standard was exceeded about 1.2 and 2.1 times per year at Buckeye and Blythe, respectively. Exceedances of the standard occurred mostly during 2017 through 2021 at Buckeye and in 2012 and 2014 at Blythe.

Except Blythe, near the west end of the decision area, the area extends across largely undeveloped, sparsely populated, and remote region. In the decision area, new activities that could trigger air pollution issues are not identified as of now. Even if they occur in the near future, their emissions would be controlled under the permits designed to ensure that they are consistent with applicable regulations along with mitigation measures.

Air quality in the decision area would be degraded by wildland fires (including prescribed burning) and/or windblown dust that mostly occurs in upwind areas, rather than by local emissions.

5.4.2 Climate

General information for climate that relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.2.

[22] "Design values" are the statistic used to compare ambient air monitoring data against the NAAQS to determine designations for each NAAQS.

Current Conditions and Context

Wide variations in elevation and topographic features within the decision area have an impact on wind patterns, temperatures, precipitations, and other meteorological parameters. The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. The prevailing wind direction aloft over the region is from the west (the westerlies), as it is in most of the U.S.; however, complex terrain in the area is responsible for deflecting these winds. Accordingly, wind patterns are sometimes dissimilar even over short distances. The designated corridor runs in the east-west direction, so temperature and precipitation along the corridor are relatively uniform.

According to Local Climatological Data for Phoenix, Arizona, the decision area is in a broad desert and surrounded by scattered mountains. The area is characterized by very hot summers and mild winters with significant diurnal variations, scarce precipitation, and low relative humidity (NCEI 2022a).

There are several meteorological stations within a few miles of the designated corridor; meteorological data at these stations closely represent the decision area in terms of proximity and topography.

Wind. Two of the closest meteorological stations are Blythe Airport, California and Buckeye Airport, Arizona, which are located in the west end and east end of the decision area, respectively. Average wind speeds were about 7.7 mph (3.5 m/s) and 5.8 mph (2.6 m/s), respectively (NCEI 2022b). Northerly and southerly winds are equally prevalent at Blythe Airport, winds at which are more affected by the Palo Verde Valley, which is aligned in a north-south direction. At Buckeye Airport, there is no prevailing wind direction, but northerly winds blew more frequently, followed by southwesterly. Wind speeds categorized as calm (less than 1 mph [0.5 m/s]) occurred more frequently (about 18% of the time at Blythe Airport and 21% of the time at Buckeye Airport) because of the stable conditions caused by strong radiative cooling in the arid environment.

Temperature. Historical annual average temperatures in the decision area are in the 70s, from 70.4 °F (21.3 °C) to 74.5 °F (23.6 °C), as shown in Table 5.4-3 (WRCC 2022). Monthly average temperature extremes range from a low of 36.5 °F (2.5 °C) to a high of 108.8 °F (42.7 °C). December was the coldest month and July was the warmest month. At Quartzsite, Arizona, the monthly average in January is the same as that in December. Each year, about 167-176 days had a maximum temperature of ≥90 °F (32.2 °C), while about 2-25 days had minimum temperatures at or below freezing (32 °F [0 °C]), with no day below 0 °F (-17.8 °C).

Precipitation. The decision area lies within the Sonoran Desert, which has an arid subtropical climate, characterized by infrequent rainfall. Historical annual precipitation ranged from 3.55 in (9.0 cm) to 7.63 in (19.4 cm), as shown in Table 5.4-3 (WRCC 2022). Precipitation is most frequent in winter (ranging 35-40%) and least

frequent in spring (ranging from 12% to 15%). Except for 0.1 in (0.3 cm) per year in Quartzsite, Arizona, no snowfall has been reported in the decision area.

Table 5.4-3. Temperature and Precipitation Summaries at Selected Stations in the Vicinity of the Decision Area[a]

Station	Temperature						Annual Precipitation	
	Monthly Averages[b]			Number of Days with:				
	Min.	Max.	Mean	Max. ≥90°F	Min. ≤32°F	Min. ≤0°F	Water Equivalent	Snowfall
Blythe, California	41.3°F (5.2°C)	108.4°F (42.4°C)	73.7°F (23.2°C)	175.8	5.3	0.0	3.55 in. (9.0 cm)	0.0 in. (0.0 cm)
Ehrenberg, Arizona	42.6°F (5.9°C)	108.0°F (42.2°C)	74.5°F (23.6°C)	174.5	2.1	0.0	4.67 in. (11.9 cm)	0.0 in. (0.0 cm)
Quartzsite, Arizona	36.9°F (2.7°C)	108.8°F (42.7°C)	72.3°F (22.4°C)	176.3	24.7	0.0	4.98 in. (12.6 cm)	0.1 in. (0.3 cm)
Tonopah, Arizona	36.5°F (2.5°C)	106.8°F (41.6°C)	70.4°F (21.3°C)	167.4	24.9	0.0	7.63 in. (19.4 cm)	0.0 in. (0.0 cm)

[a] Summary data presented in the table are based on the period of record: from 1948 to 2012 (Blythe); from 1977 to 2012 (Ehrenberg); from 1908 to 2012 (Quartzsite); and from 1951 to 2010 (Tonopah).

[b] "Minimum Monthly Average" denotes the lowest monthly average of daily minimum during the period of record, which normally occurs in December, except in Quartzsite where the lowest averages of January and December are the same. "Maximum Monthly Average" denotes the highest monthly average of daily maximum during the period of record, which normally occurs in July.

Source: WRCC 2022.

Trends and Forecasts

In both Arizona and California, there are recent upward trends in average temperatures. In the last century, southern California has experienced one of the largest increases in temperature in the continental U.S. Temperatures in California have risen almost 3 °F (1.7 °C) since the beginning of the 20th century and all of California is becoming warmer. In California, the six warmest years have all occurred since 2014 (2014 through 2018, and 2020) in the 126-year period of record (1895–2020) (NCEI 2022c). Arizona has warmed about 2 °F (1.1 °C). Temperature in Arizona has risen about 2.5°F (1.4 °C) since the beginning of the 20th century last century. In Arizona, the first 21 years of this century have been the warmest period on record for the state; 2017 has been the hottest year on record. Annual average temperature has increased about 2.5-3 °F (1.4-1.7 °C) in the decision area (EPA 2016a, 2016b).

Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others. The changing climate is likely to increase the need for water but reduce the supply. Rising temperatures increase the rate at which water evaporates into the air from soils and surface waters along with transpiration from plants. However, less water is likely to be available because precipitation is unlikely to increase as much as evaporation. Soils are likely to be drier, and periods without rain are likely to become longer, making droughts more severe (EPA 2016a, 2016b). Precipitation is highly variable from location to location and from year to year. Unlike many areas of the U.S., Arizona has not experienced an upward trend in the frequency of extreme precipitation events. The driest consecutive 5-year interval was 1899–1903 and the wettest was

1905–1909. In California, the driest consecutive 5-year interval was 1928–1932, and the wettest was 1979–1983. The late 1990s had the highest number of 2-in. extreme precipitation events, which show no overall trend (NCEI 2022c).

As the climate warms, less precipitation falls as snow, and more snow melts during the winter. That decreases snowpack—the amount of snow that accumulates over the winter. This snowpack melts during spring and summer, which provides water supply for cities and farms. Since the 1950s, the snowpack has declined in both California and Arizona, decreasing the snowmelt that drains into the Colorado River. On average, more than 2% and about 4% of the land in Arizona and California, respectively, have burned per decade since 1984. Higher temperatures and drought, due to global warming, are likely to increase the severity, frequency, and extent of wildfires, which reduce air quality and harm human health and ecosystems (EPA 2016a, 2016b).

Over the next few decades, annual average temperature over the contiguous U.S. is projected to increase by about 2.2 °F (1.2 °C) relative to 1986-2015, regardless of future scenario (USGCRP 2018). As a result, recent record-setting hot years are projected to become common in the near future. Much larger increases in Nevada and California are projected by late century: 2 to 5 °F (1.1 to 2.8 °C) under a lower scenario (RCP4.5) and 5 to 8 °F (2.8 to 4.4 °C) under a higher scenario (RCP8.5) relative to 1986-2015.[23]

In the late twenty-first century, the greatest precipitation changes are projected to occur in winter and spring, with similar geographic patterns to observed changes: increases across the Northern Great Plains, the Midwest, and the Northeast (USGCRP 2018). In Nevada and California, precipitation projections decrease in spring through fall but mostly decrease in Arizona and mostly increase in California, in winter. Note that changes in average precipitation is much more difficult for climate models to predict than temperature. Surface soil moisture over most of the U.S. is likely to decrease, accompanied by large declines in snowpack in the western U.S. and shifts to more winter precipitation falling as rain rather than snow, which is conducive to more wildfires.

Associated with ongoing global warming, large wildfire frequency, fire duration, and fire season length have increased substantially in the western U.S. in recent decades and are projected to increase, especially in the Southwest (USGCRP 2018). This is due primarily to earlier spring snowmelt and warmer temperatures that increase evaporation rates (i.e., reduce the moisture availability) and thus dry out the vegetation that provides the fuel for fires. In addition, Arizona and California snowpack plays a critical role in water supply and flood risk (NCEI 2022c).

[23] For climate projections, the international scientific community developed four RCPs, i.e., RCP2.6, RCP4.5, RCP6.0, and RCP8.5, in which radiative forcing is stabilized at 2.6, 4.5, 6.0, and 8.5 W/m^2 in the year 2100, respectively. RCP4.5, referred to as a lower scenario, is generally associated with lower population growth, more technological innovation, and lower carbon intensity of the global energy mix, while the reverse is true for RCP8.5, referred to as a higher scenario.

5.4.3 Cultural Resources

General information for cultural resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.3.

Current Conditions and Context

The following cultural resources are listed as generally representative of the decision area region and are presented as a characterization of prehistoric and historic site types that may reasonably be expected to be affected in the absence of specific resource location data. In some cases (e.g., National Register sites), resources would not be affected by the designated corridor or the Regional Review Recommendation but are included as part of this regional characterization.

The Northern and Eastern Colorado Desert/CDCA Plan Amendment comprises the southern portion of the original CDCA boundary and includes the westernmost portion of the decision area from MP 94 to MP 112 within Riverside County. As of 2002, 3,305 historic and prehistoric archaeological sites across the planning area are noted, dating back to 10,000-12,000 years BP. Of these sites, 2,539 are on BLM-administered land. Within Riverside County, 833 sites are indicated (BLM 2002a).

Of the total 1,625,500 ac surveyed within the DRECP planning area, a total of 36,262 known sites are present within all ecoregion subareas. The range of prehistoric and historic site types includes habitation sites, temporary camps, rock shelters, caves, milling stations, lithic scatters, chipping circles, quarries, ceramic scatters, cemeteries, cremation features, rock alignments, geoglyphs, petroglyphs pictographs, trails, roasting pits, cairns, isolated artifacts, mines, homesteads, historic-era campsites, and historic dumps. Resource counts specific to the ecoregion subarea are as follows (Note: counts include BLM, State, private, and other federal lands) (BLM 2015a:Table R1.8-2):

- Prehistoric: 339
- Historic: 785
- Multi-component: 86
- Unknown: 2,228
- Isolates: 1,814
- Total: 5,252

Sites listed on the National Register, California Landmarks, California Register of Historical Resources and Points of Interest within the DRECP in Riverside County are summarized below (BLM 2015a: Table R1.8-3):

- National Register: 10 sites
- California Historical Landmarks: 6 sites
- California Register: 15 sites
- Points of Interest: 8 sites

The 1985 Yuma District RMP/EIS outlines cultural resources in the Yuma District planning area in Arizona at the time of publication, providing a partial estimate of resource types/numbers for the region. At the time of the plan, 1,299 recorded sites were on file with 423 of these on non-BLM lands. These are categorized as prehistoric, historic, and traditional cultural areas. The most common site types encountered in the region include "sleeping circles", quarries, lithic scatters, ceramic scatters, circular rock alignments, trails, camps, and mines. Less common sites include ceremonial sites, roasting pits, hunting blinds, pictographs, cremation sites, and historic wagon roads (See Table 5.4-4). Noticeably absent are sites with stratified deposits, nearly all sites being surficial terrace deposits. Sites located in drainage bottoms (e.g., Gila and Colorado Rivers) have nearly all been washed away by repeated flooding. Highly sensitive areas for cultural resources are based on known distribution of sites and site values, mainly located near river resources and traditional hunting/gathering areas. Approximately 49,000 sites are estimated to exist within Yuma District, with approximately 57,000 ac designated as being of high resource sensitivity (BLM 1985).

Table 5.4-4. Cultural Resource Site Types in the Yuma District

Prehistoric Archaeological Sites	
Villages (Rancherias)	Usually a permanent habitation area for several families over an extended period of time
Temporary Camps	Temporary habitation area
Farm Camps	Temporary camp occupied during planting or harvesting time. Usually found along the Colorado River
Trail Camps	Very temporary camps used for a night or two while migrating to other areas
Hunting and Gathering Camp	Temporary camp used for a few weeks as a base camp for hunting and gathering activities
Rock shelters	Same as above
"Sleeping Circles"	Cleared and/or smoothed depression areas on desert pavement terraces; usually used for sleeping
Circular Rock Alignments	Usually a cleared area with rocks around the edge. Rocks thought to have served as anchors for temporary brush huts
Quarry/Lithic Source	A source area for raw lithic materials used for tool manufacture, or for minerals used for paints
Roasting Pit	A concentration of thermally affected rocks usually with ash in the soil (occasionally these will be a cremation site)
Rock Cairn	A trail marker, monument, or "shrine" resulting from stones heaped into a pile
Midden	A refuse area usually associated with permanent or semi-permanent annually occupied villages or camps
Milling Station	A food preparation area where one or more stones (metates, mortars, or pestles) are present
Lithic Scatter	A location used to manufacture a lithic tool, as evident by a scatter of lithic flakes or cores
Ceramic Scatter	A location with scattered broken pottery sherds, often the result of the breakage of a single vessel
Hunting Blind	A semi-walled locality, usually on hilly or mountain slopes, used to hunt primarily bighorn sheep
Burial/Cremation	Evidence of human burial or cremation. The latter usually contain ash and pieces of human bone
Trails	Aboriginal footpaths used to travel from area to area

Prehistoric Archaeological Sites	
Dance Patterns	Paths or other images resulting from ceremonial dance activities on desert pavement surfaces
Aboriginal Art	Geometric. zoomorphic or anthropogenic design created by aboriginal peoples
Petroglyphs	Designs, pecked, rubbed or scratched on a rock
Pictographs	Designs painted on rock
Intaglios	Large designs created on desert pavement by removal of surface gravel; images range from human and animal to geometric pattern (a form of geolyph)
Rock Alignments	Large designs created by the alignment of rock and gravel
Isolated Artifacts	Artifacts (pottery sherds, lithic tools, etc.) found without association to an identifiable site
Historic Archaeological Sites	
Mine	Evidence of ore removal for mineral extraction, i.e., pits, holes, shafts, adits, tailings, etc.
Mill	Structures (or remains of) associated with removal of minerals from ore
Town	Aggregation of structures and other physical remains of a multifamily occupation in historic periods
Home or Cabin	Single structure and associated physical remains of a single person or family occupancy
Historic Campsite	Evidence of temporary occupation by one or more families. Usually associated with temporary mining or river-related activities
Road or Trail	Evidence of historic use as a wagon or pack train route
Military	Site of a military camp or other activity
Trash Dump	Historic refuse area associated with any of the above
Grave	One or more historic burials
Traditional Cultural/Religious Sites	
Ceremonial Sites	Prehistoric or historic area of sacred character. Physical evidences of activities usually present, i.e., dance patterns, vision quest circles, intaglios, rock cairns, etc.
Sacred Areas	Prehistoric or historic area of sacred character. Evidence of physical activities not always present, i.e., sacred mountain top, power place or vision quest places, etc.
Traditional Use Areas	Areas of traditional hunting, gathering, fishing or travel
Burial or Cremation Sites	Area of historic cremation or burial of the dead
Prehistoric or Archaeological Sites	Some areas where prehistoric peoples lived or died are considered areas of spiritual residence of these peoples

Source: BLM 1985.

The Yuma RMP (BLM 2010) indicates 10 Special Cultural Resource Management Areas (SCRMA) within the planning area. None of these are crossed/affected by the decision area. The Dripping Springs ACEC southeast of the town of Quartzsite, Arizona, and south of MP 142 of the designated corridor bears significant archaeological and historic features that are eligible for listing on the National Register. This ACEC is open to the public and includes a concentration of petroglyphs in the Patayan cultural style. In addition, remains of several historic structures are present. While the designated corridor does not cross this ACEC, the Regional Review Recommendation along the Ten West Link authorized ROW that detours south around Quartzsite may affect the western boundary, depending on the proposed corridor width.

The designated corridor follows the BLM Lake Havasu Field Office's southern boundary and Yuma Field Office's northern boundary for approximately 32 mi. The Lake Havasu RMP (BLM 2007a) does not list any SCRMAs in this vicinity. Appendix E of this plan outlines goals, objectives, allocations, and actions for cultural resources. While outside the decision area, north of US 10, the Harcuvar and Harquahala Mountains contain a concentration of significant prehistoric resources including camps, lithic workstations, petroglyphs, rock shelters, and rock art spanning the period between A.D. 700-1000 and a significant occupation zone by the historic Yavapai tribe. A list of land use allocations for cultural resources is given, where specific site types are allocated to management units. Locations are not given for these units (see BLM 2007a, Table E-1, page E-4).

The designated corridor is aligned with the northwestern boundary of the Lower Sonoran BLM district from MP 191 to 199.8; however, the Lower Sonoran RMPA/ROD (BLM 2012) provides only management decisions. It does not provide estimates for cultural resources for the portion of the corridor within that BLM district.

Cultural resource data for the Ten West Link 500kV Transmission Line Project is described in detail in the RMPA/EIS (BLM 2019a). Although the APE under Section 106 for this project differs from the FEIS analysis, data are presented here as generally representative of the project area. Class I survey data for the project was collected in two tiers: 1) Data within a 1 mi -wide buffer over centerline and 2) data within a 200-ft-wide buffer on centerline. Indirect effects on known areas of tribal concern were encompassed in a 10 mi-wide buffer (BLM 2019a). Class I data were incorporated into a sensitivity analysis, on file with the Palm Springs Field Office (BLM 2018).

The Class I inventory revealed 919 cultural resources. Of these, 607 are in Arizona and 312 are in California. Prehistoric site types reflect those listed in the Yuma and Lake Havasu RMPs with the addition of cairns, milling stations, and intaglios. Likewise, historic sites in this inventory are similar to those listed in the Yuma and Lake Havasu RMPs with the addition of trash dumps, agricultural canals/drains, a check dam, roads, transmission lines, railroad grade, and military sites.

There are no sites listed on the National Register within the 1 mi analysis buffer in either California or Arizona along the Ten West Link authorized route. Tables 5.4-5 and 5.4-6 below indicate eligibility determinations for Class I inventoried sites in Arizona and California respectively. A total of 66 eligible or unevaluated sites have been previously recorded within the 200-ft buffer of the Ten West Link authorized route. Sensitive sites include trails, intaglios, habitation sites with human remains. Other culturally significant and sensitive resources in the vicinity of segments p-17 and p-18 of the Ten West Link authorized route include medicinal plants, seasonal habitation sites, bone consistent with cremated human remains, trails, and other resource collection areas. The RMP/FEIS and RMP (BLM 2019a; Table 4.4) lists, known survey and anticipated cultural resources by line segment and by alternative.

Table 5.4-5. Ten West Link Cultural Sites per NRHP Eligibility by Site Type in Arizona (All Segments, 1-Mi-Wide Corridor)

Eligibility	Historic	Prehistoric	Multi Component	Unknown Chronology	Total
NRHP-listed	0	0	0	0	0
Determined eligible	1	2	0	10	13
Recommended eligible	5	6	0	33	44
Determined ineligible	1	0	0	11	12
Recommended ineligible	1	0	0	0	1
Unevaluated/Unknown	19	158	2	357	536
Total	27	166	2	411	606

Source: BLM 2019a

Table 5.4-6. Ten West Link Cultural Sites per NRHP Eligibilities by Site Type in California (All Segments, 1-Mi-Wide Corridor)

Eligibility	Historic	Prehistoric	Multi Component	Unknown Chronology	Total
NRHP-listed	0	0	0	0	0
Determined eligible	0	4	3	0	7
Recommended eligible	0	2	3	0	5
Determined ineligible	106	36	16	0	158
Recommended ineligible	0	0	0	0	0
Unevaluated/Unknown	64	64	13	1	142
Total	170	106	35	1	312

Source: BLM 2019a

Other resources of concern to Native Indian tribes include petroglyphs, intaglios cremated human remains, rock art. Resources susceptible to visual impact by this particular project includes numerous petroglyphs, rock art, as well as intaglio and possible intaglio sites. Numerous prehistoric trail segments lie within several Ten West Link segments. One previously unrecorded historic airfield (Salome Emergency Airfield) is located along segment x-03. This airfield was constructed during the 1920s or early 1930s and facilitated emergency landings between Phoenix and Los Angeles. The project area lies within the ancestral lands of several Indian tribes and contains numerous places or areas of cultural or spiritual significance. Tribally significant cultural resources have been categorized into several types, resulting from the McCoy Solar Energy Project's ethnographic assessment:

1. Traditional Origin and Mythological Places
2. Ceremonial
3. Historical Tribal
4. Ethnohistoric Habitation
5. Trails
6. Burial Sites
7. Resource Collection Areas

A Class III report for the Ten West Transmission line includes newly recorded sites that increase the number of known historic properties compared to the data provided in the Class I survey. As construction of the Ten West Transmission Line continues, it is expected that additional historic properties will be discovered and recorded.

Specific tribal concerns are discussed in Section 5.4.17. Under project-specific conditions, ancestral resources of concern to Native tribes include intaglios/rock art/petroglyphs, trails, and unidentified Colorado River Indian Tribe resources. The latter are particularly prevalent around the Colorado River. The Mule Mountains region south of Blythe is a particularly dense resource area with multiple types of tribally and archaeologically significant sites, including trails, ceremonial sites, and a rock water tank. The eastern base of Palo Verde Mesa is also tribally significant, containing favored plants, seasonal habitation sites, graves, trails, and other natural resource collection areas (e.g., clay, material for basketry) (BLM 2019a).

Trends and Forecasts

Within the NECO planning area, Standards and Guidelines indicate that livestock grazing near springs and streams, where archaeological sites tend to be located, promotes vegetation degradation which in turn leads to soil destabilization and erosion. In addition, grazing can directly damage surface artifacts and site integrity, compromising horizontal and stratigraphic information about such sites. Wild horses and burros continue to present similar issues in areas with water sources. Within the NECO planning area, there are 816 cultural resources within HMAs that encompass approximately 930,906 ac.

Motorized vehicle routes and access points can result in ground disturbance from tires, camping, and off-roading. Additionally, such access tends to increase occurrences of looting and vandalism. The CHRIS and BLM records have provided site locations within a 600-ft-wide APE for the NECO planning area and are categorized according to likelihood of impact by this ongoing threat. A total of 1,106 cultural resources are located on BLM-administered lands within the APE for each route. According to the CDCA, routes designated “open” are accessible for non-competitive recreational activities. Existing routes that will eventually take this designation, including APEs, contain 554 known sites. Of these, 184 sites have been either listed, determined eligible, or potentially eligible for listing on the National Register. The remaining 167 sites are considered to have properties that may be adversely affected by recreational activities. Vehicle routes and access points specific to the decision area, and their relationship to known sites within the decision area would be required to determine the level of impact this activity would present.

Land ownership changes through acquisition or disposal has variable effects on cultural resource protection. Acquisition of lands for the protection of multiple resources may have the indirect effect of conserving archaeological sites, particularly where natural resources such as water sources have the likelihood of corresponding to archaeological site presence. However, land disposal for low habitat qualities does not necessarily

indicate low potential for cultural resources. Similarly, incorporation of Wilderness Areas into the CDCA plan would improve cultural resources protection (BLM 2002a).

Within the DRECP planning area, estimates for potential impacts on cultural resources are provided by ecoregion subarea. Total estimated cultural resources for the Cadiz Valley and Chocolate Mountains subarea equal 87,684, with 15,272 resources estimated under BLM conservation designations. The DRECP also estimates potential impacts on cultural resources by technology type:

- Solar: 28,857 ac, 1,154 cultural resources impacted
- Transmission: 8,283 ac, 331 cultural resources impacted

Because of the difficulty in locating and quantifying Traditional Cultural Properties, these resource elements were not included in the DRECP LUPA and FEIS impact assessment, although it is presumed that this resource would be affected, commensurate with increases in technology development acreage (BLM 2002b).

Under Management Actions, the Yuma RMP indicates that additional SCRMAs may be allocated within the planning area as they are identified (BLM 2010).

5.4.4 Ecology

General information for ecological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.4.

5.4.4.1 Vegetation, Invasive Species, and Fire

Current Conditions and Context

The decision area is in the Sonoran Basin and Range Ecoregion. Vegetation in the area is primarily desert-shrubland. Creosote (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), ocotillo (*Fouquieria splendens*), and brittlebush (*Encelia farinosa*) shrubs dominate plant communities in the hottest, driest areas; palo verde-cactus shrub (*Parkinsonia* spp.), mesquite (*Prosopis* spp.), and ironwood (*Olneya tesota*) trees are common on slopes and near the heads of alluvial fans (Cazia and Wilson 2012; BLM 2019a) (Figure 5.4-2). Riparian vegetation is associated with river and stream corridors, seeps, and springs, and provide cover, forage, and nesting habitat for a diverse wildlife community. Lower elevation ephemeral streams are common and support deep-rooted trees and shrubs, such as mesquite, acacia, salt cedar (*Tamarixs* spp.), cottonwood (*Populus* spp.), willow (*Salix* spp.), and sycamore (*Platanus* spp.) (BLM 2019a).

Invasive Species

Human development, recreation, and livestock grazing have altered vegetation communities in the ecoregion. For example, greater human presence has introduced invasive species and livestock grazing has increased the susceptibility of native vegetation to invasive weeds (BLM 2019a). Invasive annual and perennial plant species

such as Mediterranean grass, cheatgrass, buffelgrass, red brome, fountain grass, wild oat (*Avena fatua*), prickly Russian thistle (*Salsola tragus*), and Sahara mustard have become widespread throughout the Sonoran Desert. In riparian areas, salt cedar is the most widespread and invasive species (BLM 2019a).

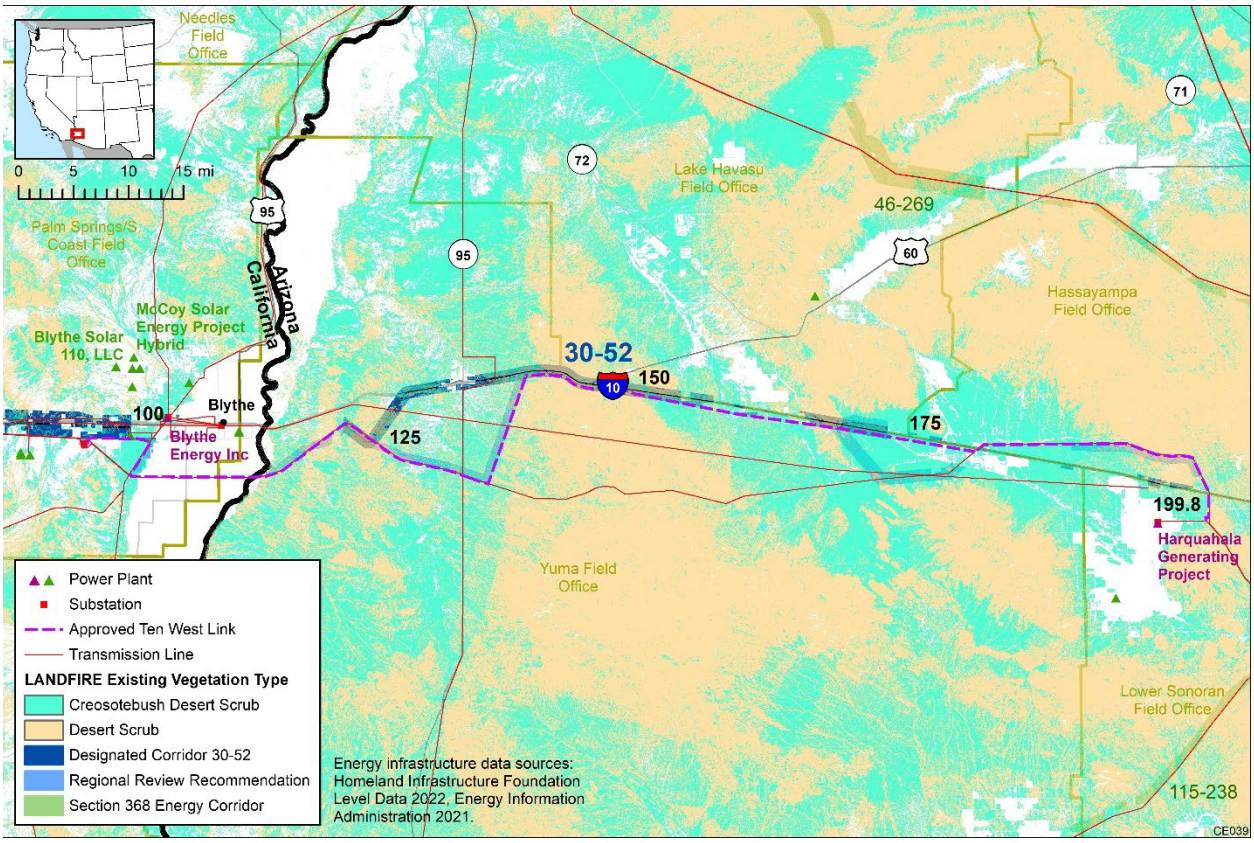

Figure 5.4-2. Vegetation communities in the Vicinity of the Decision Area (2020 Landfire).

Trends and Forecasts

Human population in the Sonoran Basin and Range Ecoregion has been increasing dramatically over the last few decades and urbanization has come primarily at the expense of desert communities. Population growth will likely continue to strain groundwater and surface water resources, which will in turn create stress on vegetation communities (Calzia and Wilson 2012). In addition, existing studies indicate that the Sonoran Desert has exhibited a drying trend and warmer temperatures over the past few decades and these trends are expected to continue into the future (Prein et al. 2016). Drier conditions may create more adverse conditions for vegetation communities in the Sonoran Basin and Range Ecoregion similar to those described for the Mojave Basin Ecoregion.

Fire and Fuels

The Lower Colorado River subdivision of the Sonoran Desert is poorly adapted to fire and the occurrence of wildfires in the region has historically been low. However, the

Sonoran Desert has experienced the invasion of non-native vegetation, especially annual grasses, which has increased the frequency and intensity of fires (BLM 2010).

The projected increase in future development and the accompanying surface disturbing activities and vehicle traffic may promote the further spread of invasive plants (BLM 2002b). Mitigation measures to reduce fire size and frequency may include mechanical measures like fire breaks) as well as herbicide treatment and prescribed fire to reduce invasive grass fuels (BLM 2010; BLM 2002b).

5.4.4.2 Terrestrial Wildlife

Current Conditions and Context

The decision area crosses the border of California and Arizona. One challenge to wildlife management is the conflicting management goals across jurisdictions. California ranks first among the 50 states in overall biological diversity (CDFW 2015) and Arizona ranks eighth for overall vertebrate diversity (AZGFD 2012). A major threat to terrestrial wildlife in California is its rapidly growing human population and the resulting loss of suitable habitat (CDFW 2015). Some of the important stressors to wildlife and wildlife habitats in Arizona include: altered surface hydrology, international border impacts, climate change, groundwater depletion, invasives species, human activity/development, and unnatural fire regimes (AZGFD 2012).

The decision area is in the Sonoran Desert ecoregion. The Sonoran Desert is considered a subtropical desert and contains primarily (76%) Sonoran-Mojave Creosotebush-White Bursage Desert Scrub and Sonoran Palo Verde-Mixed Cacti Desert Scrub (Strittholt et al. 2012). The decision area occurs mostly in the lower, drier western section of the Sonoran Desert. Currently, 60% of the Sonoran Desert ecoregion has very high/high/moderately high intactness (Strittholt et al. 2012). However, the decision area contains about 60% very low/low/moderately low landscape intactness due to the presence of transportation and energy infrastructure. Desert bighorn sheep has more of its current distribution in more intact habitats than mule deer and mountain lion. The mule deer, which is more adaptable to its environment, showed more of its current distribution in least intact habitats (Strittholt et al. 2012).

The following section focuses on game species (big game species, upland game birds, and waterfowl) and migratory birds. Other species may inhabit the decision area but are not directly discussed. Any management direction which affects the recovery, maintenance, or improvement of the wildlife populations discussed in this section would also indirectly support other native species. Table 5.4-7 lists the managed big game species with habitat in the decision area.

Table 5.4-7. Managed Big Game Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Habitat Association and Life History	State
Desert bighorn sheep (*Ovis canadensis nelson)*	The decision area intersects the range of desert bighorn sheep in Arizona. This species of bighorn sheep prefers desert mountain ledges and grassy basins within the desert ranges of southern and western Arizona (AZGFD 2022b).	Arizona
Javelina (*Tayassu tajacu*)	The decision area intersects the very sparse range of javelina (also known as the collared peccary) in Arizona. Javelina prefer desert, chaparral, and oak-grassland habitats. They live in herds of 8-9 animals and can breed year-round (AZGFD 2022c).	Arizona
Mountain lion (*Puma concolor*)	The decision area intersects the range of mountain lion (also known as cougar) in Arizona. Mountain lions mostly occupy remote and inaccessible areas. Their annual home range can be more than 560 square mi, while densities are usually not more than 10 adults per 100 square mi. The cougar is generally found where its prey species (especially mule deer) are located. In addition to deer, they prey upon most other mammals (which sometimes include domestic livestock) and some insects, birds, fishes, and berries. They are active year-round. Their peak periods of activity are within two hours of sunset and sunrise, although their activity peaks after sunset when they are near humans. They are hunted on a limited basis and are closely monitored basis in some states (DOE and BLM 2008).	Arizona
Mule deer *(Odocoileus hemionus)*	The decision area intersects the range of mule deer in Arizona and California. Mule deer attain their highest densities in shrublands characterized by rough, broken terrain with abundant browse and cover. Some populations of mule deer are resident (particularly those that inhabit plains), but those in mountainous areas are generally migratory between their summer and winter ranges. They have a high fidelity to specific winter ranges where they congregate within a small area at a high density. Their winter range occurs at lower elevations within sagebrush and pinyon-juniper vegetation. Winter forage is primarily sagebrush, with true mountain mahogany, fourwing saltbush, and antelope bitterbrush also being important. Prolonged drought and other factors can limit mule deer populations. Mule deer are also susceptible to chronic wasting disease. When present, up to 3% of a herd's population can be affected by this disease (DOE and BLM 2008).	Arizona & California

*Intersections with decision area was determined using GIS data or habitat range maps from NDOW (NDOW 2017) and CDFW (CDFW 2022b) when possible.

Game species

Big Game Species

There are six big games species in California (CDFW 2022a) but only one species has a range intersecting the decision area: mule deer. There are ten big game species in Arizona (AZGFD 2022a), but only four species have ranges intersecting the decision area: desert bighorn sheep, javelina, mountain lion, and mule deer. Population numbers for these big game species fluctuate annually and depend on conditions such as weather, hunting, forage quality, water availability, and cover (WAPA and BLM 2015a).

Upland Game Birds

Upland game bird species that may occur in the decision area include African collared dove, Eurasian collared dove, Gambel's quail, mourning dove, white-winged dove, and Wilson's snipe. African and Eurasian collared doves are invasive species in North

America. African collared doves occur throughout Arizona and southern California (AZGFD 2022d). Eurasian-collared doves can be found in various habitats including neighborhoods, grasslands, agricultural fields, woodland edges, and roadsides (NDOW 2022). Gambel's quail occupy shrub habitats near riparian areas (WAPA and BLM 2015a). Mourning doves occur in a wide range of habitats from deciduous forests to shrubland and grassland communities (WAPA and BLM 2015a). White-winged doves occur in southern Arizona and southern California. They occupy a wide range of habitats including agricultural fields and residential areas but favor woodlands or desert habitats (NDOW 2022). Wilson's snipes are year-round residents in the decision area in California. They are found in wet pastures, canals and ditches, and other fresh emergent wetlands. Breeding occurs in wet areas adjacent to ponds and rivers (CWHR 2016). Most upland game species exhibit annual population fluctuations depending on weather and habitat conditions (WAPA and BLM 2015a).

Waterfowl

Waterfowl are also popular game birds in Arizona and California. Some common waterfowl in Arizona and California include American coot, American wigeon, blue-winged teal, bufflehead, Canada goose, canvasback, cinnamon teal, common merganser, gadwall, greater scaup, green-winged teal, lesser scaup, mallard, moorhen, northern pintail, northern shoveler, redhead, ring-necked duck, ruddy duck, white-fronted goose (CDFW 2022c and AZGFD 2022a). Species distributions are limited to the rivers, streams, lakes, reservoirs, ponds, and wetlands found within the decision area. Population numbers for these species vary annually depending on weather and habitat conditions (WAPA and BLM 2015a).

Various conservation and management plans exist for waterfowl, including the 2018 NAWMP, signed by the U.S., Canada, and Mexico. The NAWMP is a model for international conservation of wetlands and waterfowl. It was first signed in 1986 and has been adapted through reviews and updates in response to changing science and conservation goals (NAWMP 2018). While waterfowl species are considered game birds, they also are protected under the MBTA.

Migratory Birds

Many bird species occurring in Arizona and California are seasonal residents and exhibit seasonal migrations. These birds include waterfowl, shorebirds, raptors, and neotropical songbirds. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways (DOE and BLM 2008).

The Pacific Flyway includes the Pacific Coast Route, which occurs between the eastern base of the Rocky Mountains and the Pacific coast of the U.S. This flyway encompasses the states of California, Nevada, Oregon, and Washington, and portions of Montana, Idaho, Utah, Wyoming, and Arizona. Birds migrating from the Alaskan Peninsula follow the coastline to near the mouth of the Columbia River, then travel inland to the Willamette River Valley before continuing southward through interior California. Birds migrating south from Canada pass through portions of Montana and Idaho and then migrate either eastward to enter the Central Flyway, or turn southwest

along the Snake and Columbia River valleys and then continue south across central Oregon and the interior valleys of California. This route is not as heavily used as some of the other migratory routes in North America (DOE and BLM 2008).

Migratory birds encompass a variety of passerine and raptor species, most of which are protected under the MBTA of 1918 (16 USC 703-711) and Executive Order 13186.

The decision area intersects the Lower Colorado River Valley global IBA. This IBA is very important for northbound migrants in spring and supports very high numbers of migrant shorebirds. This IBA also supports large numbers of migrant and wintering waterfowl. Some species that frequent this IBA include the long-billed curlew, mountain plover, sandhill crane, and Harris' hawk (National Audubon Society 2022). Migratory birds include neotropical migrant species, raptors, waterfowl, shorebirds, and wading birds. A wide range of migratory birds could occur within the decision area. More than 350 species of birds have been documented in southwestern Arizona. Many species of raptors are known to nest in the region, as well as several wintering migrant raptor species (BLM 2019a).

Trends and Forecasts

Climate change modeling for the Sonoran Desert show that the entire ecoregion is expected to experience warming, and some locations are expected to increase by > 2° Celsius by 2060. The southwestern portion of the ecoregion is projected to have the greatest temperature increase and seasonally, the winter months show the greatest increases (Strittholt et al. 2012). Both summer and winter are forecasted to experience drier conditions by 2060.

Climate change has the potential to impact wildlife communities by changes in temperature and precipitation and therefore in changes in their seasonal habitats. Mountain lion, mule deer, and desert bighorn sheep all showed roughly 40% of their existing distributions under Very High or Moderately High exposure to climate change by 2045–2060. Mountain lions showed the highest potential exposure to climate change with nearly 30% of its current distribution under the Very High exposure to climate change. These species will likely overcome some habitat alterations due to climate change because of their potential for dispersal but increasing fragmentation or a reduction in the availability of food or water may make dispersal more difficult (Strittholt et al. 2012).

5.4.4.3 Fish and Aquatic Species

Current Conditions and Context

Aquatic habitat in the region primarily consists of springs and washes that flow intermittently. Native fish communities in the Lower Colorado River are primarily in the minnow and sucker families (BLM 2010a, BLM 2019a). Amphibians found in the ecoregion use riparian areas, perennial waterbodies, and seasonal pools that form after rainfall to breed and develop. Amphibians in the region include the Couch's spadefoot toad (*Scaphiopus couchii*), Sonoran desert toad (*Incilius alvarius*), Woodhouse's toad

(*Anaxyrus woodhousii*), and red-spotted toad (*Anaxyrus punctatus*) (BLM 2010a, BLM 2019a). These species require perennial or ephemeral standing water to complete their lifecycle.

The introduction of non-native species in addition to hydrologic modifications in the form of dams and reservoirs have created adverse habitat conditions for many native species resulting in severe population declines. Consequently, four endangered fishes have been designated for the lower Colorado River in the vicinity of the corridor (bonytail chub [*Gila elegans*], razorback sucker [*Xyrauchen texanus*], and Colorado River pikeminnow [*Ptychocheilus lucius*] and Desert Pupfish occupy biologically suitable perennial waters (BLM 2010a, BLM 2019a). Portions of the Colorado River in the vicinity of the Regional Review Recommendation (following the Ten West Link Transmission Line Project authorized ROW) are considered critical habitat for the razorback sucker. However, the decision area crosses intermittent washes that would not be suitable for these species.

Trends and Forecasts

The human population in the Sonoran Basin and Range Ecoregion has increased substantially in the past two decades (Calzia and Wilson 2012). If these trends continue as expected, they could significantly affect water resources in the vicinity of the corridor. As the population grows aquatic habitat may be affected if groundwater pumping and withdrawal from the Colorado River are used to meet water demands (Calzia and Wilson 2012).

Existing studies indicate that the Sonoran Desert has exhibited a drying trend and warmer temperatures over the past few decades and these trends are expected to continue into the future (Prein et al. 2016). Drier conditions will create more adverse conditions for aquatic species in the Sonoran Basin and Range Ecoregion like those described for the Mojave Basin Ecoregion.

5.4.4.4 Special Status Species

Current Conditions and Context

The decision area intersects sensitive habitat for the Sonoran population of the Desert Tortoise (*Gopherus morafkai*) (Figure 5.4-3). The Sonoran Desert Tortoise is similar in appearance to the Mojave Desert Tortoise (*G. agassizii*), but the two species are genetically different and occupy different geographic ranges separated by the Colorado River. The Sonoran Desert Tortoise, for example, occurs south and east of the Colorado River in Arizona and Northern Mexico. This species is a state-managed species in Arizona. It is discussed below and summarized in Table 5.4-8. The Sonoran Desert Tortoise inhabits desert scrub vegetation communities on the rocky hillsides and alluvial fans in the Sonoran Desert in and Northern Mexico. Priority habitat for the Sonoran Desert Tortoise designated by the BLM occurs within the decision area. The BLM identified priority habitat areas ranging between Category I (highest priority) to Category III in the 1988 "*Desert Tortoise Habitat Management on Public Lands: A Rangewide Plan*" (Spang 1988). Category II habitat intersects the designated corridor

in Arizona between MP 120 and MP 130 and also intersects the Regional Review Recommendation along the Ten West Link authorized ROW. Category III habitat intersects the designated corridor in Arizona between MP 140 and MP 153 and also intersects the Regional Review Recommendation along the Ten West Link authorized ROW. Habitat categories have been defined as follows:

- Category 1: Habitat Area essential to maintenance of large, viable populations and conflicts with land use planning are usually resolvable.
- Category 2: Habitat Area may be essential to maintenance of viable population and conflicts with land use planning are usually resolvable.
- Category 3: Habitat Area not essential to maintenance of viable populations and conflicts with land use planning are not resolvable.

There are no Category I habitats within the decision area. Other species that could occur within the decision area include the Southwestern Willow Flycatcher, Yellow Billed Cuckoo, Ridgeway's Clapper Rail, Northern Mexican Garter Snake, and Sonoran Pronghorn.

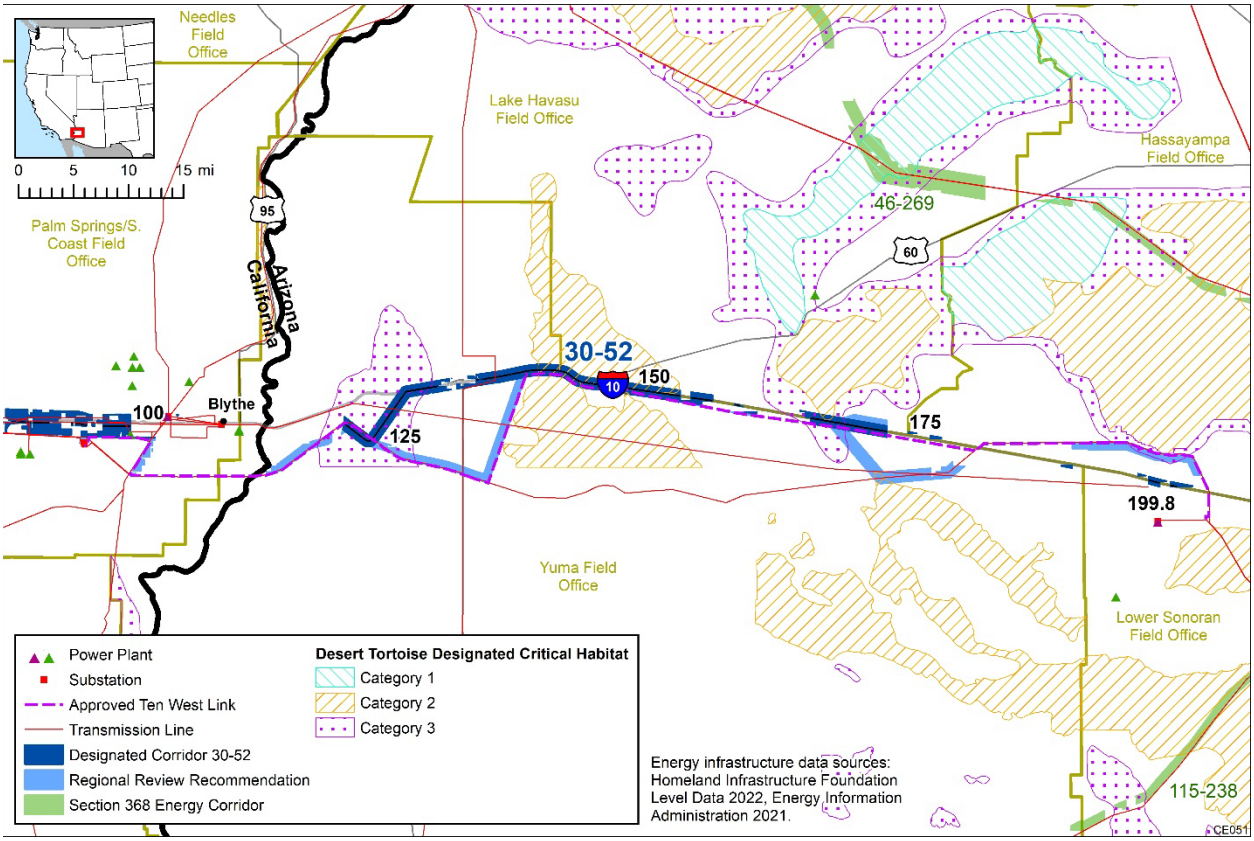

Figure 5.4-3. Special Status Species Habitat in the Vicinity of the Decision Area.

Table 5.4-8. Special Status Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Species Status and Habitat Association	Habitat within the Decision Area
Sonoran Desert Tortoise (*Gopherus morafkai)*	The Sonoran Desert Tortoise is a BLM- and State-managed species in Arizona. It inhabits desert scrub vegetation communities on the rocky hillsides and alluvial fans in the Sonoran Desert in and Northern Mexico.	Category 2 habitat for the species intersects the designated corridor in Arizona between MP 120 and MP 130. Category 3 habitat intersects the designated corridor between MP 140 and MP 153. Category 2 and Category 3 habitat intersects the Regional Review Recommendation along the Ten West Link authorized ROW.

Ecoregional conditions for the decision area are described in the terrestrial wildlife section (Section 5.4.4.2). The Sonoran Desert Tortoise currently occurs across much of its historical range (USFWS 2021). In a recent status assessment, the USFWS (2021) evaluated several factors that could affect the Sonoran Desert Tortoise. These include: (1) altered plant communities, (2) altered fire regimes, (3) habitat conversion to human-developed landscapes, (4) habitat fragmentation, (5) climate change, and (6) human-tortoise interactions such as handling, collecting, and killing of individuals.

Trends and Forecasts

Population models developed by the USFWS showed that the Sonoran Desert Tortoise may be particularly vulnerable in the future to two primary threats: urban population growth and climate change (USFWS 2022).

5.4.5 Environmental Justice

General information for environmental justice that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.5.

Current Conditions and Context

For environmental justice, a 2 mi buffer area was used to evaluate minority and low-income populations, 1 mi on either side of the decision area. The geographic distribution of minority and low-income groups within the buffer area was based on census block group data from the 2020 Census (U.S. Census Bureau 2022a, 2022b, 2023).

Table 5.4-9 lists the minority and low-income composition within the 2 mi buffer in the three counties on the basis of 2020 census data. For two of the counties, the total minority population (those not listed as White alone, not Hispanic or Latino) in the buffer does not exceed 50%, and is not meaningfully greater (10 percentage points or more) than the countywide average. Although the total minority population in that part of the buffer located in Riverside County exceeds 50%, it is not meaningfully greater (10 percentage points or more) than countywide averages. The number of persons at or below twice the Federal poverty rate in the buffer exceeds the county rate in Maricopa

County, Arizona and Riverside County, California, and exceeds 50% in the buffer in both of these counties (Table 5.4-9).

The 2 mi buffer had a population of 7,386 in 2020 (U.S. Census Bureau 2022b). Countywide median household income ranged from $34,956 in 2020 in La Paz County to $70,732 in Riverside County, while the average unemployment rate in the three counties was 5.4% in 2021.

Table 5.4-9. Minority and Low-Income Population Within Decision Area Buffer, 2020

Population Category	County and State		
	La Paz, Arizona	Maricopa, Arizona	Riverside, California
Racial Groups			
Number of persons:			
Hispanic or Latino	432	492	2,013
White alone, not Hispanic or Latino	2,016	752	1,154
Black or African American alone	9	11	137
American Indian and Alaska Native alone	17	7	14
Asian alone	6	6	18
Native Hawaiian and Other Pacific Islander alone	26	0	3
Two or more races	100	29	107
Minority percent	23.0	42.7	66.6
County Minority percent	33.6	46.7	67.4
Low-income Population			
Number of persons	1,110	731	2,169
Low-income percent	38.9	57.6	56.8
County Low-income percent	44.3	28.6	30.4

Sources: U.S. Census Bureau (2022a, 2022b,2023).

Trends and Forecasts

Forecasts of the effects of changes in employment opportunities, cost of living, social and cultural values, and consumer preferences on population growth and migration, are undertaken only at the regional or national level for the population as a whole, with detailed forecasted data on minority and low-income populations at the census block group level not available. Preparing demographic forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local employment, unemployment, income, population growth and migration, and the characteristics of minority and low-income populations, that are difficult to forecast, particularly at the census block group level.

5.4.6 Geology, Soils, and Mining and Mineral Resources

Current Conditions and Context

The relatively small California portions of the decision area are situated on Quaternary alluvium (Jennings 2010). They are adjacent to the heavily agricultural region known as the Palo Verde Valley surrounding Blythe, California. To the east, in Arizona, the decision area is on Quaternary sediments and faulted Mesozoic volcanic and sedimentary rock units of the Dome Rock Mountains (Arizona Geological Survey 2002). Further east, the decision area is situated on surficial deposits (alluvium) of the La Posa Plain (Arizona Geological Survey 2002). Furthest east, the decision area is located on alluvium of the Renegras Plain and Harquahala Plain and a small area of Quaternary volcanics (Arizona Geological Survey 2002).

Soil is poorly developed in alluvial and colluvial materials in the low areas of the decision area, and it is generally absent in the upland areas of exposed bedrock. The decision area contains multiple locatable resources including gold, silver, copper, manganese, and gypsum and is mined for such. There are several ongoing mining operations as well as many casual use mining claim exploration projects by the public.

Trends and Forecasts

The decision area extends across an area that is essentially unpopulated with negligible change expected in the geologic, mineralogic, and soil conditions. Irrigated agriculture near Blythe, California is not expected to extend into the decision area.

5.4.7 Human Health and Safety

General information for hazardous materials and human health that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.7

Current Conditions and Context

Volcanic Hazards –The designated corridor is not located within the area of influence of an active volcano (DOE and BLM 2008, Table 3.14-1). The volcanic hazard is low.

Seismic Hazards – The decision area is located in an area with low earthquake potential. The area from MP 94 to approximately MP 150 has a 2% probability of horizontal shaking exceeding 8 - 16%g within 50 years (USGS 2022a). The area from MP 150 east to MP 200 has a 2% probability of horizontal shaking exceeding only 4 – 8%g within 50 years. If an earthquake with a PGA in these strength ranges were to strike near a transmission line or pipeline in the corridor, significant damage to the infrastructure would be unlikely.

Fault Crossings – Faults in which a slip has occurred within the past 10,000 years (Holocene faults) are commonly considered active (USGS 2022b). The decision area is not near any known fault lines (USGS 2021).

Liquefaction Potential – The designated corridor is not in an area rated low, medium, or high liquefaction potential (DOE and BLM 2008, Figure 3.14-3). This indicates that the risk of liquefaction is low.

Landslide Potential – The designated corridor does not intersect with any areas classified for landslide susceptibility (DOE and BLM 2008, Figure 3.14-5). The risk of landslide at any location near this corridor is low.

Trends and Forecasts

The decision area has a low probability of experiencing a powerful quake and/or landslide within the next 50 years.

5.4.8 Hydrology

Current Conditions and Context

The decision area is primarily located on alluvial plains, which are comprised of unconsolidated sand and gravel and considered to be basin-fill aquifers (USGS 2000). The bedrock in relatively smaller areas does not generally serve as aquifers.

On either side of the Dome Rock Mountains, the designated corridor crosses ephemeral channels in the bedrock and alluvial areas (USGS 2022c). The alluvium east of the Dome Rock Mountains also includes alluvial channels formed by runoff from the Kofa Mountains to the east. Eastern portions of the corridor cross unnamed ephemeral washes of the Renegras Plain and Harquahala Plain.

The designated corridor is not located on a sole source aquifer (EPA 2022c), and it does not cross any Wild and Scenic Rivers (USGS 2022c) or any perennial rivers.

Trends and Forecasts

The decision area extends across an area of low population with the exception of a few small towns. Changes in hydrologic conditions are expected to occur on short time scales in response to precipitation events. Agricultural water usage will continue in nearby areas, with irrigation by the Colorado River in the Palo Verde Valley in California and by pumping of groundwater in several places in Arizona. Evaluating the sustainability of water resources for agricultural purposes at these locations is beyond the scope of this study.

5.4.9 Lands and Realty

General information for lands and realty that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.9.

Current Conditions and Context

Lands and realty management is guided by decisions made in existing RMPs. For Corridor 30-52, the planning area includes the BLM-administered lands managed under

the Bradshaw-Harquahala RMP (BLM 2010b), the California Desert Conservation Plan (BLM 1999), as modified by the Northern and Eastern Colorado Desert/CDCA Plan (BLM 2002a, 2002b), the DRECP LUPA (BLM 2016a), the Lake Havasu RMP (BLM 2007a), and the Yuma RMP (BLM 2010a). The lands and realty program consists generally of land use authorizations (e.g., ROWs) and land tenure (purchases and acquisitions, sales and exchanges, and withdrawals of public land).

Trends and Forecasts

In general, current management trends for land tenure indicates that the BLM will pursue a long-term program for repositioning public lands toward improved manageability and increased public benefits. Lands may be acquired to provide access or facilitate management, or to protect or enhance natural resources (BLM 2007b). Future opportunities for land acquisitions would be contingent on willing sellers, the condition of proposed acquired lands, and the availability of funding (BLM 2023a).

In general, the BLM will continue to consider land exchanges if such exchanges enhance public resource values and improve land ownership patterns and management capabilities of both private and public lands by consolidating ownership and reducing the potential for conflicting land use. Small, isolated parcels of public lands, especially those surrounded by large blocks of individually owned private parcels, are most likely to be considered for disposal in the future. Generally, the BLM would also consider the disposal of some isolated parcels near communities, if those parcels are deemed necessary for community expansion and economic development. The BLM anticipates an increase in requests from private individuals and communities to acquire public lands in the future (BLM 2019b).

The lands and realty program responds to requests for ROWs, permits, leases, withdrawals, and land tenure adjustments from other programs or outside entities. The frequency of such requests is anticipated to increase as neighboring communities grow, and as the demand for use of public lands increases. As a result, future management of the lands and realty program may become more intense, complex, and costly (BLM 2019b).

The main land use topics addressed in this section focus on renewable energy; ROWs, particularly utility corridors and, as applicable, roads and railroads; and military flight operations. While military flight operations are not an actual use of BLM-administered lands, they could have potential effects on energy corridors, particularly those involving above-ground transmission lines.

5.4.9.1 Renewable Energy

Current Conditions and Context

In 2005, the BLM signed a ROD implementing a wind energy development program. The BLM-administered lands were categorized into areas having a low, medium, or high potential for development of wind energy production based on wind power classifications. Lands categorized as having low potential fall in wind power Classes 1

and 2, lands with a medium potential fall in wind power Class 3, and lands with a high potential fall in wind power Class 4 and higher. Wind resources in Class 4 and higher are generally considered to be economically developable with current technology. Class 3 wind resources are expected to become more economical as low-wind-speed turbines become increasingly available (BLM 2005).

The California portion of the decision area has low potential for wind energy production. Most of the Arizona portions of the decision area also have low potential. However, a small portion along the Regional Review Recommendation along the Ten West Link Transmission Line Project authorized ROW just north of the northeast corner of the Yuma Proving Ground has medium-to-high potential (BLM 2005).

In 2012, the BLM approved the Western Solar Plan, implementing RMP amendments for a solar energy development program in six southwestern states, including California and Nevada. The Solar PEIS ROD designated SEZs, areas that the BLM prioritizes for utility scale production of solar energy as well as variance areas (areas potentially available for utility-scale solar energy development located outside of SEZs). On December 8, 2022, the BLM published a NOI to prepare a PEIS and conduct scoping to evaluate the environmental effects of potential improvements and expansions to the BLM's utility-scale solar energy planning (BLM 2022a). The Brenda SEZ is located about 2.8 mi north of the designated corridor at MP 153. Solar variance areas occur within the decision area from MP 96 to MP 102, MP 145 to MP 155 and MP 165 to MP 173 (based on the mileposts for the designated corridor). The designated corridor overlaps solar variance areas from MP 189 to MP 190 and MP 196 to MP 198.8. Most of the Regional Review Recommendation along the Ten West Link authorized ROW from MP 190 to MP 199.8 (based on the mileposts for the designated corridor) are within solar variance areas except for the eastern 4 mi that is mountainous (DOE and BLM 2014).

Trends and Forecasts

Renewable energy production on BLM public lands has increased in recent years. As of November 2021, permitted renewable energy projects on BLM-managed lands include 36 wind, 37 solar, and 48 geothermal projects with a total combined capacity of more than 12 gigawatts of power (BLM 2023b). Continued growth of responsible renewable energy has recently been supported by Executive Order 14008, the Energy Act of 2020, and Congressional direction to seek to permit at least 25 gigawatts of solar, wind and geothermal energy production on public lands no later than 2025 (BLM 2023c). In addition, laws enacted in most of the western states require energy companies and utilities to provide a portion of their energy from renewable energy sources. As a result, the BLM anticipates an increased interest in the use of public lands for renewable energy development.

The placement of renewable energy facilities depends on a number of factors are not always addressed in BLM land use plans such as economics, proximity to the electrical grid, project design, current technology, and potential resource impacts. However, BLM land use plans can be amended through the public process to accommodate such uses if necessary (BLM 2008a).

Under the Western Solar Plan, areas that are not included as part of the SEZs or variance areas are to be considered as potential exclusion areas for utility-scale solar energy development. Exclusion areas are identified based on the potential for resource conflicts (e.g., Greater Sage-grouse habitat) or because lands are not well suited for utility-scale solar energy development (BLM 2019b). The upcoming Solar PEIS may identify additional areas as suitable for utility-scale solar energy development, potentially increasing future solar energy development on BLM-administered land.

As the potential for wind resources are limited within the decision area, it is unlikely that utility-scale wind energy projects will be developed in the area. There are opportunities for solar energy projects to be developed in the area due to the proximity to solar variance areas and the Brenda SEZ.

5.4.9.2 Rights-of-Way

Current Conditions and Context

Section 503 of FLPMA provides for the designation of corridors and encourages use of ROW collocation to minimize environmental impacts and the proliferation of separate ROWs.

The decision area extends along I-10. The corridor contains several transmission lines and the El Paso natural gas pipeline (MP 128 to MP 152). The Regional Review Recommendation follows the Ten West Link Transmission Line project, which was issued a Notice to Proceed by the BLM in July 2022.

Trends and Forecasts

In general, requests for ROWs will continue to increase due to increasing population growth and urban development, which in turn, will increase demand for energy and the need for improved electric transmission grid reliability. Demand for ROWs may increase within areas that have potential for wind, solar, and geothermal energy. Existing or designated corridors could provide grid connectivity to accommodate for the anticipated growth in renewable energy production. The BLM will continue to process and grant ROWs, consistent with national, state, and local plans. The BLM will continue to encourage colocation of ROWs to minimize environmental impacts and proliferation of separate ROWs.

As with past and present development, designated energy corridors or colocation with existing infrastructure will continue to be preferred for future development of linear utility infrastructure projects (particularly large, interstate energy transport projects). Colocation of utility infrastructure could continue to concentrate development, and associated surface disturbance, to certain areas, including areas adjacent to highways and major county roads, railroads, Section 368 energy corridors, and other existing or proposed energy corridors (BLM 2019b).

The proximity of the Brenda SEZ and solar variance areas to the decision area provides the opportunity for the corridor to accommodate transmission tied to renewable energy development (BLM, Forest Service, and DOE 2022).

5.4.9.3 Military Training Flight Operations

Current Conditions and Context

While military training flight operations are not an actual use of BLM-administered lands, they could have a potential effect on energy corridors or renewable energy projects, particularly above-ground transmission lines and wind energy projects. The decision area is located within MTR-VR, MTR-IR, an MTR Slow Route, and an SUA. In addition to the Ten West Link authorized ROW, there are other existing transmission lines that also occur within the MTRs and SUA. Table 5.4-10 displays the MTRs and where they overlap the decision area.

Table 5.4-10. Military Training Routes within the Decision Area

Military Training Route Type	State	Planning Area	MPs[a]
Visual Route	California		Designated corridor: MP 146 to MP 175 and MP 183 to MP 187 Regional Review Recommendation along Ten West Link authorized ROW: MP 129 to MP 138, MP 146 to MP 156, MP 158 to MP 175, MP 185 to MP 187, and MP 198 to MP 199.8
Instrument Route	California		Designated corridor: MP 125 to MP 199.8 Regional Review Recommendation along Ten West Link authorized ROW: MP 137 to MP 198.8
Slow Route	California		Designated corridor: MP 106 to MP 121 Regional Review Recommendation along Ten West Link authorized ROW: MP 104 to MP 121
Special Use Area	California		Designated corridor: MP 134 to MP 146 Regional Review Recommendation along Ten West Link authorized ROW: MP 139 to MP 146

[a] MPs for the Regional Review Recommendation utilize the corresponding MPs from the designated corridor.

Trends and Forecasts

The trends and forecasts for military training flight operations are not under the purview of the BLM. DoD would consult with the BLM if any significant changes or increases in military training flights over BLM-administered lands were planned for the future.

5.4.10 Lands with Wilderness Characteristics

There are no managed lands with wilderness characteristics units within the decision area. Lands with wilderness characteristics are not expected to be affected during this planning effort and will not be discussed further.

5.4.11 Livestock Grazing and Wild Horse and Burro

General information for livestock grazing and wild horse and burro that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.11

5.4.11.1 Livestock Grazing

Conditions and Context

Management direction for livestock grazing comes primarily from the RMPs that provide management for livestock grazing and rangeland health. Most BLM-administered lands are or can be grazed by livestock except for lands considered unsuitable due to steep slopes (greater than 70%) or barren areas (less than 2%vegetation) (BLM 1993, 2008b; DOE and BLM 2008). The number of Animal Unit Months (AUMs) could be modified over time—e.g., based on whether the allotments meet the land health standards (BLM 2008c). An AUM is the amount of forage necessary to support one cow and calf, five sheep, one horse, or one indigenous animal for onemonth. Table 5.4-11 and Figure 5.4-4 provide information on the livestock grazing allotments that intersect the decision area. There are 10 grazing allotments within the within the designated corridor and seven grazing allotments within the Regional Review Recommendation (Table 5.4.11 and Figure 5.4-4). The decision area overlaps less than 5% of the total size of the allotment for each allotment except for one: the decision area overlaps 5.1%of the Scott allotment and the Regional Review Recommendation overlaps 6%of the Scott allotment.

Table 5.4-11. Livestock Grazing Allotments within the Corridor 30-52 Decision Area[a]

Allotment Name (Allotment Number)	Administrative State	Allotment Acreage	Percentage of the allotment within the decision area
Corridor 30-52			
Aguila (03000)	Arizona	222,164	0.04
Wells/Ehrenberg (03088)	Arizona	78,618	4.1
Scott (03075)	Arizona	132,931	5.1
Crowder-Weisser (01933)	Arizona	320,231	2.7
K Lazy B (03047)	Arizona	144,879	2.7
Clem (03017)	Arizona	86,846	0.1
East Clem (00121)	Arizona	83,775	1.0
West Clem (03017)	Arizona	28,953	0.5
Martinez (03097)	Arizona	60,556	1.7
Weisser (03096)	Arizona	67,854	3.6
Regional Review Recommendation			
Crowder-Weisser (01933)	Arizona	320,231	0.1
Clem (03017)	Arizona	86,846	2.4
Carter-Herrera (03015)	Arizona	41,683	3.7
Wells/Ehrenberg (03088)	Arizona	78,618	3.9
East Clem (00121)	Arizona	83,775	4.3

Allotment Name (Allotment Number)	Administrative State	Allotment Acreage	Percentage of the allotment within the decision area
K Lazy B (03047)	Arizona	144,879	4.8
Scott (03075)	Arizona	132,931	6.0

[a] Allotments are listed if they are on BLM-administered lands within the decision area.

Source: BLM 2023d

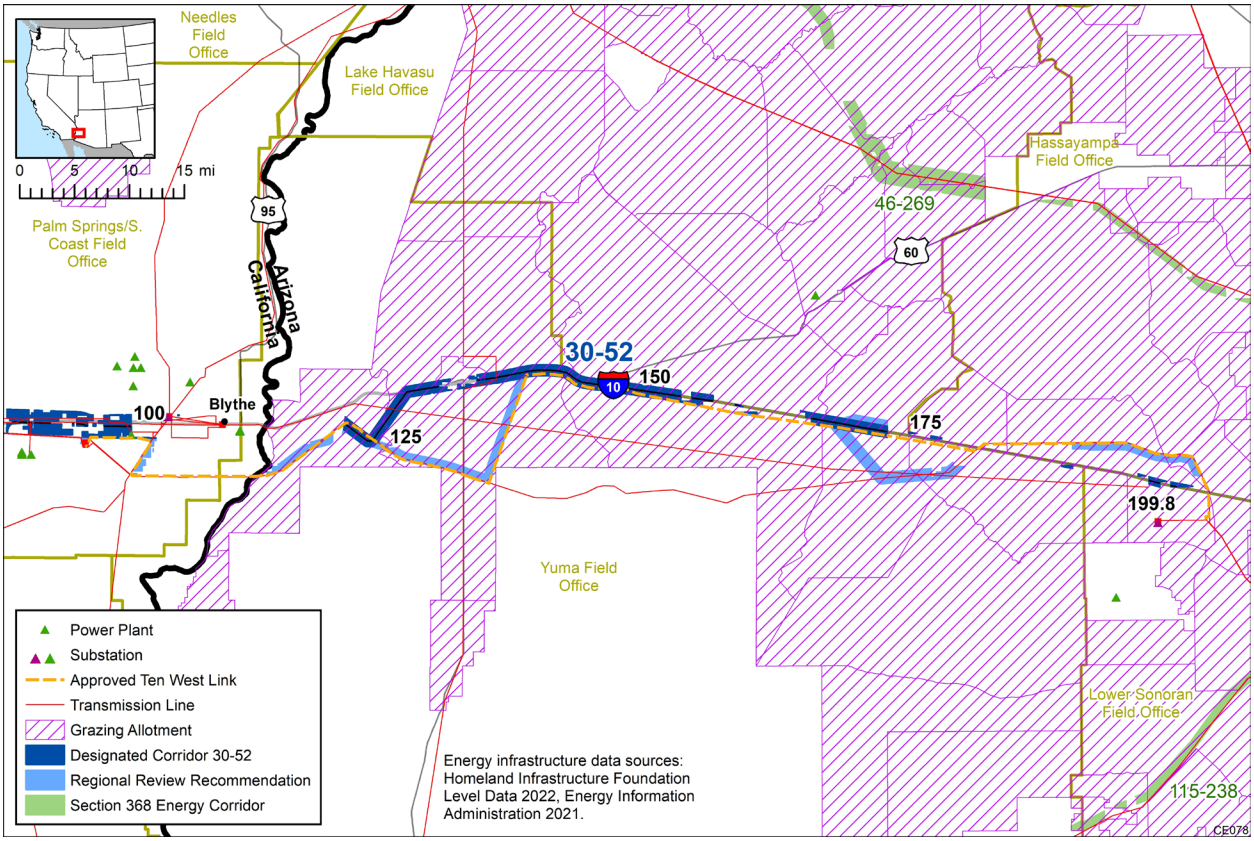

Figure 5.4-4. Grazing Allotments in the Vicinity of the Decision Area

Trends and Forecasts

Livestock grazing will continue to be managed through existing laws, regulations, and policies. Appropriate BMPs will be followed to protect rangeland resources and, where necessary, to mitigate any conflicts with other uses and values. The BLM will continue to assure compliance with existing permit/lease requirements, modify permits and leases, monitor and supervise grazing use, and to remedy unauthorized grazing use. Management direction for livestock grazing comes primarily from the RMPs that provide current management for livestock grazing and rangeland health. Review of existing AUMs would be conducted on individual allotments through assessment of existing activity plans (i.e., allotment management plans, livestock grazing decisions, habitat management plans, watershed management plans, biological opinions, and multiple-use decisions). The BLM enhances range conditions by controlling animal numbers, regulating season of use, regulating duration of use, and periodically resting

rangelands as part of livestock management systems and following catastrophic events, such as fire (BLM 2008b).

The occurrence of weather extremes or shifts in climatic variables, such as the increase in frost-free days, change in the timing or amount of precipitation, and warmer summers, is often cited as a growing trend that may be the result of climate change (see Section 5.1.2). Increases in temperatures and shifts in precipitation patterns may reduce livestock forage production and alter the livestock carrying capacity on BLM-administered lands. Season or timing of grazing use and livestock numbers, distribution, intensity, and type of livestock may need to be adjusted on a temporary or long-term basis in response to climatic factors.

5.4.11.2 Wild Horse and Burro

Current Conditions and Context

The decision area intersects the Cibola-Trigo wild horse and burro HMA in Arizona (Figure 5.4-5). The maximum AML for the HMA is 150 wild horses and 285 wild burros; however, the HMA contains 352 wild horses and 243 wild burros (BLM 2023e). The designated energy corridor crosses the HMA from the California/Arizona border to MP 127; while the Regional Review Recommendation along Ten West Link authorized ROW crosses the HMA from the California/Arizona border to about 6 mi south of MP 130 (based on mileposts for the designated corridor).

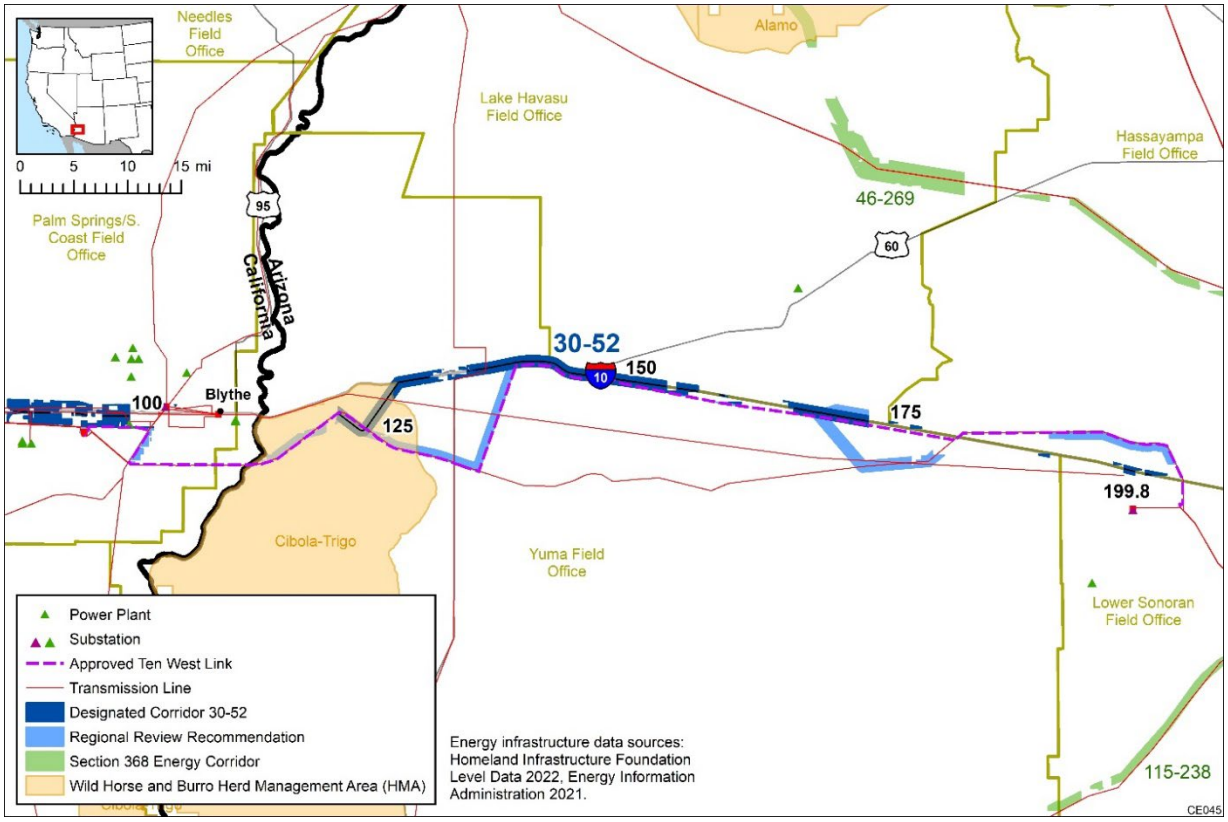

Figure 5.4-5. HMAs in the Vicinity of the Decision Area

Pertinent information on the HMA is listed below (BLM 2023).

Cibola-Trigo HMA (in Arizona)

HA size 1,034,422 ac (281,023 on BLM-administered land)

HMA size: 634,218 ac (185,132 ac on BLM-administered land)

AML: burros 228-285 and horses 120-150,

2023 population estimate: burros: 243 and horses: 352

Most recent population inventory March 2014

Most recent year at AML: 2002

Last gather: November 2022.

Trends and Forecasts

Challenges to wild horse and burro management include controlling populations within HMAs to maintain herd and rangeland health. Wild horse and burro herds that are above their established AML are at increased risk for food and water scarcity and habitat degradation, especially as extreme drought conditions continue to threaten animal and land health across the West. BLM-wide population estimates from March 2022 indicate a two-year decline in wild horse and burro population; the population decreased by 3,805 animals between March 2021 and March 2022. As of March 2022, the estimated total wild horse and burro population was 82,384 animals, three times the BLM's goal of approximately 27,000 animals (BLM 2022b). Climate change effects, including change in precipitation patterns and temperature, could further reduce water and forage availability and habitat for wild horses and burros.

5.4.12 Noise

General information for noise resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.12.

Current Conditions and Context

Arizona and California do not have regulatory standards limiting noise levels from sources associated with activities along the energy corridor (NPC 2022). La Paz and Maricopa counties in Arizona have not established quantitative noise-limit regulations applicable to energy corridor activities.

California State law requires a Noise Element, which is the County's approach to controlling environmental noise and limiting community exposure to excessive noise levels. The California Governor's Office of Planning and Research's noise element guidelines include recommended noise level standards for evaluating land use noise compatibility (State of California 2017). The guidelines contain a table that describes the compatibility of various land uses with a range of environmental noise levels in terms of CNEL/L_{dn}. These guidelines require a rather broad interpretation. The Riverside County General Plan Noise Element provides a systematic approach to identifying and

appraising noise problems in the community; quantifying existing and projected noise levels; addressing excessive noise exposure; and community planning for the regulation of noise. This element includes policies, standards, criteria, programs, diagrams, a reference to action items, and maps related to protecting public health and welfare from noise. It states that noise-sensitive land uses (e.g., residences, schools, hospitals) is discouraged in excess of 65 dBA CNEL (Riverside County 2015). In addition, Chapter 9.52 in the Riverside County Code of Ordinance (Chapter 9.52 - Noise Regulation) defines maximum sound level (L_{max}) by land use and by day or night.

Noise sources around the decision area include road traffic, railroad traffic, aircraft flyover by military and civilian aviation, agricultural activities, animal noise from nearby wildernesses, industrial activities, and infrequent community activities and events. In addition, crackling or hissing corona noise from transmission lines and humming noise from substation transformers are additional noise sources along the corridor. Except Blythe in California and small towns in Arizona where the designated corridor passes, the decision area is mostly undeveloped, sparsely populated, and remote – the overall character of which is considered mostly pristine to rural.

Airports: The nearest airport is Blythe Airport in Riverside County, California, about 2 mi (3 km) north of the west end of the designated corridor. The next nearest airports are Tonopah Airport and Maulin Airstrip in Maricopa County, Arizona, which are located about 5 mi (8 km) east of the east end of the designated corridor. Many public, private, and military airports along with heliports in these counties are scattered around the decision area, especially clustered around the west and east ends.

Roads and Railroads: The designated corridor extends along Interstate 10, while the Regional Review Recommendation along the Ten West Link authorized ROW runs mostly parallel to Interstate 10 within a short distance. In California, U.S. Route 95 joins Interstate 10 from the north of Blythe, travels east, and diverge to the south from Interstate 10 near Quartzsite, Arizona, where Arizona State Route 95 from the north meets. U.S. Route 60 merges to Interstate 10 from the northeast direction near Brenda in Arizona. In addition, many county roads and local roads are located around the corridor. The nearest railroad to the decision area is Arizona & California Railroad near Vicksburg, which is about 8 mi (13 km) north of MP 160.

To date, no environmental noise survey has been conducted in the decision area. On the basis of the population density, the day-night average sound level (L_{dn} or DNL) is estimated to be 47 dBA for Riverside County in CA, 28 dBA for La Paz County in Arizona, and 49 dBA for Maricopa County in Arizona, which correspond to quiet suburban, wilderness, and quiet suburban residential areas, respectively (Cavanaugh and Tocci 1998, Miller 2002).

Trends and Forecasts

Primary noise sources include roads, airports, railroads, and stationary sources. In general, doubling the number of noise sources of the same intensity increases the sound level only by 3 dB, which is a barely noticeable difference. For example, if the number of passenger cars increases from 1,000 to 2,000 vehicles per hour on any road,

the noise level increases only by 3 dB. This level of drastic change in activities is not anticipated in the remote and unpopulated decision area. As a result, even with population and industrial growth in the region, noise level around the decision area is forecasted to increase slightly and unnoticeably in the near future unless new and noisy sources, to which the receivers have never been exposed before, come into the region.

5.4.13 Paleontology

General information for paleontological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.13.

Current Conditions and Context

Figure 5.4-6 depicts the PFYC Classes within the decision area. The PFYC Classes represent an estimate based on the available regional geologic data; they are not meant to replace project-specific evaluations of potential paleontological resources. The PFYC Classes within the decision area in Arizona is mostly Class 1 (very low). Where the PFYC classification is Class 1, the probability of impacting significant paleontological resources would be very low and further assessment of paleontological resources is likely unnecessary. There are portions in Arizona and in California south of Blythe with PFYC Class 2 (low). The Class 2 areas in California are mostly on private land. Where the PFYC classification is Class 2, the probability of impacting significant paleontological resources would be low and further assessment of paleontological resources is would likely not be unnecessary, unless paleontological resources are known or found to exist. The PFYC classification in Arizona just east of the Colorado River is PFYC Class 4, which indicates a moderate to high probability for impacting paleontological resources. Detailed field assessment is typically required prior to land disturbing activities in PFYC Class 4 areas. There are PFYC Class 5 areas near MP 100 west of the Colorado River in California. PFYC Class 5 areas indicate a high probability for impacting significant paleontological resources. The area should be assessed prior to land tenure adjustments and pre-work surveys would likely be required.

In Arizona, no known paleontological occurrences have been found on BLM-managed lands within the Bradshaw-Harquahala planning areas and paleontological resources are not actively managed for the planning areas under existing management plans (BLM 2007b). Significant fossil sites on BLM-managed lands within the Lake Havasu planning area have been found within the Chemehuevi Formation, which extends along the Colorado River from Lake Mead to Yuma, Arizona. Findings include remains of mammoths, petrified driftwood, mammalian herbivories, and a large cat (BLM 2006a). Within the Yuma planning area, several rock units have the potential to contain paleontological resources, specifically rock units originally deposited as river, stream or lake sediments (BLM 2008d).

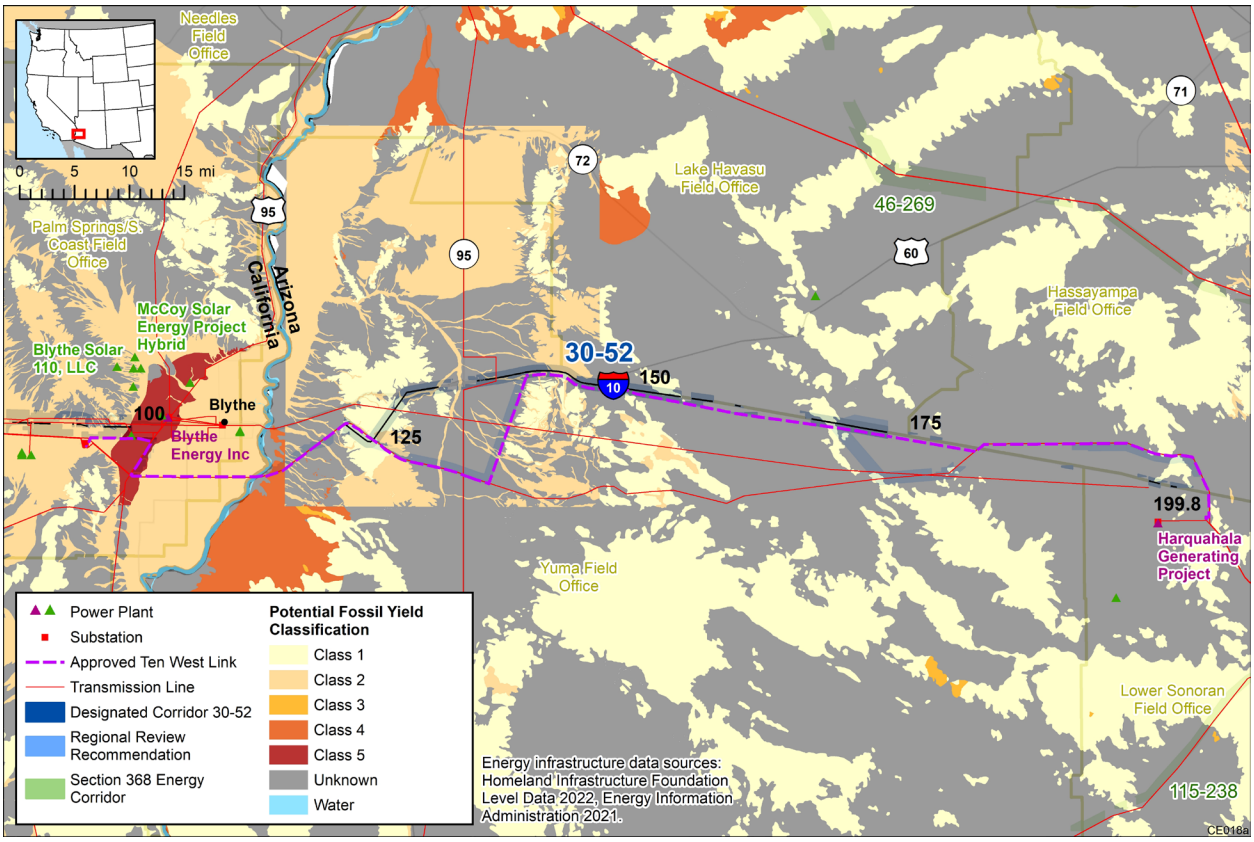

Figure 5.4-6. Potential Fossil Yield Classification in the Vicinity of the Decision Area

Trends and Forecasts

Soil disturbance from surface-disturbing activities, including excavation or removal of paleontological resources could create the potential for erosion. Designating areas of invertebrate and plant fossil wealth for recreational collectors could increase visitation, and therefore, increase the potential for impacts on soil from erosion (BLM 2006a).

5.4.14 Recreation

General information for recreation that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.14.

Current Conditions and Context

The Kofa and Big Horn Mountains Wilderness Areas and Dripping Springs ACEC on BLM-administered lands near the decision area provide numerous recreational opportunities throughout the area.

The decision area intersects several SRMAs (Table 5.4-12). SRMAs recognize unique and distinctive recreation values and are managed to enhance a targeted set of activities, experiences, benefits, and recreation setting characteristics, which become the priority management focus. The Colorado River Corridor Destination SRMA is primarily used for water-based activities during summer. During the winter, the SRMA is

a destination for OHV riding, hunting, camping, horseback riding, cultural resource viewing, and fishing. The La Posa SRMA is a national and international camping destination, with thousands of retirees migrating to the area every winter in recreational vehicles. While camping, these visitors also participate in a variety of other activities on the public lands, such as hiking and , geocaching (BLM 2010a). The primary activities within the Plomosa SRMA are cultural and historical sightseeing, wildlife watching, hiking, mountain biking, OHV touring, vistas and photography, hunting, and public education (BLM 2007a).

Table 5.4-12. SRMA Intersections with the Decision Area

SRMA	State	Planning Area	MPs
Colorado River Corridor Destination	California	Yuma Field Office	MP 111 to MP 123
La Posa Destination	California	Yuma Field Office	MP 123 to MP 160.5
Plomosa	California	Lake Havasu Field Office	MP 143 to MP 149.5

Most of the decision area has a Limited OHV management area designation. The Ehrenberg Sandbowl Open OHV in Arizona near the border with California is north of the Regional Review Recommendation along Ten West Link Transmission Line authorized ROW and south of I-10 and the designated corridor between MP 112 and MP 113 (based on the mileposts for the designated corridor). Along the Lake Havasu Field Office portion of the decision area, OHV use is limited to designated roads and trails in the SRMA and limited to existing roads and trails elsewhere (BLM 2007a).

Trends and Forecasts

A broad range of outdoor recreation opportunities will continue to be provided on BLM-administered lands, subject to the demand for such opportunities and the need to protect other resources. SRMAs will receive first priority for operation and maintenance funds (BLM 2001**)**. As population pressures increase, and with them the demand for quality outdoor recreation, the BLM field offices will retain and develop its ability to provide a wide variety of recreational opportunities. In part, this demand would be met by restoration and regular maintenance of existing recreation sites, creation of new recreational facilities, and more intensive management. However, the unspoiled character of natural landscapes must be preserved and vulnerable areas would be excluded from all development (recreational and otherwise) in order to preserve their pristine, natural condition (BLM 2007a; 2010a,b; 2013; 2016a; 2019b,c).

The use of developed recreation sites is on an upward trend, following growth trends in adventure tourism and heritage tourism, and increased populations in communities. It is reasonable to expect that there will be a continuing need to construct recreation facilities in response to community and tourism industry growth. With visitation to BLM-administered public lands continuing to increase (and with present visitation already creating the need for additional facilities), facilities to provide for these visitors must keep pace, to protect the land and to provide for human sanitation. Current use levels continue to degrade resources, and additional facilities are needed to accommodate visitation and to stabilize resource values (BLM 2019b).

OHV use has become a substantial issue because of the number of users who participate in this recreation opportunity, and because of concerns related to the potential resource degradation that can result from high levels of unmanaged use in sensitive areas. OHV use has become one of the fastest growing recreation activities. Visitors are drawn to these areas to experience the numerous roads and trails available for OHV use, the diverse backcountry opportunities, the spectacular scenery, and the challenging OHV opportunities the landscape and terrain provide. This trend is expected to continue (BLM 2019b). Increasing OHV traffic on public lands has caused the uncontrolled proliferation of user-created, undesignated trails arising from repeated cross-country travel. Unauthorized motorized use causes natural resource damage (e.g., to soils and habitat) and increased public safety concerns (WAPA and BLM 2015a). The development of field office–wide OHV plans will help to control the social and environmental impacts related to this activity (BLM 2007c).

5.4.15 Socioeconomics

Current Conditions and Context

Socioeconomic data are presented for an ROI around the decision area, composed of the counties in which the corridor would be located. The ROI for the decision area includes La Paz and Maricopa counties in Arizona and Riverside County, California.

Population

The nearest population centers in the area are Blythe California on the west (2020 population of about 20,000), Quartzsite Arizona at about MP 135 (2020 population of about 4,000), and Phoenix Arizona located about 60 mi (100 km) southeast of MP 200 (2020 population of about 1.7 million).

In 2020, the population of the three-county ROI was 6,855,310 people (Table 5.4-13). During the period 2010 to 2020, population increased at low annual average rates in Maricopa County and Riverside County, and declined in La Paz, also at a low annual average rate. Population in the ROI as a whole increased at an average annual rate of 0.01% during this time and is projected to reach 8,666,838 by 2040.

Employment and Income

Table 5.4-14 presents the average civilian labor force statistics for the ROI in 2021. More than 3,263,750 people were employed in the ROI as a whole, and 186,311 were unemployed. Unemployment rates ranged from 4.5% for Maricopa County to 7.3% for Riverside County (Table 5.4-14). Wage and salary employment (not including self-employed persons) by industry for 2020 is provided in Table 5.4-15. More than 1,594,850 (50.1% of the total) 50,000 people in the ROI were employed in services (50.1%), with 470,834 (14.8%) persons employed in wholesale and retail.

Table 5.4-13. ROI Population

County	Population			Average Annual Growth Rate, 2010-2020 (%)
	2010	2020	2040	
La Paz, Arizona	20,489	16,557	21,800	-0.02
Maricopa, Arizona	3,817,117	4,420,568	5,712,000	0.02
Riverside, California	2,189,641	2,418,185	2,933,038	0.01
ROI Total	6,027,247	6,855,310	8,666,838	0.01

Sources: Arizona Commerce Authority 2022; State of California 2022; U.S. Census Bureau 2022c, 2022d.

Table 5.4-14. ROI Civilian Labor Force Statistics, 2021

County	Employed, 2021	Unemployed, 2021	Unemployment Rate, 2021
La Paz, Arizona	8,175	441	5.1
Maricopa, Arizona	2,208,858	103,031	4.5
Total	3,263,756	186,311	5.4

Sources: U.S. Department of Labor 2022.

Table 5.4-15. ROI Wage and Salary Employment by Industry, 2020

Sector	County			ROI Total	Share of ROI Total (%)
	La Paz, Arizona	Maricopa, Arizona	Riverside, California		
Agriculture, forestry, fishing and hunting	531	7,994	12,858	21,283	0.7
Mining, quarrying, and oil and gas extraction	36	3,183	654	3,873	0.1
Utilities	114	18,034	9,371	27,519	0.9
Construction	392	154,066	94,227	248,685	7.8
Manufacturing	169	157,958	88,824	246,951	7.8
Wholesale and retail trade	1,254	307,490	162,090	470,834	14.8
Transportation and warehousing	277	101,933	63,564	165,774	5.2
Finance, insurance, and real estate services (FIRE)	217	218,886	52,073	271,176	8.5
Services, not incl. FIRE	2,541	1,079,341	512,972	1,594,854	50.1
Public Administration	661	79,921	53,864	134,446	4.2
Total	6,192	2,128,806	1,050,497	3,179,303	

Source: U.S. Census Bureau 2022e.

Table 5.4-16 details income in the ROI for 2020. Total personal income stood at $360.0 billion, generated primarily in Maricopa County ($245.1 billion), while median annual income ranged from $34,956 in La Paz County to $70,732 for Riverside County.

Table 5.4-16. ROI Personal Income, 2020

County	Total Personal Income ($ billions)	Median Income ($)
La Paz, Arizona	0.8	34,956
Maricopa, Arizona	245.1	67,799
ROI Total	360.0	

Source: U.S. Census Bureau 2022f; U.S. Department of Commerce 2022.

Housing

Table 5.4-17 details housing characteristics in the ROI in 2020. There were 43,066 vacant rental housing units in the ROI as a whole, with rental vacancy rates ranging from 0.9% in La Paz County to 1.8% in Maricopa County.

Table 5.4-17. ROI Housing Characteristics, 2020

County	Housing Units		Vacancy Rate (%)
	Total	Vacant Rental	
La Paz, Arizona	16,308	154	0.9
Maricopa, Arizona	1,765,880	30,961	1.8
Riverside, California	845,066	11,951	1.4
ROI Total	2,627,254	43,066	1.6

Source: U.S. Census Bureau 2022g, 2022h.

Trends and Forecasts

In 2020, the population of the three-county ROI was 6,855,310, with the majority of people, 4,420,568, living in Maricopa County (Table 5.4-13). Population is projected to grow slightly in Maricopa County and Riverside County, at an annual rate of 0.01%, between 2020 and 2040, and decline at an annual rate of 0.02% in La Paz County. A noted above, the population in the ROI is projected to reach 8,666,838 by 2040.

Given the lack of appropriate geographic-specific forecasts for changes in employment opportunities, business costs, cost of living, and consumer preferences, the effects of which may be more easily predicted at the regional or national level, forecasts of their effects on employment, employment by industry, unemployment, income and housing at the county-level are not available. Preparing forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local economic activity that are difficult to forecast.

5.4.16 Special Designations

General information for special designations that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.16.

Special designations are addressed in this section only if they are intersected by or located within close proximity to the decision area. These include:

- Kofa Wilderness Area and the Big Horn Mountains Wilderness Area; and
- Dripping Springs ACEC.

The proximity of the special designation areas to the decision area are depicted in Figure 5.4-7.

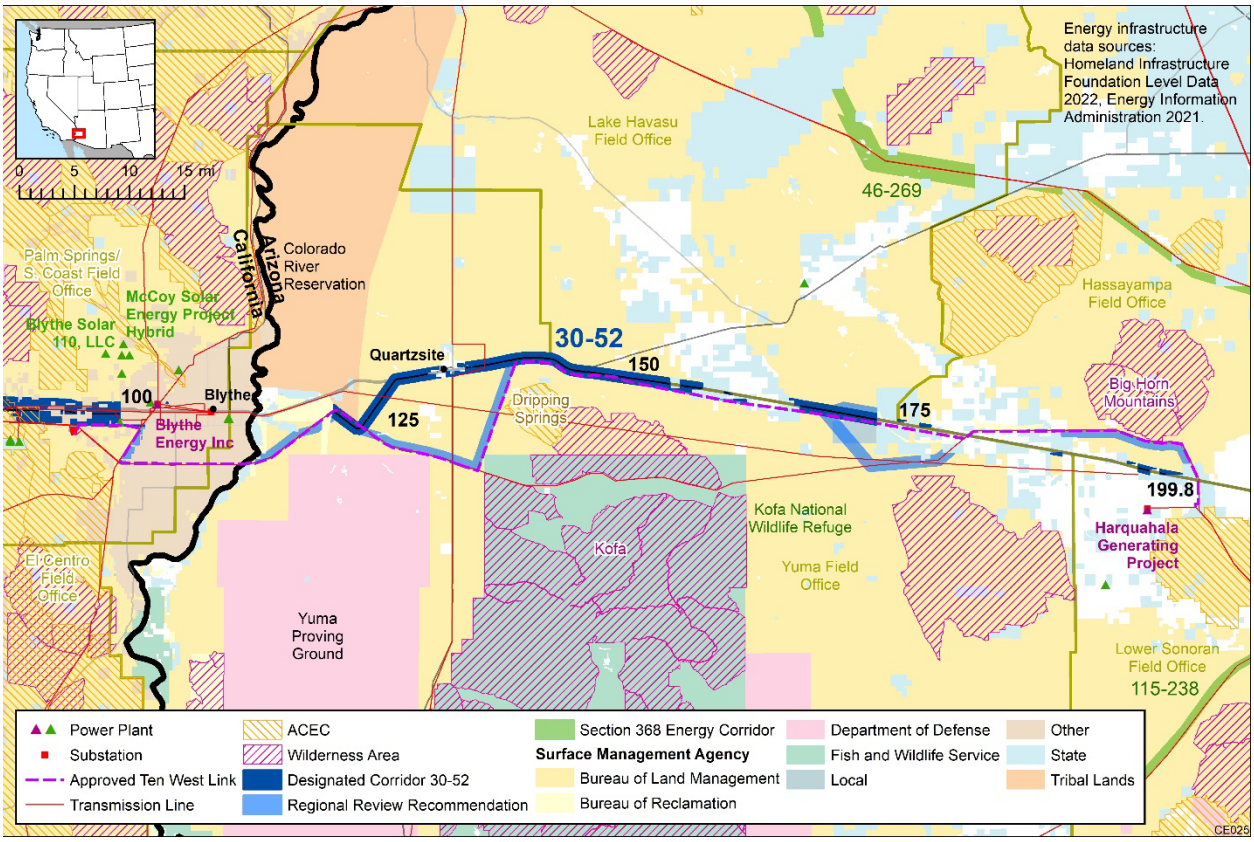

Figure 5.4-7. Special Designations in the Vicinity of the Decision Area

5.4.16.1 Wilderness Areas

Current Conditions and Context

Kofa Wilderness Area

The decision area does not intersect Wilderness Areas. The Kofa Wilderness Area is about 0.6 mi southeast of the Regional Review Recommendation (following Ten West Link transmission line authorized ROW). As the Kofa Wilderness Area is now contained within the USFWS's Kofa National Wildlife Refuge, it will not be addressed further.

Big Horn Mountains Wilderness Area

The designated corridor borders the southern end of the 21,000-ac Big Horn Mountains Wilderness. The Regional Review Recommendation (following Ten West Link authorized ROW) would locate the corridor as the northern border of the Big Horn Mountains Wilderness to avoid conflict with wilderness. Commercial recreation (including, but not limited to, guided horse rides or guided hikes) and vending operations are not allowed within the Big Horn Mountains Wilderness except for guided hunt and outfitter services. Organized non-commercial activities are allowed on a case-by-case basis provided they are consistent with wilderness management objectives. The Big Horn Mountains Wilderness is VRM Class I area (BLM 2010b). This wilderness offers many recreation

opportunities such as hiking, backpacking, rock climbing, photography and nature study.

Trends and Forecasts

There will be an ongoing long-term protection and preservation of the Wilderness Areas under the principle of non-degradation. The naturalness and untrammeled condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational, scenic, or historic value will be managed so that they remain unimpaired (BLM 2007a; 2010a).

5.4.16.2 ACEC

Current Conditions and Context

Dripping Springs ACEC

The Regional Review Recommendation (following Ten West Link authorized ROW) would locate the corridor about 0.25 mi west of the Dripping Springs ACEC. The relevance and importance of the Dripping Springs ACEC includes a perennial water source, desert bighorn sheep habitat, an important petroglyph site, and the remains of several historic stone structures (BLM 2010a).

Trends and Forecasts

Public lands in ACECs will be retained in federal ownership; while non-federal lands within or adjacent to an ACEC may be acquired for the purposes of conservation of relevance and importance values, through purchase, exchange, or donation. Acquired lands will be incorporated into the ACEC and managed in accordance with the prescriptions applied to the remainder of the ACEC (BLM 2016b).

Desired future conditions common for all ACECs are to provide protection for relevant and important resource values within designated ACECs, including special status species, wildlife, scenic, riparian, and significant cultural resources. Vegetation diversity within ACECs will be maintained in accordance with ecological site description guidelines. OHV access within designated ACECs will be managed in a manner that does not damage important cultural resources and wildlife habitat. The viewsheds and landscape character of ACECs is maintained to the extent practicable through the BLM's VRM system (BLM 2010a).

Trends for the Dripping Springs ACEC include the public use and interpretation of the ACEC balanced with the conservation of the many relevant and important resource values of the area (BLM 2010a).

5.4.17 Tribal Interests

General information for tribal interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.17.

Current Conditions and Context

The BLM has identified 57 Federally recognized Tribes with cultural affiliation and an interest in the decision area for Corridor 30-52. There are 12 Federal Indian Reservations and lands held in trust near the decision area in Maricopa County, Arizona, La Paz County, Arizona, and Riverside County, California (Table 5.4-18) (BLM 2022c; HUD 2022; BIA 2022; Heizer 1978; Ortiz 1983; Azevedo 1986). Due to a history of removal and displacement since the early 1800s, it is difficult to identify all Tribes with affiliation to the project area. Any additional Tribes not mentioned in this document should be identified through ongoing formal outreach and consultation.

Table 5.4-18. Federal Indian Reservations Near the Decision Area

Reservation, Tribe	Federally recognized Tribes	County, State
Colorado River Indian Reservation	Colorado River Indian Tribe	Riverside County, California, San Bernadino County, California La Paz County, Arizona
Agua Caliente Indian Reservation	Agua Caliente Band of Cahuilla Indians	Riverside County, California
Cabazon Reservation	Cabazon Band of Mission Indians	Riverside County, California
Augustine Reservation	Augustine Band of Cahuilla Indians	Riverside County, California
Torres-Martinez Reservation	Torres Martinez Desert Cahuilla Indians	Riverside County, California, Imperial County, California, San Diego County, California
Santa Rosa Reservation	Santa Rosa Band of Cahuilla Indians	Riverside County, California
Cahuilla Reservation	Cahuilla Band of Indians	Riverside County, California
Ramona Reservation	Ramona Band of Cahuilla	Riverside County, California
Soboba Reservation	Soboba Band of Luiseno Indians	Riverside County, California
Morongo Reservation	Morongo Band of Mission Indians	Riverside County, California
Pechanga Reservation	Pechanga Band of Indians	Riverside County, California
Salt River Reservation	Salt River Pima-Maricopa Indian Community	Maricopa County, Arizona

The following Tribes have been identified as having cultural affiliation with the lands near the decision area:

- Agua Caliente Band of Cahuilla Indians
- Ak-Chin Indian Community
- Augustine Band of Cahuilla Indians
- Big Pine Paiute Tribe of the Owens Valley
- Bishop Paiute Tribe
- Big Sandy Rancheria of Western Mono Indians
- Bridgeport Indian Colony
- Cabazon Band of Mission Indians
- Cahuilla Band of Indians
- Campo Band of Diegueno Mission Indians
- Capitan Grande Band of Diegueno Mission Indians
- Chemehuevi Indian Tribe
- Cheyenne River Sioux

- Cocopah Tribe of Arizona
- Cold Springs Rancheria of Mono Indians
- Colorado River Indian Tribe
- Ewiiaapaayp Band of Kumeyaay Indians
- Fort Bidwell Indian Community
- Fort Independence Indian Community of Paiute Indians
- Fort McDowell Yavapai Nation
- Fort Mojave Indian Tribe
- Gila River Indian Community
- Hopi Tribe of Arizona
- Inaja Band of Diegueno Mission Indians/
- La Posta Band of Diegueno Mission Indians
- Lone Pine Paiute-Shoshone Tribe
- Los Coyotes Band of Cahuilla and Cupeno Indians
- Manzanita Band of Diegueno Mission Indians
- Morongo Band of Mission Indians
- Navajo Nation
- NorthFork Rancheria of Mono Indians
- Pala Band of Mission Indians
- Pauma Band of Luiseno Mission Indians
- Pechanga Band of Indians
- Quechan Tribe of the Fort Yuma Indian Reservation
- Ramona Band of Cahuilla
- Rincon Band of Luiseno Mission Indians
- Salt River Pima-Maricopa Indian Community
- Yahaaviatam of San Manual
- San Pasqual Band of Diegueno Mission Indians
- Santa Rosa Band of Cahuilla Indians
- Santa Ynez Band of Chumash Indians
- Iipay Nation of Santa Ysabel
- Soboba Band of Luiseno Indians
- Sycuan Band of Kumeyaay Nation
- Table Mountain Rancheria
- Tejon Indian Tribe
- Timbisha Shoshone Tribe
- Tohono O'Odham Nation
- Torres Martinez Desert Cahuilla Indians
- Tule River Indian Tribe
- Twenty-Nine Palms Band of Mission Indians
- Utu Gwaitu Paiute Tribe
- Yakutat Tlingit Tribe
- Yavapai-Apache Nation
- Yavapai-Prescott Indian Tribe
- Zuni Tribe of the Zuni Reservation

The Colorado River Indian Reservation is adjacent to Corridor 30-52 at MP 120 and MP 122; the rest of the designated corridor is less than a mile from this reservation at MP 110 and MP 119. The Agua Caliente Reservation borders the designated corridor to the south between MP 0 and MP 1. Other reservations less than five mi from the designated corridor include the Torres-Martinez Reservation (near MP 17 and MP 32), The Augustine Reservation (near MP 15), and the Cabazon Reservation (near MP 14 and MP 24) (BLM 2019c; BLM 2022b). The designated corridor is currently routed to avoid crossing reservations. If any projects were proposed to cross American Indian Reservations, proponents would have to consult with Tribes to obtain a tribal resolution consenting the grant of a ROW by the BIA. Tribal consent is required to grant ROWs (BLM 2019c).

Within the decision area, there is a wide variety of archaeological site types and areas that may be of significant cultural importance to Tribes (see Section 5.4.3).

The Colorado Indian Tribe had identified Copper Bottom Pass, adjacent to the corridor at MP 123, and the area near the town of Quartzsite at MP 132 and MP 135 as areas that may contain cultural resources of significance. To avoid regions of the Colorado River Indian Reservation, the designated corridor passes through Copper Bottom Pass (BLM 2022b).

Tribes previously have been interested in working with BLM to collect flat rock – volcanic decorative rock occurring in relatively thin (often less than an inch) layers in northeast California – that has commonly been used by some southeastern Tribes in sacred ceremonies and practices (BLM 2007c). There previously also have been Tribal interests in preservation of pinyon, juniper, and sage-grouse habitats that are present within the decision area (see Section 5.4.4.4) (BLM 2007c; BLM 2015b; BLM 2020). Pinyon pine nuts are a traditional food source for several Native American groups and is considered an important resource in traditional ceremonies and festivals (BLM 2008b).

Representatives from the San Carlos Apache Tribe expressed concerns for the protection of water sources such as springs, streams, and places associated with water such as wet meadows due to the sacred relationship the Apache has with water. Mountain tops and foothills are also commonly considered sacred locations (WAPA and BLM 2015b).

Any viewsheds obstructed by any future proposed project within a Section 368 energy corridor may impact areas of traditional cultural importance (BLM 2022a). Native American Tribes may desire access to other BLM administered lands to practice traditional cultural ceremonies.

Of visual significance near the corridor may be the Old Spanish NHT; according to the Section 368 Energy Corridor Review Final Report (BLM 2022a, 2022b). The Ute Trail was first established by the Ute Tribe as a prominent trade route used by various Tribes for trade between New Mexico and California, it was later used by Spanish explorers and became known as the Old Spanish Trail (Southern Ute Indian Tribe 2022; NPS 2020).

Other areas of Tribal concern that may be visually obstructed include: the Black Peak Mountain that is north of the transmission line and abuts the Colorado River Indian Reservation, this area has been recognized as having significance to the Colorado River Indian Tribe and potentially other Tribes (BLM 2006b; BLM 2022b); Eagletail Mountain Wilderness is southeast of the corridor at MP 172 and has been identified as having sacred areas of significance (BLM 2002b; BLM 2022b); Tribes requested to add a corridor braid along the MP 190 and MP 200 line to avoid the Big Horn Mountain Wilderness Area that is less than 10 mi from the corridor at MP 199. This area may still be visually obstructed (BLM 2022a, 2022b). More information on potential areas of viewshed concerns can be found in Section 5.4.18.

Not all Tribal cultural practices involving natural and cultural resources of religious and cultural importance are known. Tribes have a deep understanding and history with the land that has been passed down through generations that cannot be properly identified by archaeological fieldwork alone. Therefore, formal government-to-government consultation concerning future projects and resource management remains the best means for identifying and addressing Tribal land use concerns and interests.

Trends and Forecasts

Tribes have previously expressed interest in implementing a new IOP for Tribal concerns that include a component to conduct ethnographic studies that would increase understanding of significant resources of concern to Tribes. The existing IOP from the 2009 WWEC PEIS ROD focused only on identifying sacred sites, sacred landscapes, gathering grounds, and burial areas, along with avoiding, minimizing, or mitigating impacts on these places through project proponents, consultation with Tribes, and relevant parties (BLM 2022a).

5.4.18 Visual Resources

General information for tribal interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.18.

Current Conditions and Context

The decision area begins near the California border at the Colorado River (MP 94) and runs east through the Sonoran Desert, ending near the agricultural outskirts of Phoenix (MP 200). Prominent visual characteristics of the Sonoran Desert region include basin valleys and mountainous landforms, with open plains and tropical and montane forests. The Colorado River is an important natural and recreational feature, and its valley is developed for agriculture in this area.

This decision area crosses the Dome Rock and Plomosa Mountains then runs through a series of plains. The Dome Rock and Plomosa Mountains contain a few campgrounds and historic mines that attract tourists to the area. Through the plains, the corridor runs along Interstate 10, which impacts the view for commuters along this highway. Tourists and recreationists who visit the wilderness areas in the surrounding mountain ranges

enjoy views out over the plains and are also sensitive to any visual changes to this landscape.

Table 5.4-19 lists the key features for visual resources within the decision area. Figure 5.4-8 depicts VRM classes within the vicinity of the decision area.

Table 5.4-19. Key Features in the Vicinity of the Decision Area

Key Feature	State	Agency	Physical Attributes	Viewer Groups and experiences	BLM VRM Class Designation
Colorado River Indian Reservation	Arizona	Tribal	Colorado River Indian Reservation		
Dome Rock Mountains	Arizona	BLM and Tribal	A north-south oriented mountain range about 30 mi long with jagged, rocky peaks of 2,000 ft to 3,000 ft. Dry washes dotted with scrub run east and west down from the peaks.	A small number of tourists come to explore the numerous abandoned mine settlements. Also used for OHV recreation.	Class II
Plomosa Mountains	Arizona	BLM	Rocky terrain with washes and small sand dunes. Evidence of both thrust faulting and strike-slip faulting is present.	Popular for ATV and UTV recreation. Tourists come to see the Plomosa ghost town and mining camp on the southwest side of the range	Class II and III
New Water Wilderness Area	Arizona	BLM	Colorful craggy spires, sharp ridges, sheer rock outcrops, natural arches, sparse vegetation, and slickrock canyons. Extremely dry landscape with less than five inches of rainfall annually. Vegetation is sparse. Saguaro, creosote, ocotillo, and cholla dot the hills, and paloverde and ironwood line the washes.	Recreation includes backpacking and hiking on about 20 primitive, two-track trails. Also a common area for hunters tracking sheep and mule deer.	Class I
Little Harquahala Mountains	Arizona	BLM	A small, arid, low-elevation mountain range, oriented northwest to southeast. Summit reaches 2,267 ft.	Only experienced by commuters on Interstate 10	Class I
Eagletail Mountains Wilderness Area	Arizona	BLM	Geologic wonders such as natural arches, high spires and monoliths, jagged sawtooth ridgelines, and numerous washes. Between the two main ridges stretches a vast desert plain of ocotillo, cholla, creosote, ironwood, saguaro	Recreation is comprised of hiking, rock climbing, mountain biking, and tent and RV camping. Geologists come to view the distinct strata, and other visitors enjoy picnicking and viewing wildlife and stargazing.	Class I

Key Feature	State	Agency	Physical Attributes	Viewer Groups and experiences	BLM VRM Class Designation
			cactus, barrel cactus, Mormon tea, mesquite, and sand.		
Big Horn Mountains Wilderness	Arizona	BLM	Precipitous 1,800-ft-high peak next to desert plain escarpments jumbled Big Horn Mountains ridgeline Central mountainous core surrounded by smaller hills, fissures, chimneys, narrow canyons, and desert plains	Exceptional scenic value Jeep trail hiking, backpacking, rock climbing, photography and nature study. Rugged ridges challenge expert climbers, while side canyons and plains offer easier hiking.	Class I
Hummingbird Springs Wilderness	Arizona	BLM	The area is dominated by Sugarloaf Mountain, a landmark encircled by many lower peaks, hills, washes and bajadas. The complexity and diversity of landforms, desert vegetation Saguaro, chollas, ocotillos, paloverdes and mesquite abound.	High scenic values Without maintained trails, the area can be backpacked easily, and primitive campsites abound. hiking and off-road driving	Class I

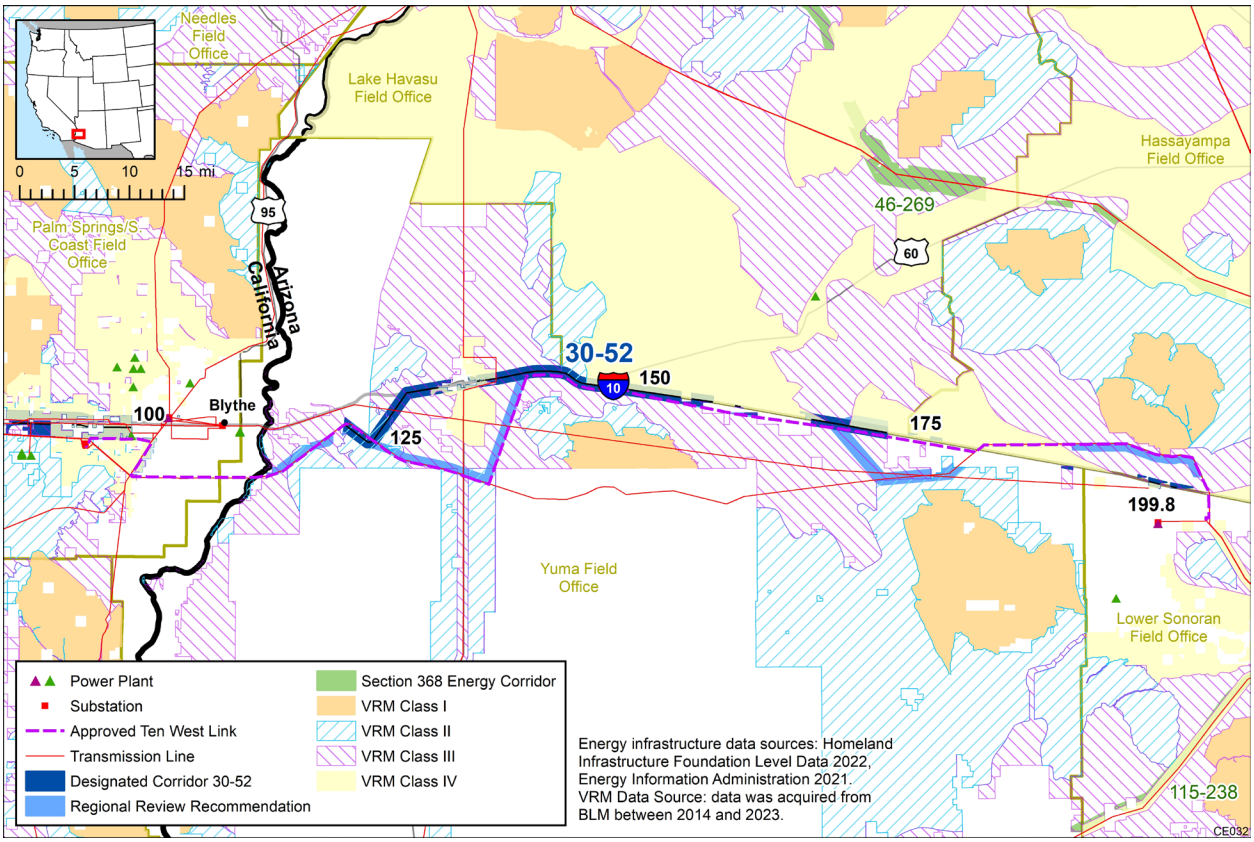

Figure 5.4-8. VRM Classes in the Vicinity of the Corridor 30-52 Decision Area

The Regional Review Recommendation follows the Ten West Link authorized ROW; it begins south of Blythe, California and crosses the Colorado River into Arizona. The Colorado River valley is developed for agricultural purposes along the western side of the river and two small riverside parks—Goose Flats Park and Peter McIntyre County Park—are located a few thousand ft on either side of the corridor.

Approximately 7 mi to the north is the Colorado River Indian Reservation which extends 90 mi north along the Colorado River (Native American Advancement, Initiatives & Research 2022). Though 9,929 individuals live on the Reservation, the vast majority of this population is concentrated at the north end in Parker, Arizona, far from the decision area (Native American Advancement, Initiatives & Research 2022). In the southern portion of the Reservation nearest the corridor, cotton, alfalfa, and sorghum agriculture extend at least a mile on either side of the river. The Hualapai ancestral grounds are also located at the southern end on the east side of the river. Tourist activities along the Colorado River are an important source of income for residents of the Reservation (Native American Advancement, Initiatives & Research 2022).

Moving east away from the river, the decision area enters the Palo Verde Valley into the Dome Rock Mountains. Various washes crisscross the Palo Verde Valley and coarse scrub unevenly dot the landscape. Through the Dome Rock Mountains, the recommendation in the Regional Review would be located in the La Paz Arroyo Valley and Copper Bottom Pass, out of sight of Interstate 10 which runs parallel to the north (Anyplace America, 2022).

This portion of the Dome Rock Mountains has peaks with an elevation of around 2,000 ft to 3,000 ft. Sawtooth Mountain (2,979 ft elevation) and La Cholla Mountain (2,301 ft elevation) are to the north of the corridor, between the corridor and I-10. Cunningham Mountain (3,303 ft elevation) is to the south, between the corridor and the Yuma Proving Ground.

A constellation of historic mines such as Historic Gold Eye Mine, Yellow Dog Mine, Kellogg Mine, Yum-Yum Mine, and Cinnabar Mine are also found in the Dome Rock Mountains (Mindat.org 2022a). These are all fairly remote and attract a small number of tourists each year who enjoy exploring the abandoned settlements.

After emerging from the Dome Rock Mountains, the decision area crosses Interstate 95. It runs south around the town of Quartzsite, Arizona through La Posa Plain, which contains a number of campsites. The decision area passes approximately 3 mi away from the Roadrunner, La Posa LTVA, and Scaddan Wash Camping Areas. While the La Posa campsites are developed, the other two are both small and primitive.

The decision area then joins I-10 and crosses the Plomosa Mountains north of the New Water Mountains Wilderness. This is a 24,600-ac Wilderness with hiking and primitive camping (BLM n.d. a). The landscape is known for its colorful craggy spires, sharp ridges, sheer rock outcrops, natural arches, sparse vegetation, and slickrock canyons (Wilderness Connect n.d. a). Black Mesa, a large volcanic butte, stands in the northwest corner 1,200 ft above the Ranegras Plain and 3,639 ft above sea level, the highest point in the Wilderness (Wilderness Connect n.d. a). Saguaro, creosote, ocotillo, and cholla

dot the hills, and paloverde and ironwood line the washes (Wilderness Connect n.d. a). Hunters also track sheep and mule deer here (Wilderness Connect n.d. a).

The Kofa National Wildlife Refuge borders the New Water Mountains Wilderness to the south.

Beyond the Plomosa Mountains the decision area continues along I-10 through the Ranegras Plain. Near the Little Harquahala Mountains, the decision area separates from I-10 and runs north of the interstate along the Coachella Canal for 4 mi. To the north, the nearby Little Harquahala Mountain summit reaches 2,267 ft (Mindat.org 2022b).

The decision area rejoins Interstate 10 through the Harquahala Plain, between the Big Horn Mountains to the north and the Eagletail Mountain Wilderness Area to the south. The Eagletail Mountain Wilderness Area totals 97,880 ac and Eagletail Peak rises from a low point of 1,100 ft to 3,300 ft (BLM n.d. b). Geologic wonders such as natural arches, high spires and monoliths, jagged sawtooth ridges, and numerous washes between six and eight mi long attract tourist (Wilderness Connect n.d. b). Courthouse Rock, a huge granite monolith, stands over 1,000 ft above the desert floor near the northern border and attracts technical rock climbers (Wilderness Connect n.d. b).

At its eastern end the decision area separates again from Interstate 10 to follow the Ten West Link preferred route. Here, it runs along the southern end of the Big Horn Mountains Wilderness and near the Hummingbird Springs Wilderness. The 21,000-ac Big Horn Wilderness contains the precipitous 1,800-ft-high Big Horn Peak and neighboring desert plain escarpments give the wilderness exceptional scenic value. It is especially noticeable from Interstate Highway 10 (BLM n.d. c).

The Hummingbird Springs Wilderness, northeast of the Big Horn Mountains Wilderness, has a central mountainous core surrounded by smaller hills, fissures, chimneys, narrow canyons, and desert plains. This wilderness offers many recreation opportunities such as hiking, backpacking, rock climbing, photography and nature study (BLM n.d. c).

Trends and Forecasts

The Ten West Link authorized ROW grants the authorization for a 500-kV power line to follow Interstate 10 from Phoenix to California (Ten West Link 2022). In addition, there is potential for solar energy development south of Interstate 10 (Brenda SEZ) and north of Interstate 10 (REDA) that would support connectivity to multiple energy generation sources.

Coordination by the BLM and Forest Service is suggested to avoid or restrict siting of nonlinear features such as geothermal and solar energy development within the corridor.

5.4.18.1 Night Sky

Night sky can be impacted by required utility lighting. The FAA Advisory Circular 70/7460-1K (2007) requires that all airspace obstructions higher than 200 ft or close to an airfield have appropriate lighting. Some transmission towers will require obstruction

warning lighting, and lights may be placed at higher elevations if blocked by trees or terrain. For very tall towers, this includes daytime strobe lighting as well as nighttime lighting (FAA 2007).

5.5 Corridor 81-213

Corridor 81-213

Designated Corridor:
Section 368 Energy Corridor 81-213 as designated in the 2009 *ARMPA/ROD for Designation of Energy Corridors on BLM-Administered Lands in the 11 Western States* (BLM 2009)

Recommendation in Regional Review:
- Add a corridor braid to the north along the 2016 Southline Transmission Line Project authorized ROW and the 2016 SunZia Southwest Transmission Project authorized ROW.
- Revise the corridor along existing 500-kV transmission line from MP 0 to MP 18.

Decision Area:
- The BLM-administered lands within the entire length of the designated energy corridor
- The BLM-administered lands along SunZia and Southline routes
- The BLM-administered lands along the existing 500-kV transmission line from MP 0 to MP 18

Planning Area:
The BLM-administered lands managed under the Mimbres RMP and the Safford RMP and lands under other administration within the vicinity of the decision area and lands under other administration within the vicinity of the decision area.

Corridor 81-213 is located within the Las Cruces District Office and the Safford Field Office (Table 5.5-1). The 145-mi (233 km) designated corridor provide an east-west pathway for energy transport from Las Cruces, New Mexico to just west of the border in Arizona. Corridor 81-213 contains existing infrastructure along most of its length (345-kV AC transmission lines from MP 3 to MP 28 and from MP 75 to MP 100, multiple natural gas pipelines from MP 0 to MP 54 and MP 76 to MP 128, and two refined product pipelines from MP 111 to MP 124). The designated energy corridor has a width of 3,500 ft and is designated multi-modal to accommodate both transmission lines and pipeline infrastructure.

The regional review recommended rerouting the corridor from MP 0 to MP 18 along the existing 345-kV transmission line to allow maximum buildout of both the Afton SEZ and the corridor. To minimize impacts, the regional review recommended that the 345-kV transmission line should be the southern border of the corridor. The regional review also recommended adding a corridor braid to the north along the Southline Transmission Line Project authorized ROW and the 2016 SunZia Southwest Transmission Project authorized ROW; the northern corridor braid could be designated for transmission lines, and the southern corridor braid could be designated for pipelines. These changes could maximize utility and minimize impacts through collocation with planned infrastructure because there are numerous homes and farms along the current route that could prevent future energy development. The regional review also concluded that the additional corridor braid could accommodate different needs of transmission lines and oil and gas pipelines at river crossings (BLM, Forest Service, and DOE 2022).

The decision area (that is, the actual parcels under BLM management that could be affected by the change in corridor designation) for Corridor 81-213 is depicted in Figure 5.5-1 and includes:

- the BLM-administered lands within the entire length of the designated energy corridor;
- the BLM-administered lands that follow the Southline Transmission Line Project ROW and the SunZia Southwest Transmission Line Project ROW (authorized in 2016); and
- the BLM-administered lands along the existing 500-kV transmission line from MP 0 to MP 18.

Table 5.5-1. BLM Administration Boundaries for Corridor 81-213 Decision Area

State	District/Field Office	Milepost (MP)
New Mexico	BLM New Mexico, Las Cruces Field Office	MP 0 to MP 138
Arizona	BLM Arizona, Safford Field Office	MP 139 to MP 145

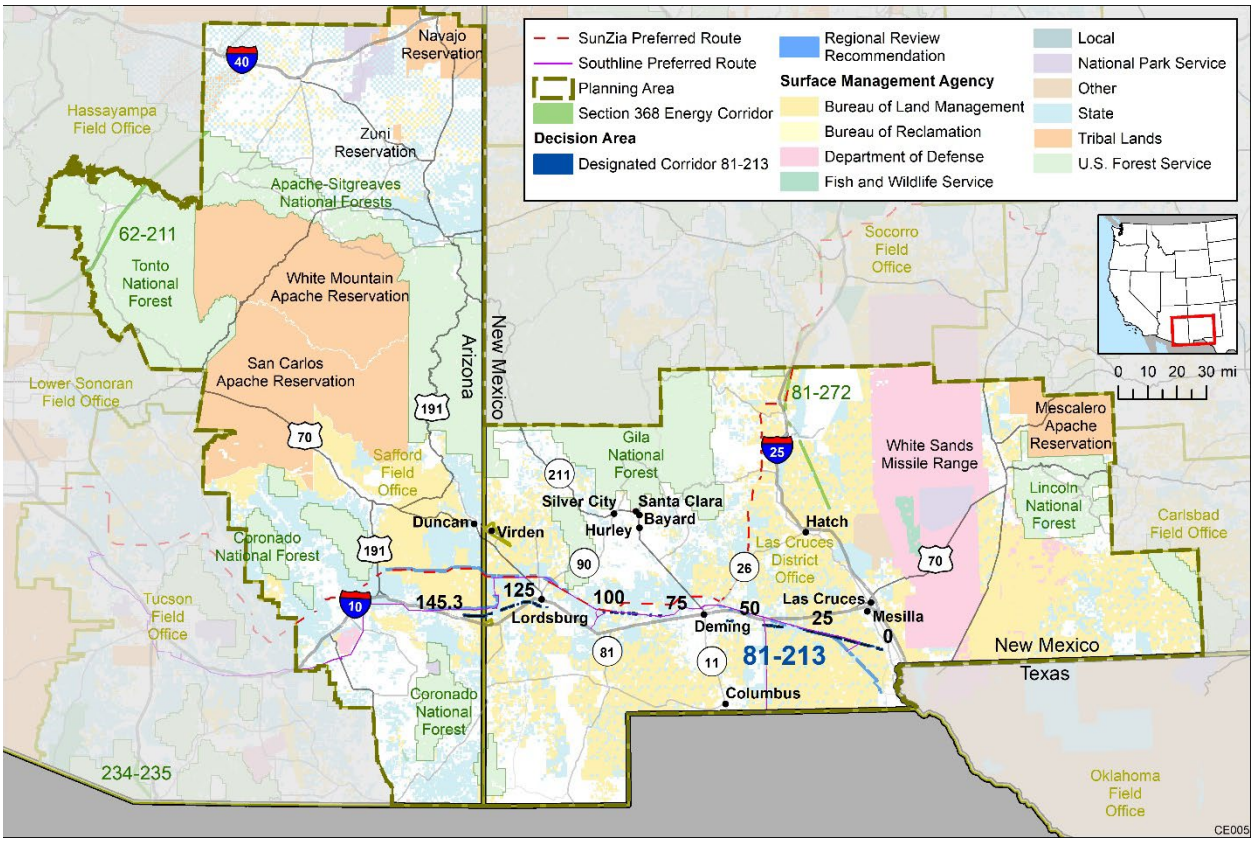

Figure 5.5-1. Corridor 81-213 Planning Area

The planning area (that is, the wider area that could be impacted by a change in the corridor designation, including both BLM-managed lands and lands under other administration) includes the BLM-administered lands managed under the Mimbres RMP and the Safford RMP (Figure 5.5-1).

Key Findings

Table 5.5-2 highlights the potentially affected resources that warrant analysis and summarizes the most important conclusions (key findings) drawn from each of the Area Profile resource sections within the Corridor 81-213 decision area. In general, these resources could be impacted by changes to the designated Corridor 81-213 resulting from this planning effort.

Table 5.5-2. Key Findings for Corridor 81-213 Decision Area

Resource	Key Finding
Air Quality	Federal Class I areas within a range of 100 km (62 mi) of corridor 81-213 include in order of distance from the corridor: Chiricahua National Monument, Chiricahua Wilderness Area, Galiuro Wilderness Area, Gila Wilderness Area, and Saguaro National Park. There are no Tribal Class I areas in the 100-km (62-mi) range. Ambient air quality around the decision area is good for NO_2 and $PM_{2.5}$ but relatively poor for O_3 and PM_{10}. O_3 concentrations frequently exceeded the standard near the east end of the decision area. Southern New Mexico experienced severe PM_{10} pollution episodes associated with windblown dust and fires in 2021.
Climate	The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. The area is characterized by warm summer and mild winter but significant diurnal variations, low precipitation, and low relative humidity.
Cultural Resources	Shakespeare Ghost Town site (listed in National Register) is adjacent to designated corridor at MP 120. The Butterfield Overland NHT crosses the decision area at least once; there may be more historic trail crossings. Burro Creek Cienega PCA may intersect the decision area.
Ecology	
Vegetation	The decision area is located within the Chihuahuan Ecoregion and the Madrean Archipelago Ecoregion. Vegetation communities along the corridor are primarily creosote bush and tarbush.
Invasive Species	Development and non-native grasses are a primary threat in the Chihuahuan Desert Ecoregion. Invasive species such as annual red brome are a continuous fuel layer and the perennial invasive buffelgrass is drastically changing the fire regime in desert scrub areas.
Fire and Fuels	Regional fire regimes vary with local differences in vegetation communities. Increased fire frequency results in a monoculture of fire-adapted plans, which prevents the reestablishment of native vegetation.
Terrestrial Wildlife	Black Bear, Coues' white-tailed deer, Desert bighorn sheep, Javelina, mountain lion, mule deer, oryx, Persian ibex, Pronghorn antelope, and Rocky Mountain elk, ranges are within the decision area, as well as upland game birds and waterfowl. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways.
Fish and Aquatic Species	There are no perennial streams in the decision area; however, the Regional Review Recommendation is in the vicinity of the Rio Grande River and Mimbres River. The Gila chub, Gila trout, and spikedace are found in the Gila River Basin, with critical habitat found in the decision area.
Special Status Species	The decision area intersects habitat for two BLM sensitive plant species: Night-blooming Cereus and Sand Prickly Pear Cactus.
Environmental Justice	The minority population in the 2 mi buffer does not exceed 50% and is not meaningfully greater than the countywide averages. The number of persons at or below twice the Federal poverty rate within the buffer exceeds countywide levels in Cochise County, Graham County, Greenlee County, and Grant County, and exceeds 50% in the buffer in Cochise County and Luna County.
Geology, Soils, and Minerals	The decision area is located on several alluvial plains and several rugged mountainous areas.

Resource	Key Finding
Human Health and Safety	There is relatively low earthquake potential and low landslide potential within the decision area.
Hydrology	Water resources in the region are limited. There are numerous ephemeral washes, playa, and alluvial basin-fill aquifers within the decision area.
Lands and Realty	There are existing 345-kV transmission lines, multiple natural gas pipelines, and two refined product pipelines associated with the designated corridor. The Southline and SunZia approved transmission line ROWs are located within the decision area. The designated corridor overlaps the Afton SEZ, which is considered a priority area for solar energy development. MTR-VR and SUA routes are located within the decision area.
Lands with Wilderness Characteristics	There are no managed lands with wilderness characteristics units within the decision area.
Livestock Grazing and Wild Horse and Burro Livestock Grazing Wild Horse and Burro	There are 25 livestock grazing allotments within the designated corridor and 41 grazing allotments within the Regional Review Recommendation. There are no wild horse and HMAs in close proximity to the decision area.
Noise	On the basis of the population density, the L_{dn} or DNL is estimated to correspond to rural residential areas for Dona Ana County in New Mexico and wilderness areas for Luna, Grant, and Hidalgo counties in New Mexico and Cochise County in Arizona.
Paleontology	There are areas in Arizona that have been characterized for potential fossil yield as high and very high (Class 4 and 5). Other areas are classified as very low and low potential (Classes 1 and 2).
Recreation	Dispersed recreation within the decision area includes hiking, biking, horseback riding, climbing, and camping, particularly within the Peloncillo Mountains Wilderness Area, Aden Lava Flow and Peloncillo Mountains WSAs, Organ Mountains-Desert Peaks National Monument, Lordsburg Playa Research Natural Area, Continental Divide NST, and the Butterfield Overland National Historic Trail. The decision area is designated as limited or open OHV access.
Socioeconomics	In 2020, the population of the seven-county ROI was 450,894 people and median income ranged from $32,251 to $66,368. The unemployment rate ranged from 4.0% to 15.2% in 2021, with the largest share of workers employed in the services and wholesale and retail trade industries.
Special Designations	The Lordsburg Research Natural Area, Aden Lava Flow Wilderness Area and Peloncillo Mountains Wilderness Area, Peloncillo Mountains WSA, Organ Mountains-Desert Peaks National Monument, Continental Divide National Scenic Trail, and Butterfield Overland National Historic Trail are within close proximity to the decision area.
Tribal Interests	There are 16 Federally recognized Tribes with cultural affiliation and an interest in the decision area. Fort Sill Apache Reservation is the only Indian Reservation and area with lands held in Trust near the decision area. Areas of concern previously identified through consultation include Mount Graham, Bosque del Apache; Rio Grande; Mesilla Valley; Klondyke and Duncan, Arizona; Deming, New Mexico; Salinas Pueblo Missions National Monument, including Grand Quivira; San Simon, Sulphur Springs and San Pedro valleys and concern with spiritual communication paths between cultural sites.
Visual Resources	The decision area intersects or is in close proximity to VRM Class I areas: Organ Mountains Desert Peaks National Monument: The Potrillo Mountains, Aden Lava Flow Wilderness, Potrillo Mountains Wilderness, Peloncillo Mountains Wilderness, and Dos Cabezas Mountains Wilderness. The decision area is mostly within VRM Class 3 areas, but a small portion of the designated corridor is located within a VRM Class 2 area.

[1] EPA has noted that a 100-km (62-mi) range is generally acceptable for AQRVs impact modeling but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Given the magnitude and schedule of the project along the corridor, these emissions are relatively small, and their release heights are at ground- or near-ground level, so potential impacts likely would be limited locally.

5.5.1 Air Quality

General information for air quality resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.1.

Current Conditions and Context

National parks and wilderness areas designated as mandatory Federal Class I areas under the CAA, as well as other areas re-designated as Class I at the request of a state or Indian Tribe have special air quality protections under federal law. Federal Class I areas within a range of 100 km (62 mi) of the decision area include in order of distance from the corridor: Chiricahua National Monument, Chiricahua Wilderness, Galiuro Wilderness, Gila Wilderness, and Saguaro National Park. There are no Tribal Class I areas in the 100-km (62-mi) range.

Each state can have its own SAAQS. Arizona does not have its own SAAQS (ADEQ 2019). However, New Mexico has established separate ambient air quality standards (20 New Mexico Administrative Code [NMAC] 20.2.3.111), which include more stringent standards than NAAQS for 1-hr and 8-hr CO, 24-hr and for annual NO_2 (that has never included in NAAQS and is same as NAAQS, respectively), and maintain 24-hr and annual SO_2 that has been revoked by EPA.

The ADEQ and New Mexico Environmental Department are responsible for monitoring ambient air quality and ensuring that the ambient air quality levels are maintained in accordance with federal and state standards. The New Mexico Environmental Department does not designate areas as attainment or nonattainment based on the SAAQS. Ambient air quality monitoring refers to collecting and measuring samples of ambient air to evaluate the status of the air pollutants in the atmosphere as compared to clean air standards and historical information.

The decision area is in Dona Ana, Hidalgo, Grant, and Luna counties in New Mexico and in Cochise County in Arizona. Hidalgo and Luna counties are in unclassified/attainment areas for all criteria pollutants (EPA 2022a). Grant County in New Mexico is in maintenance status for SO_2. These areas are relatively far from the designated corridor. Dona Ana County in New Mexico is in nonattainment for both O_3 (Sunland Park) and PM_{10} (Anthony), which are less than 10 mi (16 km) from the designated corridor A part of Cochise County in Arizona is in nonattainment for PM_{10} (Paul Spur/Douglas Planning Area) and maintenance status for SO_2 (Douglas) (EPA 2022a).

In Arizona, air monitoring stations are located in Cochise County for O_3 and PM_{10}. In New Mexico, PM_{10} monitoring station is located in Luna County, while Dona Ana County has monitoring stations for NO_2, O_3, PM_{10}, and $PM_{2.5}$. However, there are no monitoring stations in Grant and Hidalgo counties in New Mexico. The town of Deming in Luna County, New Mexico and some stations near the east end of the decision area in Dona Ana County, New Mexico are located within less than 10 mi (16 km) distance. In general, ambient air quality around the decision area is good for NO_2 and $PM_{2.5}$ but relatively poor for O_3 and PM_{10}. Based on 2019-2021 data, both NO_2 and $PM_{2.5}$ concentrations were below the standards, while O_3 concentrations frequently exceeded

the standard near the east end of the decision area, air quality of which is affected by populous El Paso, Texas and Ciudad Juarez, Mexico. In particular, southern New Mexico experience severe PM_{10} pollution episodes associated with windblown dust and fires in 2021 (EPA 2022b).

Trends and Forecasts

Using available air monitoring data between 2012 and 2021 that represent the area around the corridor, "design values"[24] for NO_2, O_3, and PM_{10} in Dona Ana County, New Mexico for O_3 in Cochise County, Arizona and for PM_{10} in Luna County, New Mexico are discussed (EPA 2022b). $PM_{2.5}$ data at four stations in Dona Ana County have been collected for five years or less which is too short to analyze the trend nationally. There is no air monitor collecting data in Hidalgo and Grant counties in New Mexico. For 1-hr NO_2, design values in Dona Ana County show a slight increasing trend over time. During the ten-year period, the 1-hr NO_2 concentrations have never exceeded the standard. For 8-hr O_3, design values tend to increase slightly in Dona Ana County but to decrease at Chiricahua National Monument in Cochise County, Arizona. On average, the O_3 standard was exceeded between two and eleven times per year in Dona Ana County and 2 times per year at the Chiricahua National Monument. Windblown dust is a problem around the I-10 Corridor from the intersection of US Route 191 and I-10 eastward to the New Mexico state line (i.e., north of Chiricahua National Monument), which can reduce visibility, resulting in a severe safety hazard for drivers. For 24-hr PM_{10}, there is a downward trend at stations in both Dona Ana County and Luna County, where two to eight exceedances were observed. Historically, Donna Ana County has experienced air quality problems, notably PM_{10} and O_3. PM_{10} issue comes mostly from windblown dust from the dry soils upwind of Dona Ana County, while O_3 issue is related to both abundant sunshine and considerable air emissions from populous El Paso, Texas and Ciudad Juárez, Mexico that border the Donna Ana County.

The decision area extends across the area that are largely undeveloped, sparsely populated, and remote except the area in the east end of the corridor in Dona Ana County. In the decision area, new activities that could trigger air pollution issues not yet identified as of no. Emissions from future activities would be controlled under the permits designed to ensure that are consistent with applicable regulations along with mitigation measures, except windblown PM and wildfire-related pollution, which cannot be easily mitigated.

Air quality around the decision area would be degraded by wildland fires (including prescribed burning) and/or windblown dust that mostly occur in upwind areas, rather than local emissions.

[24] "Design values" are the statistic used to compare ambient air monitoring data against the NAAQS to determine designations for each NAAQS.

5.5.2 Climate

General information for climate that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.2.

Current Conditions and Context

Wide variations in elevation and topographic features within the area surrounding the decision area have an impact on wind patterns, temperatures, precipitations, and other meteorological parameters. The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. The prevailing wind direction aloft over the region is from the west (the westerlies), as it is in most of the U.S.; however, complex terrain in the area are responsible for deflecting these winds. Accordingly, wind patterns are sometimes dissimilar even over short distances.

The decision area is in a broad desert, eastern half of which is within the Upper Chihuahuan Desert and surrounded by scattered mountains over the desert floor. The area is characterized by warm summer and mild winter but significant diurnal variations, low precipitation, and low relative humidity (WRCC 2022). The designated corridor runs in the east-west direction, so temperature and precipitation along the corridor are relatively uniform.

There are several meteorological stations in within a few miles of the designated corridor, so meteorological data at these stations closely representing the decision area in terms of proximity and topography are presented here.

Wind. Average wind speeds range from about 5.8 mph (2.6 m/s) at Dona Ana County International Jetport to 8.1 mph (3.6 m/s) at Deming Municipal Airport (NCEI 2022a). Westerly winds (including winds from southwest to northwest) prevail at most station, except at Safford Regional Airport, where northwesterly and southeasterly winds affected mostly by nearby topographic features prevail comparably. Wind speeds categorized as calm (less than 1 mph [0.5 m/s]) occurred more frequently, ranging from about 15% and 37% of the time, because of the stable conditions caused by strong radiative cooling in the arid environment.

Temperature. Historical annual average temperatures along the corridor are in the low 60s, ranging from 60.3 °F (15.7 °C) to 62.5 °F (16.9 °C), as shown in Table 5.5-3 (WRCC 2022). Monthly average temperature extremes range from a low of 25.5 °F (-3.6 °C) to a high of 98.0 °F (36.7 °C). Either January or December was the coldest month and either June or July was the warmest month. Each year, about 98 to 128 days had a maximum temperature of ≥90 °F (32.2 °C), while about 88 to 109 days had minimum temperatures at or below freezing (32 °F [0 °C]), with about 0.1-to 0.2 day below 0 °F (-17.8 °C).

Precipitation. The area lies within the Chihuahuan Desert, which has an arid climate, characterized by low precipitation. Historical annual precipitation ranged from 6.28 in (16.0 cm) to 10.49 in (26.6 cm), as shown in Table 5.5-3 (WRCC 2022). Precipitation is most frequent in summer (ranging from 40% to 44%) and least frequent in spring (ranging from 7% to 11%). Annual average snowfall ranged from about 2.5 in (6.4 cm) to

about 4.5 in (11.4 cm), with the snowiest month in December followed by January at Lordsburg and January followed by either February or December at other stations.

Table 5.5-3. Temperature and Precipitation Summaries at Selected Stations in the Vicinity of the Decision Area[a]

Station	Temperature						Annual Precipitation	
	Monthly Averages[b]			Number of Days with:				
	Min.	Max.	Mean	Max. ≥90°F	Min. ≤32°F	Min. ≤0°F	Water Equivalent	Snowfall
San Simon, Arizona	27.4°F (−2.6°C)	98.0°F (36.7°C)	62.2°F (16.8°C)	128.0	95.6	0.1	9.52 in. (24.2 cm)	2.5 in. (6.4 cm)
Lordsburg, New Mexico	25.5°F (−3.6°C)	96.8°F (36.0°C)	60.8°F (16.0°C)	114.6	108.5	0.1	10.49 in. (26.6 cm)	4.5 in. (11.4 cm)
Deming, New Mexico	25.6°F (−3.6°C)	95.0°F (35.0°C)	60.3°F (15.7°C)	98.4	100.6	0.2	8.33 in. (21.2 cm)	3.8 in. (9.7 cm)
Las Cruces, New Mexico	28.4°F (−2.0°C)	96.5°F (35.8°C)	62.5°F (16.9°C)	119.9	87.8	0.1	6.28 in. (16.0 cm)	3.9 in. (9.9 cm)

[a] Summary data presented in the table are based on the period of record: from 1898 to 2012 (San Simon); from 1892 to 2012 (Lordsburg); from 1920 to 2012 (Deming); and from 1897 to 2012 (Las Cruces).

[b] "Minimum Monthly Average" denotes the lowest monthly average of daily minimum during the period of record, which occurs in January (San Simon and Deming), December (Las Cruces), and January/December (Lordsburg). "Maximum Monthly Average" denotes the highest monthly average of daily maximum during the period of record, which occurs in June (Las Cruces), July (Deming), and June/July (San Simon and Lordsburg).

Source: WRCC 2022.

Trends and Forecasts

In the last century, Arizona has warmed about 2 °F (1.1 °C), while New Mexico has warmed at least 1 °F (0.6 °C). Annual average temperature has increased about 1 to 2 °F (0.6 to 1.1 °C) in the area, which encompasses the designated corridor (EPA 2016a, 2016b). Temperatures in Arizona and New Mexico have risen about 2.5 °F (1.4 °C) and more than 2 °F (1.1 °C), respectively, since the beginning of the 20th century. In both Arizona and New Mexico, there are recent upward trends in average temperatures. In Arizona, the first 21 years of this century have been the warmest period on record for the state, with the hottest year of 2017 on record. In New Mexico, the last decade has been the warmest on record for the state, with increasing trends in both extremely hot days and warm nights (NCEI 2022b).

Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others. The changing climate is likely to increase the need for water but reduce the supply. Rising temperatures increase the rate at which water evaporates into the air from soils and surface waters along with transpiration from plants. But less water is likely to be available because precipitation is unlikely to increase as much as evaporation. Soils are likely to be drier, and periods without rain are likely to become longer, making droughts more severe (EPA 2016a, 2016b). Precipitation is highly variable from location to location and from year to year. Unlike many areas of the U.S., both Arizona and New Mexico have not experienced an upward trend in the frequency of 1-in. extreme precipitation events. In Arizona, the driest consecutive 5-year interval was

1899–1903 and the wettest was 1905–1909. In New Mexico, the wettest consecutive 5 years was the 1984–1988 and the driest was the 1952–1956 (NCEI 2022b).

As the climate warms, less precipitation falls as snow, and more snow melts during the winter. That decreases snowpack—the amount of snow that accumulates over the winter. This snowpack melts during spring and summer, which provides water supply for cities and farms. Since the 1950s, the snowpack has declined in both Arizona and New Mexico. On average, more than 2% of the lands in both Arizona and New Mexico have burned per decade since 1984. Higher temperatures and drought due to global warming are likely to increase the severity, frequency, and extent of wildfires, which reduce air quality and harm human health and ecosystems (EPA 2016a, 2016b).

Over the next few decades, annual average temperature over the contiguous U.S. is projected to increase by about 2.2 °F (1.2 °C) relative to 1986-2015, regardless of future scenario (USGCRP 2018). As a result, recent record-setting hot years are projected to become common in the near future. Much larger increases in Arizona and New Mexico are projected by late century: 4 to 5 °F (2.2 to 2.8 °C) under a lower scenario (RCP4.5) and 7 to 8 °F (3.9 to 4.4 °C) under a higher scenario (RCP8.5) relative to 1986-2015.[25]

In the late twenty-first century, the greatest precipitation changes are projected to occur in winter and spring, with similar geographic patterns to observed changes: increases across the Northern Great Plains, the Midwest, and the Northeast (USGCRP 2018). In Arizona and New Mexico, precipitation projections decrease in winter through summer but decrease or increase in fall, depending on the location. Note that changes in average precipitation is much more difficult for climate models to predict than temperature. Surface soil moisture over most of the U.S. is likely to decrease, accompanied by large declines in snowpack in the western U.S. and shifts to more winter precipitation falling as rain rather than snow, which is conducive to more wildfires.

Associated with ongoing global warming, large wildfire frequency, fire duration, and fire season length have increased substantially in the western U.S. in recent decades and are projected to increase, especially in the Southwest (USGCRP 2018). This is due primarily to earlier spring snowmelt and warmer temperatures that increase evaporation rates (i.e., reduce the moisture availability) and thus dry out the vegetation that provides the fuel for fires. In addition, Arizona and New Mexico snowpack plays a critical role in water supply and flood risk. Projected earlier melting of the snowpack due to rising temperatures could have substantial negative impacts on water-dependent sectors and ecosystems (NCEI 2022b).

[25] For climate projections, the international scientific community developed four RCPs, i.e., RCP2.6, RCP4.5, RCP6.0, and RCP8.5, in which radiative forcing is stabilized at 2.6, 4.5, 6.0, and 8.5 W/m^2 in the year 2100, respectively. RCP4.5, called as a lower scenario, is generally associated with lower population growth, more technological innovation, and lower carbon intensity of the global energy mix, while the reverse is true for RCP8.5, called as a higher scenario.

5.5.3 Cultural Resources

General information for cultural resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.3.

Current Conditions and Context

The following cultural resources are listed as generally representative of the decision area region and are presented as a characterization of prehistoric and historic site types that may reasonably be expected to be affected in the absence of specific resource location data. In some cases (e.g., National Register sites), resources would not be affected by the designated corridor or the Regional Review Recommendation but are included as part of this regional characterization.

The 1993 Mimbres RMP for the BLM Las Cruces District Office in New Mexico provides an overview of cultural resources, covering the decision area from MP 0 to MP 138 within Dona Ana, Luna, Grant, and Hidalgo counties. This region was inhabited by three major cultural groups from about 9,500 BC through AD 1,400 and includes the Paleoindian period, the Desert or Archaic tradition, and the Mogollon cultural group. The Mogollon group (AD 200-1400) is typified by an agricultural mode of subsistence, supplemented with hunting and gathering. This period is subdivided into three sub-periods: Early Pithouse, Late Pithouse, and Pueblo. Pre- and post-contact Apache presence is known for the region between AD 1650-1890, although sites from this period are rare. The historic period is characterized by mining camps, homesteads, military forts (e.g., Fort Cummings), and the Dripping Springs Natural Area Resort east of Las Cruces. There are nine ACECs in the Las Cruces District planning area with significant cultural resource affiliation, three of which are solely cultural ACECs: Los Tules, Rincon, and San Diego Mountain. Los Tules ACEC is a 20-ac area containing a large pithouse village on the western margin of Las Cruces. The Rincon ACEC consists of numerous petroglyphs covering an area of 840 ac 1 mi north of Rincon, New Mexico. Likewise, the San Diego Mountain ACEC consists of a 640-ac area containing several hundred petroglyphs. None of these ACECs are within the decision area and are included here only as an indication of resource types in the region. At the time of this RMP a total of 3,100 archaeological sites were recorded in the above four counties, with approximately 2% of public lands subjected to Class III inventories (BLM 1993). One site listed on the National Register lies on the north side of the designated corridor between MP 119 and MP 120: Shakespeare Ghost Town southwest of Lordsburg, New Mexico.

Within the Safford District in Arizona, no ACECs with cultural designations are within the vicinity of the decision area or are expected to be impacted by changes to energy corridor designation (see BLM 1991, BLM 1992a).

Cultural resource assessments were performed for the Southline Transmission Line Project in both New Mexico and Arizona (WAPA and BLM 2015a). The analysis area for disturbance for all alternatives in the New Build Section of the Southline Transmission Line Project is a 2 mi buffer from centerline. The analysis area was intended to account for resources that could potentially be impacted by all stages of development. An

additional 10-mi buffer analysis area was intended to account for potentially significant visual effects on properties eligible for listing on the National Register (WAPA and BLM 2015a).

Overall, prehistoric archaeological site categories include habitation sites, rock shelter and cave sites, agricultural, resource procurement and/or processing sites, lithic manufacturing locations, trails, and petroglyph sites. Euro-American site categories include homesteads, mining, ranching, water control, transportation (e.g., roads, trails, railroads), infrastructure (e.g., telecommunication, electricity), military sites, town sites, cemeteries, and trash dumps/scatters. Other cultural resources of importance to native tribes include property of traditional religious or cultural importance, traditional cultural property (TCP), and other resources described as American Indian Critical Resource Types (e.g., springs).

Of the known resources within the 2-mi analysis area, 910 archaeological sites and/or historic built environment resources have been previously recorded. Eight of those are listed in State registers or on the National Register, 102 have been determined eligible for listing, 47 have been determined not eligible, and 753 are unevaluated or unknown.

Two Southline Transmission Line project route groups cover the greater Corridor 81-213 decision area in terms of characterizing local cultural resources: Route Group 1 from Afton to Hidalgo substations in New Mexico (roughly MP 0 to MP 110) and Route Group 2 from Hidalgo to Apache substations in New Mexico and Arizona (roughly MP 110 to MP 145.3 and on). Only these two route groups and their subroutes will be referenced here as they correspond directly to the decision area.

Table 5.5-4 shows previous survey coverage in Route Groups 1 and 2 at 3.5% and 11.3% respectively.

Table 5.5-4. Previous Survey Acreage in the Analysis Area by Route Group

Route Group No.	Route Group	Acres Surveyed	Total Acres in Route Group	Percentage Surveyed
1	Afton to Hidalgo	17,244	490,759	3.5
2	Hidalgo to Apache	47,554	422,119	11.3

Source: WAPA and BLM 2015a (Table 3.9-2)

Within Route Group 1, a total of 415 archaeological sites and/or historic features have been recorded:

- 65 eligible for listing on the National Register
- 39 not eligible
- 308 unevaluated or unknown

The temporal breakdown of previously recorded sites in Route Group 1 is:

- 177 prehistoric
- 139 historic

- 35 multi-component
- 64 unknown

Of the 177 prehistoric sites, 29 have been determined eligible for listing on the National Register, seven have been determined not eligible, and 141 are unevaluated or unknown. The 170 sites that are eligible or have unevaluated/unknown eligibility status are summarized in Table 5.5-5. Cultural affiliation of these sites includes Archaic, Mogollon, Jornada Mogollon, Mimbres, Casas Grandes, Native American, and unknown.

Table 5.5-5. Prehistoric Site Types of Eligible or Unevaluated/Unknown NRHP Status within the Route Group 1 Analysis Area

Site Type	No. of NRHP-Eligible Sites	No. of NRHP Unevaluated/Unknown Sites	Total
Artifact scatter	9	93	102
Artifact scatter with features	16	28	44
Features	1	2	3
Camp	0	6	6
Habitation	2	1	3
Quarry	1	0	1
Unknown	0	11	14
Total	**29**	**145**	**170**

Source: WAPA and BLM 2015a (Table 3.9-3)

Of the 139 historic sites, 3 are listed on State or Federal registers, 30 have been determined eligible for listing on the National Register, 29 have been determined not eligible, and 77 are unevaluated or unknown. Excluding sites that are not eligible, the remaining sites are summarized in Table 5.5-6. The cultural affiliation of these sites includes Euro-American, Hispanic or Mexican-American, multi-cultural, and unknown.

Table 5.5-6. Historic Archaeological Sites and Built Environment Resources of Listed, Eligible, or Unevaluated/Unknown NRHP Status in the Route Group 1 Analysis Area

Resource Category	No. of NRHP-Eligible Sites (includes listed historic properties)	No. of NRHP Unevaluated/Unknown Sites	Total
Habitation	5	5	10
Industrial	6	2	8
Limited activity	6	28	34
Mining	2	4	6
Ranching	0	5	5
Town	7	2	9
Transportation	4	4	8
Utility	0	1	1
Unknown	3	26	29
Total	**33**	**77**	**110**

Source: WAPA and BLM 2015a (Table 3.9-4)

Additional historic features recorded or digitized from historic maps include artifact scatters, telephone lines, trails, airfields, canals, cemeteries, corrals, ditches, fencelines, gas lines, mining features/claims, pipelines, pumping stations, railroad features, ranches, reservoir, roads, structures, tanks, targets, telegraph lines, towns, utilities, wells, and windmills. Three historic trails intersect the Southline Route Group 1 analysis area: the Butterfield Overland Stage and Mail Route, the Mormon Battalion Trail, and Janos Copper Road route. As with the Southline and SunZia Southwest Transmission Line Project authorized ROWs, the designated corridor intersects one Archaeology Southwest Priority Conservation Area at its southern-most limit: Burro Creek Cienega.

Within Route Group 2, a total of 352 archaeological sites and/or historic features have been recorded:

- 1 listed in State or Federal register (Cochise Hotel)
- 16 eligible for listing on the National Register
- 4 not eligible
- 331 unevaluated or unknown

The temporal breakdown of previously recorded sites in Route Group 2 is:

- 127 prehistoric
- 76 historic
- 16 multi-component
- 121 unknown

Of the 127 prehistoric sites, five have been determined eligible for listing on the National Register, one has been determined not eligible, and 121 are unevaluated or unknown. The 126 sites with a status of eligible or unknown are summarized in Table 5.5-7. Cultural affiliation of these sites includes Archaic, Mogollon, Hohokam, Native American, and unknown.

Table 5.5-7. Prehistoric Site Types for Sites Eligible or Unevaluated/Unknown NRHP Status within the Route Group 2 Analysis Area

Site Type	No. of NRHP-Eligible Sites	No. of NRHP Unevaluated/Unknown Sites	Total
Artifact scatter	2	75	77
Artifact scatter with features	2	17	19
Camp	0	7	7
Cave or rock shelter	0	2	2
Habitation	0	12	12
Petroglyph site	0	2	2
Quarry	1	0	1
Rock piles	0	1	1
Unknown	0	5	5
Total	**5**	**121**	**126**

Source: WAPA and BLM 2015a (Table 3.9-6)

Of the 76 historic sites, one is listed on State or Federal registers, nine have been determined eligible for listing on the National Register, two have been determined not eligible, and 64 are unevaluated or unknown. Excluding sites that are not eligible, the remaining sites are summarized in Table 5.5-8. The cultural affiliation of these sites includes Euro-American, American Indian, Asian-American, Hispanic, and unknown.

Table 5.5-8. Historic Archaeological Sites and Built Environment Resources of Listed, Eligible, or Unevaluated/Unknown NRHP Status in the Route Group 2 Analysis Area

Site Type	No. of NRHP-Listed Sites	No. of NRHP-Eligible Sites	No. of NRHP Unevaluated/Unknown Sites	Total
Habitation	1	1	2	4
Limited Activity	0	1	20	21
Mining	0	0	2	2
Ranching	0	0	7	7
Structure	0	0	3	3
Transportation	0	7	19	26
Utility	0	0	6	6
Water control	0	0	3	3
Unknown	0	0	2	2
Total	**1**	**9**	**64**	**74**

Source: WAPA and BLM 2015a (Table 3.9-7)

An additional 1,646 historic features were recorded from historic maps and include: airfields/airports, cemeteries, compounds, corrals, dikes, ditches, fences, land claims, levees, mills, mines/mining features, oil well, park, pipelines, railroads/railroad features, ranches, reservoir, roads, stage routes, structures, tanks, telegraph lines, towns, trails, transmission line, utility lines, wells, and windmills (WAPA and BLM 2015a). Of the historic trails within the Southline Transmission Line Project study area, only the Butterfield Overland Stage and Mail Route crosses the designated corridor from MP 143 to MP 145.3. The SunZia Southwest Transmission Line Project Class II survey located five cairns and several historic artifacts along this trail (BLM 2013a).

Of the four Archaeology Southwest PCAs within Southline Route Group 2, none are intersected by the designated corridor or Regional Review Recommendation along Southline Transmission Line Project. The analysis for the Southline Transmission Line Project also included an Archaeological Sensitivity Analysis but is not covered here.

Visual impacts are defined as those that "alter the characteristics of a property that make it eligible for listing on the National Register by diminishing the integrity of the property's location, setting, association, or feeling" (WAPA and BLM 2015a). The visual impact assessment for the Southline Transmission Line Project is limited to historic properties. For Route Group 1, 28 historic properties lie within the 10-mi buffer, seven of which are listed on the National Register. Twenty-one are listed in the New Mexico State Register of Cultural Properties. For Route Group 2, 21 State or Federally listed properties lie within the 10-mi buffer, 18 of which are listed on the National Register. Three are listed in the New Mexico State Register of Historic Places.

Twenty-one American Indian tribes were consulted for the NEPA and Section 106 process of the Southline Transmission Line Project. Specific resources of concern to the tribes listed in the NEPA analysis are not within the decision area (See Section 5.5.17 on Tribal Interests).

The SunZia Southwest Transmission Project (BLM 2013a) includes one segment that coincides with portions of the decision area: Route Group 3 and specifically Subroute 3A2, which runs from Midpoint Substation northeast of Deming, New Mexico to Willow 500kV Substation south of Safford, Arizona. The western portion of this subroute parallels the northernmost Regional Review Recommendation (along SunZia route) on its south side. Other alternatives were evaluated during the the SunZia Southwest Transmission Line Project NEPA process and could be reviewed for comparison to the decision area.

SunZia Southwest Transmission Line Project Class I Inventory:

Of the 39,774 ac comprising the subroute 3A2 study area, 1,262 ac or 3% were previously inventoried and considered for the project's Class I survey. Previously inventoried sites totalled 14, giving a site density of 1.11 sites per 100 ac. A summary of cultural resources identified in the Class I records review for Route Group 3 is shown in Table 5.5-9.

Table 5.5-9. Cultural Resources within Route Group 3 Study Corridors

Resource Type	Quantity	Percent Eligible	Percent Ineligible	Percent Unevaluated
Archaeological site, poorly documented	2	0	0	100
Cave or rock shelter	2	50	0	50
Historic feature(s) with artifacts	5	100	0	0
Historic homestead or structure(s)	2	0	60	40
Historic trail	4	0	0	100
Historic transportation or utility feature(s)	3	33	33	33
Historic trash scatter	4	0	33	67
Prehistoric artifact scatter	35	0	0	100
Prehistoric habitation site	5	28	3	70
Prehistoric site with feature(s)	29	52	4	45
Total Sites/Average Percent	**91**	**30**	**10**	**60**

Source: BLM 2013a (Table 3-39)

Specific to subroute 3A2, prehistoric sites identified in the Class I review include four habitation sites, three sites with features, and 14 artifact scatters. No structural historic resources were identified, although four historic trails are crossed by this subroute: Butterfield, Gila, Janos Copper, and General Cooke's Wagon Road/Mormon Battalion Road. The San Carlos and White Mountain Apache tribes have concerns over traditional plant gathering areas near Deming, New Mexico. Site sensitivity analysis of subroute 3A2 demonstrates a mainly moderate sensitivity with one one site of high sensitivity.

SunZia Southwest Transmission Line Project Class II Inventory:

A total of 19 sites were identified for combined subroutes 3A and 3A2, not including trail/route segments, for a density of 3.9 sites per 100 ac. Sixteen sites included in the sensitivity analysis rated low-to-moderate to moderate-high with one site ranking high.

Trends and Forecasts

In the absence of project-specific approval and impact assessment, the Mimbres RMP covering the Las Cruces BLM District indicates that livestock grazing, where not curtailed by fencing will continue to have surficial site destabilization effects, both through trampling and displacement of sediment as well as exfoliation from grazing. Acquisition or disposal of managed lands with cultural resources will have beneficial or potentially deleterious effects respectively, where the former will provide added protection to known and unknown resources under BLM management. Disposal of managed lands will potentially lead to resource degradation especially where land use changes or development come into effect (BLM 1992b).

Under the Southline Transmission Line Project, primary direct impacts on cultural resources would consist of damage, loss, or disturbance from construction/maintenance that would jeopardize the resources' eligibility for listing on the National Register. These impacts are mainly ground disturbance but may also stem from restriction of resource access and visual impairment that changes the characteristics of the resource in relation to its surroundings. Impacts are designated by magnitude where significant impacts could occur when mitigation is not carried out. These impacts include loss, damage, or disturbance to resources listed on State or Federal registers, eligible for listing on said registers, those of tribal concern, alterations to setting, feeling, or association with a National Register- or State-listed historic property, and alterations of the setting or feeling to resources of tribal concern.

The decision area coincides with certain segments of Southline subroutes, which, between the Afton-Hidalgo substations and partway to the Apache substation, includes the Southline Proponent and Agency Preferred ROWs, Proponent Alternative, and Local Alternatives:

- Route Group 1 – Proponent Preferred segments: P1, P2, P4a
- Route Group 1 – Local Alternative segment: D
- Route Group 2 – Proponent Preferred segment: P5b
- Route Group 2 – Proponent Alternative segments: D, E
- Route Group 2 – Local Alternative segments: LD3a, LD3b, LD4

The NEPA analysis for the Southline Transmission Line Project (FEIS Tables 4.9-1 to 4.9-4) present cultural resources inventories, forecast resources, and estimated eligible sites with index of Total Potential Effect for each segment of the representative ROW. Given here is a brief summary the direct impacts for ROW segments that are partially or completely colocated with the decision area.

Where avoidance cannot be achieved, and disturbance from existing infrastructure has not already occurred, direct impacts would be major and permanent. However, variable projected resource impacts are demonstrated with ROW segment alternatives.

Route Group 1, segments P1 and P4a have no previously recorded cultural resources that are eligble or may be eligible for listing on the National Register. Segment P1 has 6 potential historic resources that were located on historic maps. Segment P4a has 3 potential historic resources. Segment P2 crosses the Butterfield Overland National Historic Trail southeast of Hidalgo substation, as well as the Burro Creek Cienega PCA for one mi. A total of 173 resources, including 26 historic resources eligible for listing on the National Register, are projected to be found in the entire Southline Proponent Preferred subroute, the majority of which are within segment P2. In terms of archaeological sensitivity, 119 of the 173 projected resources are estimated to be moderate, while 7 should be moderate to high sensitivity. Segment P2 is categorized as being of cultural concern, primarily because of its length. The decision area follows this segment for the furthest distance compared to Route Group 2 segments. Three historic trails are crossed by segment P2: Butterfield Overland National Historic Trail, Mormon Battalion Trail, and Janos Copper Road, however the Butterfield Overland National Historic Trail could not be confirmed by field reconnaissance (WAPA and BLM 2015a). Visual impacts on historic properties are divided into three distance categories. Significant visual impacts are more likely in the nearer distance ranges, however the proposed transmission structures are visible from up to 3 mi away. Twenty State or Federally listed historic properties (one determined eligible for the National Register) are located within the 10-mi visual effects buffer, however due to distance and existing obstructions/infrastructure, visual impact is expected to be low.

Route Group 2, Southline Preferred Proponent segment P5b crosses the Butterfield Overland National Historic Trail once. This segment also has two eligible resources (one multi-component and one historic), five unevaluated, and 17 potential resources from historical maps. Segment P5b, along with other segments in Subroute 2.1 is categorized as being of cultural concern as the number of resources along this ROW is estimated to be 241. Based on estimated count and density, impacts due to ground disturbance are projected to be major. Overall, direct impacts for subroute 2.1 will be moderate and long-term and adverse impacts would be mitigated, preferably by avoidance. Visual impacts for the listed Stein’s Peak Station along segment P5b is anticipated to be low to none, due to obstruction by mountains (WAPA and BLM 2015a).

The analysis for the SunZia Southwest Transmission Project outlines anticipated impacts resulting from construction and maintenance of the proposed project and are in general agreement with Southline Project impact assessments: direct and permanent ground disturbance, direct and permanent visual and auditory intrusions, indirect and temporary visual intrusions, and indirect and permanent due to public accessibility and visual intrusions. Apart from the potential impacts on traditional plant gathering areas noted above near Deming, New Mexico, no other tribal concerns specific to subroute 3A2 are noted.

The total anticipated number of sites for subroute 3A2 within its 9,019 ac corridor is 255. A summary of impact levels (as defined in the FEIS) for these sites is given as follows:

- Low: 28
- Low-Moderate: 99
- Moderate: 77
- Moderate-High: 43
- High: 8

As mentioned above, four historic trails are crossed by subroute 3A2, however only Butterfield Overland National Historic Trail is confirmed to also cross the designated corridor east of Lordsburg, New Mexico at the time of this AMS. As with the analysis for the Southline Transmission Line Project, it is noted that several rock cairns associated with the trail have been observed but no physical segments were identified. With identification and avoidance of the trail by ground disturbing activity, remaining impacts would be limited to visual effects. Impacts on the other trails mentioned above are indeterminate until more detailed spatial relationships to the decision area are examined. Several prehistoric sites including a large-scale habitation site (Site LA49) could be impacted by construction, although their relationship to the decision area is currently unknown. Finally, the SunZia route lies within five mi of subroute 3A2 and may be subject to visual impacts (BLM 2013a)

5.5.4 Ecology

General information for ecological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.4.

5.5.4.1 Vegetation, Invasive Species, and Fire

Current Conditions and Context

The decision area is in the Chihuahuan Ecoregion and the Madrean Archipelago Ecoregion. Vegetation communities in the Chihuahuan Ecoregion are dominated by Chihuahuan Deserts scrub and Chihuahuan Desert grasslands (Figure 5.5-2). The Chihuahuan desert scrub community is dominated by creosote bush, and tarbush (*Flourensia cernua*), along with subdominants like whitethorn acacia (Acacia constricta), viscid acacia (*Acacia neovernicosa)*, Rio Grande saddlebush (*Mortonia scabrella*), and ocotillo (Unnasch et al. 2017a). Common vegetation community types in the Madrean Archipelago Ecoregion are Apacherian-Chihuahuan mesquite upland scrub, Chihuahuan creosotebush desert scrub, and Sonoran paloverde-mixed cacti desert scrub (Crist et al. 2014).

Vegetation communities in these ecoregions have been affected by climate change, water availability, invasive species, altered fire regimes, livestock grazing, infrastructure development, and agriculture. In addition, native desert scrub plants have invaded areas

historically dominated by grasslands (Crist et al. 2014). Lower-elevation vegetation communities are the most impacted by human development within the ecoregion especially near urban and major transportation areas (Crist et al. 2014).

Invasive Species

As in other western lands, development and non-native grasses are a primary threat in the Chihuahuan Desert Ecoregion (Crist et al. 2014). For example, cheatgrass has converted thousands of square kilometers of sagebrush steppe into monospecific grasslands, while tamarisk has replaced native riparian communities (Unnasch et al. 2017a). In the Madrean Archipelago, invasive species include mesquite, exotic grasses and forbs, tamarisk, and Russian olive (Crist et al. 2014). Development and human land use have facilitated the spread of invasive species, especially in lower elevation.

One consequence of invasive species is altered fire regime, which creates further adverse conditions for native vegetation which are typically fire sensitive. Invasive species such as annual red brome are a continuous fuel layer and the perennial invasive buffelgrass (*Pennisetum ciliare*) is drastically changing the fire regime in desert scrub areas (Crist et al. 2014).

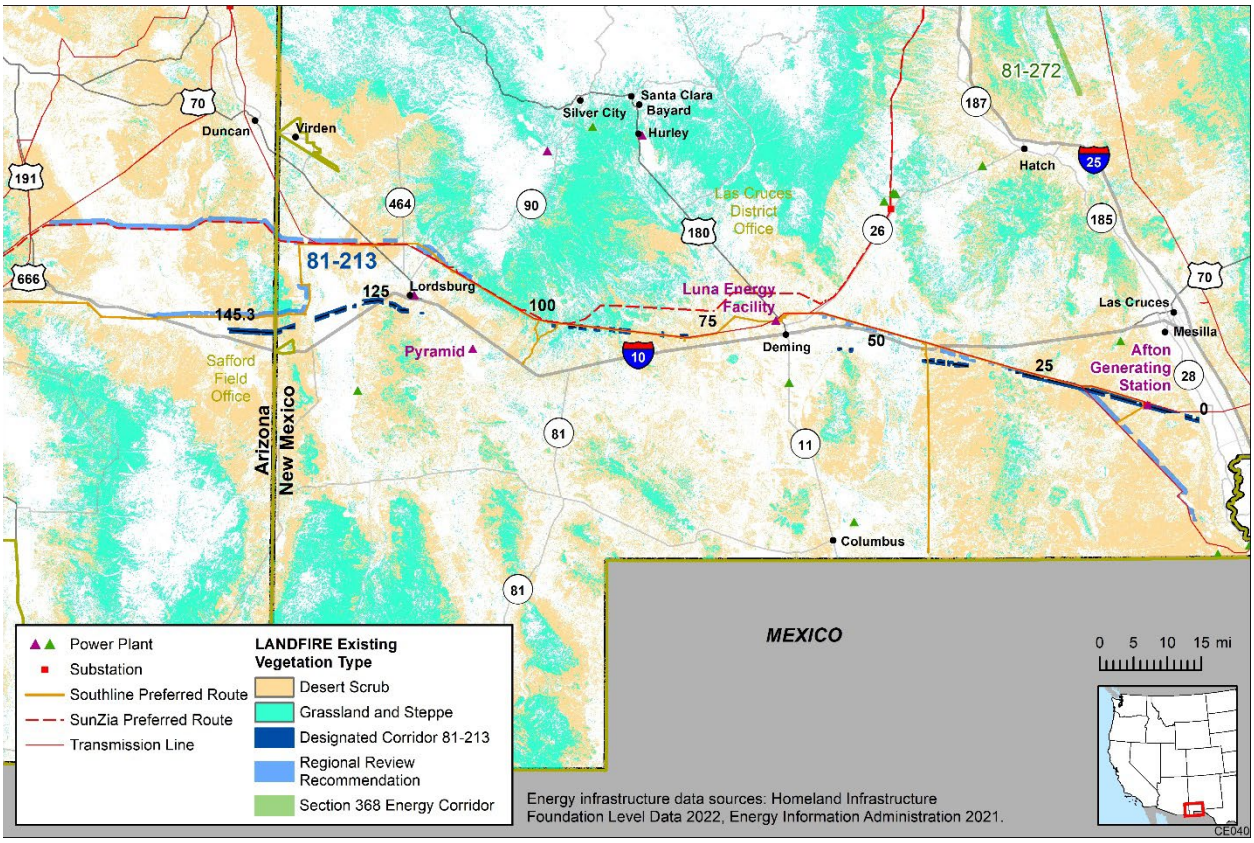

Figure 5.5-2. Vegetation communities in the Vicinity of the Decision Area (2020 Landfire).

Trends and Forecasts

Climate forecasts through 2070 for the Chihuahua Ecoregion indicate an increase in average annual air temperatures, a decrease in rainfall, and an increased occurrence of heat waves and drought (Unnasch et al. 2017a). Although a longer growing season may benefit some species, the drier and warmer conditions may significantly stress others (Crist et al. 2104). In addition, these conditions are likely to increase the frequency and severity of wildfires in the Chihuahuan Desert grasslands, Chihuahuan desert scrublands, and pinyon-juniper woodlands (Unnasch et al. 2017a).

Models of the impacts of climate change on the future distributions of the woodlands, grasslands, and scrub indicate that by 2070 large areas of current grassland will likely transition to scrub cover. These forecasted changes in vegetation cover reflect the increases in temperature and decreases in precipitation (Unnasch et al. 2017a). In the Madrean Archipeligo Ecoregion, semi-Desert grassland and steppe and Chihuahuan creosotebush desert scrub are projected to contract significantly by 2050 (Crist et al. 2014).

Fire and Fuels

Prior to European settlement, there were variable, patchy fires in the northern Chihuahuan Desert. Historically, fire was common in grasslands and mid-elevation conifer or mixed woodlands but was rare or absent from Sonoran or Chihuahuan deserts scrub because sparse vegetation cover did not permit the spread of fire across the landscape. Prior to the late 1800s, burn intervals may have been approximately four to nine years in mountain shrub and grassland communities. However, fire suppression dramatically reduced annual total acreage that burned in western North America through the middle of the twentieth century (Unnasch et al. 2017a).

Today, regional fire regimes vary with local differences in vegetation communities. In modern times, humans have significantly altered fire frequency and duration by fire suppression activities and the introduction of cattle grazing and non-native plants. These changes created a positive feedback loop in which increased fire frequency results in a monoculture of fire-adapted plants, especially invasive grasses, which precludes the re-establishment of native vegetation (BLM 2013a).

5.5.4.2 Terrestrial Wildlife

Current Conditions and Context

The decision area crosses the border of Arizona and New Mexico. One challenge to wildlife management is the conflicting management goals across jurisdictions. Arizona ranks eighth for overall vertebrate diversity (AZGFD 2012) and New Mexico ranks fifth (NMDGF 2016). Some of the important stressors to wildlife and wildlife habitats in Arizona include altered surface hydrology, international border impacts, climate change, groundwater depletion, invasives species, human activity/development, and unnatural fire regimes (AZGFD 2012). The greatest threats to wildlife in New Mexico relate to

human activities (e.g., human development, pollution, energy production and mining, habitat modification) and climate change (NMDGF 2016).

The decision area is located in Madrean Archipelago and Chihuahuan Desert ecoregions. The Madrean Archipelago Ecoregion is comprised of an archipelago of isolated mountain ranges surrounded by intervening valleys or "desert seas." This ecoregion contains subtropical desert, subtropical thornscrub, semi-desert grasslands, oak savanna, deciduous riparian forest, oakpine woodlands, and mixed conifer forests. The valleys contain wetlands, ephemerally flooded playa lakes, and floodplains along streams and rivers with deciduous forests and shrubs (Crist et al. 2014).

The following section focuses on game species (big game species, upland game birds, and waterfowl) and migratory birds. Other species may inhabit the decision area but are not directly discussed. Any management direction which affects the recovery, maintenance, or improvement of the wildlife populations discussed in this section would also indirectly support other native species. Table 5.5-10 lists the managed big game species with habitat in the decision area.

Game species

Big Game Species

There are ten big games species in New Mexico (NMDGF 2022a) but only seven species occur in Hidalgo, Luna, or Dona Ana Counties and could occur in the decision area: black bear, bighorn sheep deer (mule and Coues' white-tailed), javelina, ibex, mountain lion, and oryx. There are ten big game species in Arizona (AZGFD 2022a), but only four species have distributions intersecting the decision area: javelina, mountain lion, mule deer, and pronghorn. Population numbers for these big game species fluctuate annually and depend on conditions such as weather, hunting, forage quality, water availability, and cover (WAPA and BLM 2015b).

Table 5.5-10. Managed Big Game Species with Habitat in the Corridor 81-213 Decision Area*

Common Name *Scientific Name*	Habitat Association and Life History	State
Black bear (*Ursus americanus*)	The decision area intersects black bear suitable habitat in New Mexico. Forested areas provide cover and rivers and streams provide a source of food. Conflicts with humans is the greatest threat to black bears (NDOW 2022).	New Mexico
Coues' white-tailed deer (*Odocoileus virginianus*)	Coues' white-tailed deer occur in Hidalgo County, New Mexico and could potentially occur within the decision area. The Coues is a subspecies of the white-tailed deer. They prefer woodlands of chaparral, oak, and pine with interspersed clearings (AZGFD 2022b).	New Mexico
Desert bighorn sheep (*OVIS CANADENSIS NELSON)*	Desert bighorn sheep occur in Hidalgo and Dona Ana Counties, New Mexico and could potentially occur within the decision area in New Mexico. This subspecies of bighorn sheep prefers desert mountain ledges and grassy basins within the desert ranges of southern and western Arizona (AZGFD 2022c).	New Mexico

Common Name *Scientific Name*	Habitat Association and Life History	State
Javelina (*Tayassu tajacu*)	The decision area intersects the distribution of javelina (also known as the collared peccary) in Arizona. Javelina occur in Hidalgo, Dona Ana, and Luna Counties, New Mexico and could potentially occur within the decision area in New Mexico. Javelina prefer desert, chaparral, and oak-grassland habitats. They live in herds of 8-9 animals and can breed year-round (AZGFD 2022d).	Arizona & New Mexico
Mountain lion (*Puma concolor*)	The decision area intersects the distribution of mountain lion (also known as cougar) in Arizona. Mountain lions occur in Hidalgo, Luna, and Dona Ana Counties, New Mexico and could potentially occur within the decision area in New Mexico. Mountain lions mostly occupy remote and inaccessible areas. Their annual home range can be more than 560 square mi, while densities are usually not more than 10 adults per 100 square mi. The cougar is generally found where its prey species (especially mule deer) are located. In addition to deer, they prey upon most other mammals (which sometimes include domestic livestock) and some insects, birds, fishes, and berries. They are active year-round. Their peak periods of activity are within two hours of sunset and sunrise, although their activity peaks after sunset when they are near humans. They are hunted on a limited basis and are closely monitored in some states (DOE and BLM 2008).	Arizona & New Mexico
Mule deer *(Odocoileus hemionus)*	The decision area intersects the distribution of mule deer in Arizona. Mule deer occur in Hidalgo, Luna, and Dona Ana Counties, New Mexico and could potentially occur within the decision area in New Mexico. Mule deer attain their highest densities in shrublands characterized by rough, broken terrain with abundant browse and cover. Some populations of mule deer are resident (particularly those that inhabit plains), but those in mountainous areas are generally migratory between their summer and winter ranges. They have a high fidelity to specific winter ranges where they congregate within a small area at a high density. Their winter range occurs at lower elevations within sagebrush and pinyon-juniper vegetation. Winter forage is primarily sagebrush, and true mountain mahogany, fourwing saltbush, and antelope bitterbrush are also important. Prolonged drought and other factors can limit mule deer populations. Mule deer are also susceptible to chronic wasting disease. When present, up to 3% of a herd's population can be affected by this disease (DOE and BLM 2008).	Arizona & New Mexico
Oryx (*Oryx gazella*)	Oryx occur in Dona Ana County, New Mexico and could potentially occur within the decision area in New Mexico. Oryx are originally found in desert, steppe and savanna ecosystems of Africa and the Middle East but were introduced in The Chihuahuan Desert in White Sands Missile Range, New Mexico and have spread to other parts of southern New Mexico (NMDGF 2022b).	New Mexico
Persian ibex (*Capra aegagrus*)	Persian ibex occur in Hidalgo, Luna, and Dona Ana Counties, New Mexico and could potentially occur within the decision area in New Mexico. The Persian ibex was introduced in the Florida Mountains near Deming, New Mexico in 1970. They're found in desert mountains and feed on almost anything edible: grasses, forbs, leaves, oak (NMDGF 2022c).	New Mexico

Common Name *Scientific Name*	Habitat Association and Life History	State
Pronghorn antelope (*Antilocapra americana*)	The decision area intersects the distribution of pronghorn in Arizona. Pronghorn inhabit non-forested areas such as desert, grassland, and sagebrush habitats. Herd size can commonly exceed 100 individuals, especially during winter. They consume a variety of forbs, shrubs, and grasses, with shrubs of greatest importance. Fawning occurs throughout the species range. However, some seasonal movement within their range occurs in response to factors such as extreme winter conditions and water or forage availability Pronghorn populations have been adversely impacted in some areas by historic range degradation and habitat loss and by periodic drought conditions (DOE and BLM 2008).	Arizona
Rocky Mountain elk (Cervus canadensis)	Rocky Mountain elk occur in the extreme northern portion of Luna County, New Mexico. Suitable habitat for the Rocky Mountain elk would not occur within the decision area. Elk are generally migratory between their summer and winter ranges (up to 60 mi annually), although some herds do not migrate. Their summer range occurs at higher elevations. Aspen and conifer woodlands provide security and thermal cover, while upland meadows, sagebrush/mixed grass, and mountain shrub habitats are used for forage. Their winter range occurs at mid-to-lower elevations where they forage in sagebrush/mixed grass, big sagebrush/rabbitbrush, and mountain shrub habitats. They are highly mobile within both summer and winter ranges in order to find the best forage conditions. In winter, they congregate into large herds of 50 to more than 200 individuals. Elk are susceptible to chronic wasting disease (DOE and BLM 2008)	New Mexico

*Intersections with decision area was determined using GIS data or habitat range maps from AZGFD (AZGFD 2022e) and BISON-M (BISON-M 2022) when possible.

The current ecological condition within the Madrean Archipelago Ecoregion for big game species has been impacted by invasive species and altered fire regimes. The Coues white-tailed deer habitat has somewhat better ecological status than that of pronghorn or desert bighorn sheep, with most status scores falling between 0.5 and 0.8. Pronghorn has approximately 50% of the expected distribution with status scores between 0.5 to 0.7. The desert bighorn sheep has the worst current ecological status with over 70% of its habitat scoring 0.5 or lower (Crist et al. 2014).

The Chihuahuan Desert is the largest desert in North America. It is hot and dry and experiences a wide range of variation in temperature across seasons and elevation. The two dominant ground cover types are grasslands and scrub (Unnasch et al. 2017a). Across the areas in which pronghorn are estimated to occur within the Chihuahuan Desert Ecoregion, nearly 70% currently is moderately to highly disturbed. Mule deer show slightly better current conditions with 66% of their habitat being moderately to highly disturbed (Unnasch et al. 2017a).

Upland Game Birds

Upland game bird species that may occur in the decision area include African collared dove, band-tailed pigeon, Eurasian collared dove, Gambel's quail, Montezuma quail, mourning dove, scaled quail, and white-winged dove. African and Eurasian collared

doves are invasive species in North America. African collared doves occur throughout Arizona and southern California (AZGFD 2022f). Eurasian-collared doves can be found in a various habitats including neighborhoods, grasslands, agricultural fields, woodland edges, and roadsides (NDOW 2022). Band-tailed pigeons occur in Arizona from late March through mid-October in hardwood and coniferous forests (AZGFD 2022g). Gambel's quail occupy shrub habitats near riparian areas (WAPA and BLM 2015b). Montezuma quails are found in pine-oak and oak scrub habitats in New Mexico. They prefer open woodlands with a grass understory (NMDGF 2022d). Mourning doves occur in a wide range of habitats from deciduous forests to shrubland and grassland communities (WAPA and BLM 2015b). Scaled quails are found primarily in open habitats in Arizona and New Mexico including semi-arid rangelands with mixed scrub (NMDGF 2022d). White-winged doves occur in southern Arizona and southern California. They occupy a wide range of habitats including agricultural fields and residential areas but favor woodlands or desert habitats (NDOW 2022). Most upland game species exhibit annual population fluctuations depending on weather and habitat conditions (WAPA and BLM 2015b).

Waterfowl

Waterfowl are also popular game birds in Arizona and New Mexico. Some common waterfowl in Arizona and New Mexico include American wigeon, barrow's goldeneye, blue-winged teal, bufflehead, Canada goose, canvasback, cinnamon teal, common goldeneye, common merganser, gadwall, greater scaup, green-winged teal, hooded merganser, lesser scaup, Mexican mallard, mallard, Northern pintail, Northern shoveler, redhead, ring-necked duck, Ross' goose, ruddy duck, snow goose, stiff-tailed duck, Trumpeter swan, Tundra swan, white-fronted goose, wood duck, (Martsh 2022 and AZGFD 2022a). Species distributions are limited to the rivers, streams, lakes, reservoirs, ponds, and wetlands found within the decision area. Population numbers for these species vary annually depending on weather and habitat conditions (WAPA and BLM 2015b).

Various conservation and management plans exist for waterfowl including the 2018 NAWMP, signed by the U.S. Canada, and Mexico. The NAWMP is a model for international conservation of wetlands and waterfowl. It was first signed in 1986 and has been adapted through reviews and updates in response to changing science and conservation goals (NAWMP 2018). While waterfowl species are considered game birds, they also are protected under the MBTA.

Migratory Birds

Many bird species occurring in Arizona and New Mexico are seasonal residents and exhibit seasonal migrations. These birds include waterfowl, shorebirds, raptors, and neotropical songbirds. The decision area is located within the Pacific Flyway and the Central Flyway, two of the four major North American migration flyways (DOE and BLM 2008). The Pacific Flyway includes the Pacific Coast Route, which occurs between the eastern base of the Rocky Mountains and the Pacific coast of the U.S. This flyway encompasses the states of California, Nevada, Oregon, and Washington, and portions

of Montana, Idaho, Utah, Wyoming, and Arizona. Birds migrating from the Alaskan Peninsula follow the coastline to near the mouth of the Columbia River, then travel inland to the Willamette River Valley before continuing southward through interior California. Birds migrating south from Canada pass through portions of Montana and Idaho and then migrate either eastward to enter the Central Flyway or turn southwest along the Snake and Columbia River valleys and then continue south across central Oregon and the interior valleys of California. This route is not as heavily used as some of the other migratory routes in North America (DOE and BLM 2008).

The Central Flyway includes the Great Plains–Rocky Mountain routes. These routes extend from the northwest Arctic coast southward between the Mississippi River and the eastern base of the Rocky Mountains and encompass all or most of the states of Wyoming, Colorado, and New Mexico, and portions of Montana, Idaho, and Utah. In western Montana, this flyway crosses the Continental Divide and passes through the Great Salt Lake Valley before turning eastward. This flyway is relatively simple, with the majority of birds making relatively direct north and south migrations between northern breeding grounds and southern wintering areas (DOE and BLM 2008).

Migratory birds encompass a variety of passerine and raptor species, most of which are protected under the MBTA (16 USC 703-711) and Executive Order 13186.

Migratory birds include neotropical migrant species, raptors, waterfowl, shorebirds, and wading birds. A wide range of migratory birds could occur within the Corridor 81-213 decision area. Approximately 259 bird species regularly occur within the New Mexico portion of the SunZia Southwest Transmission Project ROW. Semidesert grassland in southwestern New Mexico provides wintering habitat for some prairie-nesting species. The Arizona portion of the SunZia Southwest Transmission Project ROW has high bird diversity because of the varying habitats that occur over a wide elevation range. Approximately 267 bird species regularly occur within the Arizona portion of the recently authorized SunZia Southwest Transmission Project ROW and migratory species are a significant component of the total bird species diversity in the region. Bird diversity in the study corridor is also enhanced due to the proximity to Mexico. Birds occurring in the different biomes of Mexico may range into the Southern United States (BLM 2013a). Bird species have the potential to use habitats within the recently authorized Southline Transmission Project ROW for nesting, foraging, and migratory stopover. The decision area also includes several seasonal wetlands which can support a diverse avian community during migratory periods. Avian species that are usually found at higher elevations could also be present in the analysis area during migration or after storm events (WAPA and BLM 2015a).

Trends and Forecasts

Climate change modeling for the Madrean Archipelago Ecoregion shows substantial increases in maximum and minimum temperatures by mid-century. Maximum and minimum temperatures are expected to increase with summer months experiencing greater temperature increases than other seasons. Maximum temperature increases are not expected to be as severe as minimum temperature increases. The ecoregion is

also projected to experience a general drying trend during the months of April through August, with much less change over the remaining months and even slight precipitation increases projected for some fall and winter months (Crist et al. 2014).

Climate change modeling for the Chihuahuan Desert Ecoregion show that the entire ecoregion is expected to experience widespread warming (2-3 °C) and decreased precipitation (16-20 mm) by 2050, with additional warming (1 °C) and decreases in precipitation (2-19 mm) by 2070 (Unnasch et al. 2017a). A significant loss of pinyon-juniper woodlands and grasslands is projected to occur by 2070 within the ecoregion due to transitions to scrub cover 2070 (Unnasch et al. 2017a).

Climate change has the potential to impact wildlife communities by changes in temperature and precipitation and therefore in changes in their seasonal habitats. Some examples of potential climate change related impacts include:

- Potential major shifts in the vegetation assemblages of the Madrean Archipelago Ecoregion in the grassland zone may affect habitat for pronghorn (Crist et al. 2014).
- Predicted temperature increases may increase evapotranspiration and stress on plants and could increase water loss by pronghorn and mule deer (Unnasch et al. 2017b).
- Predicted decreases in precipitation may cause the water content of plants to decrease, thereby reducing a source of preformed water for pronghorn and mule deer at a time when surface water resources will also diminish (Unnasch et al. 2017b).
- Predicted increases in temperature and decreases in precipitation can affect pronghorn abundance and reproductive success (Unnasch et al. 2017b).

5.5.4.3 Fish and Aquatic Species

Current Conditions and Context

Aquatic habitat in these ecoregions consists of springs, wetlands, playas, and high and low elevation perennial and intermittent streams (Crist et al. 2014; Unnasch et al. 2017a). Water sources for aquatic habitat can be from rainfall, seasonal snowmelt, or groundwater discharge.

Water use and development are the greatest stressors on aquatic systems in the ecoregion. Development for residential, commercial and agricultural uses has eliminated a significant amount of historically vegetated wetland and riparian habitat along the major rivers of the region. Aquatic stressors are greatest in lower elevation riparian corridors while higher elevation streams have less development and therefore fewer stressors. Playa habitat like Lordsburg and Willcox playas have also been impacted by roads and railroad across the playa surface (Crist et al. 2014).

Water usage as well as water development projects have had multiple effects on aquatic habitat and communities in the ecoregion by changing surface flows, water

infiltration, evapotranspiration, and runoff; and increase erosion and pollutants inputs to aquatic habitat (Crist et al. 2014).

There are no perennial streams in the decision area. However, on the eastern end of the corridor, the Regional Review Recommendation (along Southline and SunZia authorized ROWs) is in the vicinity of the Rio Grande River and the Mimbres River. The decision area (both the designated corridor and the Regional Review Recommendation along Southline and SunZia authorized ROWs) are in the path of and multiple intermittent streams from Deming, New Mexico to the western end of the corridor. The Regional Review Recommendation along Southline and SunZia authorized ROWs avoids the Lordsburg Playa Research Natural Area. Playas are topographic depressional areas that may experience season standing water from seasonal storms and increases in water table during which time they provide temporary aquatic habitat.

Special status aquatic species found in the vicinity of the corridor include the Gila trout (*Salmo gilae*), Gila chub (*Gila intermedia*), spikedace (*Meda fulgida*), Chihuahua chub (*Gila nigrescens*), and the Chiricahua Leopard Frog (*Rana chiricahuensis*) (BLM 2013a; BLM 2016a). The Gila chub, Gila trout, and spikedace are found in the Gila River Basin, with critical habitat found in the vicinity of the corridor. The Chihuahua chub is found in the Mimbres River of southwestern New Mexico. The Chiricauhua Leopard frog is found in desert regions of Arizona and New Mexico.

Trends and Forecasts

Climate forecasts for the Chihuahua Ecoregion indicate an increase in air temperatures and a decrease in rainfall (Unnasch et al. 2017a). Future climate projections also indicate that increased evapotranspiration and reduced snowfall and snowmelt will reduce recharge, runoff, and upstream discharge along the Gila River, Rio Grande, and Pecos River watersheds, and potentially increased surface and groundwater use in the region. Future climate projection for the Madrean Archipelago Ecoregion indicate greater minimum temperature in the ecoregion during the summer months (Crist et al. 2014). Precipitation also decreased in the entire ecoregion in the spring but increased in the summer compared to baseline conditions. These changes in temperature and precipitation patterns will increase water temperatures, alter watershed runoff and recharge hydrology, and water chemistry, the magnitude and duration of flooding in stream and river channels, and fluvial network connectivity (Crist et al. 2014).

5.5.4.4 Special Status Species

Current Conditions and Context

The decision area intersects habitat for three BLM-Sensitive plant species: Chihuahua Scurfpea (*Pediomelum pentaphyllum*), Night-blooming Cereus (*Peniocereus greggii greggii*), and Sand Prickly Pear Cactus (*Opuntia arenaria*). These species are discussed below, summarized in Table 5.5.-11 and depicted in Figure 5.5-3.

The Night-blooming Cereus is a cactus that occupies a limited range in the southwestern U.S. and northern Mexico. In the U.S., it occurs in Arizona, New Mexico,

and Texas. It grows in desert flats and washes at elevations between 1,000 and 5,000 ft (300 and 1,500 m) (NatureServe 2022a). Documented habitat for this species occurs within the designated corridor between MP 118 and MP 121. There is no habitat for the Night-blooming Cereus within the Regional Review Recommendation (along Southline and SunZia authorized ROWs or along the existing 500-kV transmission line between MP 0 to and MP 18).

Table 5.5-11. Special Status Species with Habitat in the Corridor 81-213 Decision Area*

Common Name *Scientific Name*	Species Status and Habitat Association	Habitat within the Decision Area
Chihuahua Scurfpea (*Pediomelum pentaphyllum*)	BLM-Sensitive legume endemic to southwestern New Mexico and southeastern Arizona in desert grasslands and shrublands. Occupies sandy to gravely soils, sometimes associated with Honey Mesquite (*Prosopsis glandulosa*).	Potentially suitable habitat for this species occurs in the designated corridor.
Night-blooming Cereus (*Peniocereus greggii greggii*)	BLM-Senstive cactus restricted to desert flats and washes in Arizona, New Mexico, Texas, and northern Mexico at elevations between 1,000 and 5,000 ft (300 and 1,500 ft).	Documented habitat intersects the designated corridor between MP 118 and MP 121.
Sand Prickly Pear Cactus (*Opuntia arenaria*)	BLM-Sensitive cactus restricted to sandy soils and sand dunes in the Rio Grande Valley of central New Mexico, western Texas, and northern Mexico at elevations between 3,770 and 4,430 ft (1,150 and 1,350 m).	Documented habitat intersects the designated corridor between MP 5 and MP 6.

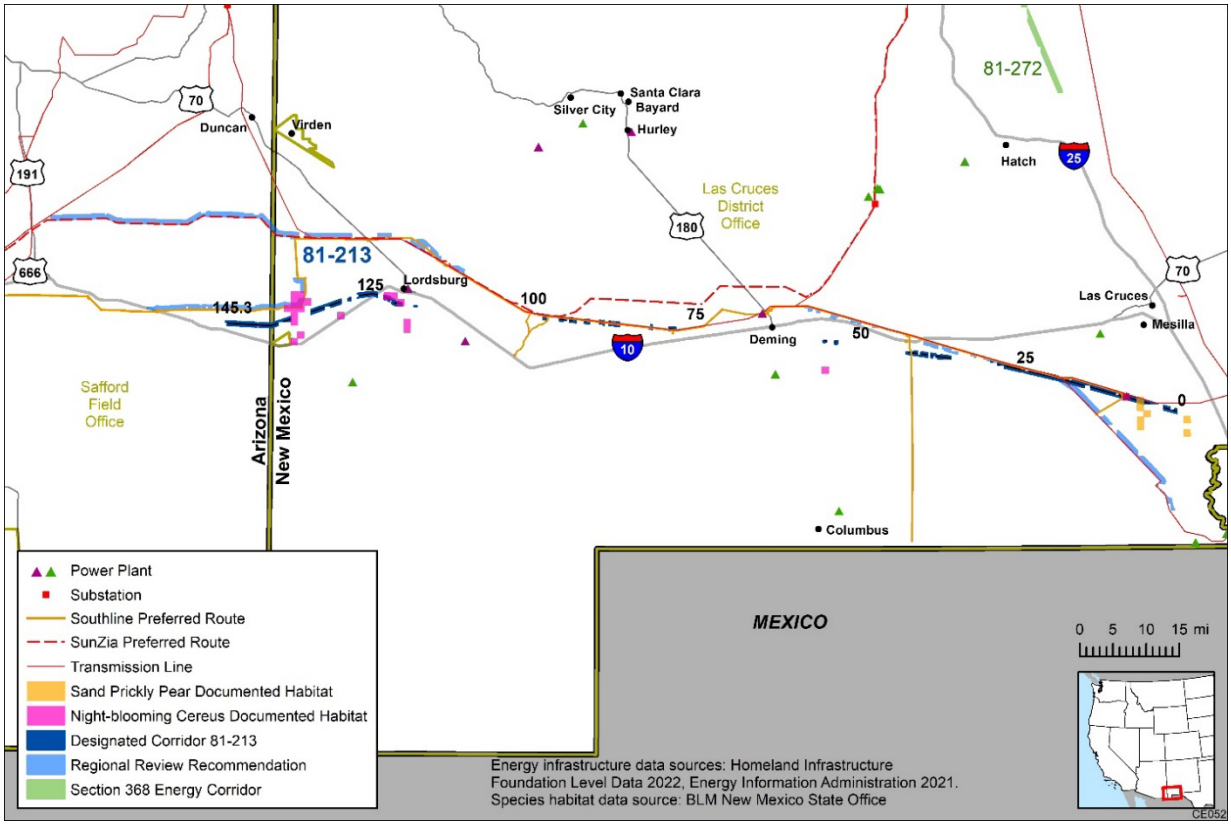

Figure 5.5-3. Special Status Species Habitat in the Vicinity of the Decision Area

The Sand Prickly Pear Cactus is a cactus restricted to the Rio Grande River and adjacent valleys in south-central New Mexico, western Texas, and northern Mexico. It occurs in sandy soils of barrens or sand dunes at elevations between 3,770 and 4,430 ft (1,150 and 1,350 m) (NatureServe 2022b). Documented habitat for this species occurs within the designated corridor between MP 5 and MP 6. There is no habitat for the Sand Prickly Pear Cactus within the Regional Review Recommendation (along Southline and SunZia authorized ROWs or along the existing 500-kV transmission line between MP 0 to and MP 18).

Ecoregional conditions for the decision area are described in the terrestrial wildlife section (Section 5.5.4.3). The two special status plant species, Night-blooming Cereus and Sand Prickly Pear Cactus, have lost historical habitat and currently occupy a fraction of their historic ranges. Both species are threatened by urban development and overcollection by humans (NatureServe 2022a, 2022b).

Trends and Forecasts

Population trends and forecasts for these species is not well known and require additional field survey. However, it is estimated that the threats of urbanization and over-collection will continue in the future (NatureServe 2022a, 2022b).

5.5.5 Environmental Justice

General information for environmental justice that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.5.

Current Conditions and Context

For environmental justice, a 2 mi buffer area was used to evaluate minority and low-income populations, 1 mi on either side of the decision area. The geographic distribution of minority and low-income groups within the buffer area was based on census block group data from the 2020 Census (U.S. Census Bureau 2022a, 2022b, 2023).

Table 5.5-12 lists the minority and low-income composition within the 2 mi buffer in the seven counties on the basis of 2020 census data. For four of the counties, the total minority population (those not listed as White alone, not Hispanic or Latino) in the buffer does not exceed 50% and is not meaningfully greater (10 percentage points or more) than the countywide average. Although the total minority population in that part of the buffer located in Graham County, Arizona, Dona Ana County, New Mexico and Luna County, New Mexico exceed 50%, it is not meaningfully greater (10 percentage points or more) than countywide averages. The number of persons at or below twice the Federal poverty rate within the buffer exceeds countywide levels in Cochise County, Graham County, Greenlee County and Grant County, and exceeds 50% in the buffer in Cochise County and Luna County (Table 5.5-12).

The 2 mi buffer had a population of 20,601 in 2020 (U.S. Census Bureau 2022b). Median household income ranged from $32,251 in 2020 in Luna County to $66,368 in Greenlee County, while the average unemployment rate in the four counties was 6.4% in 2021.

Table 5.5-12. Minority and Low-Income Population Within Corridor 81-213 Decision Area Buffer, 2020

Population Category	County and State						
	Cochise, Arizona	Graham, Arizona	Greenlee, Arizona	Grant, New Mexico	Dona Ana, New Mexico	Hidalgo, New Mexico	Luna, New Mexico
Racial Groups							
Number of persons:	619	503	152	437	8,269	1,154	1,409
Hispanic or Latino, White alone, not Hispanic or Latino	905	568	595	492	2,259	1,408	1,156
Black or African American alone	9	1	1	5	89	8	22
American Indian and Alaska Native alone	6	9	6	0	35	7	31
Asian alone	0	5	1	0	33	7	10
Native Hawaiian and Other Pacific Islander alone	0	0	0	0	9	2	0
Two or more races	16	51	22	34	91	53	92
Minority percent	42.3	53.1	23.5	49.7	79.1	47.1	57.6
County Minority percent	47.1	45.6	53.5	53.5	72.8	60.6	69.8
Low-income Population							
Number of persons	655	1,043	320	459	4,205	1,062	1,761
Low-income percent	58.7	47.4	31.7	48.5	40.3	40.6	52.6
County Low-income percent	37.2	42.3	25.9	46.4	46.7	43.0	55.7

Sources: U.S. Census Bureau (2022a, 2022b, 2023).

Trends and Forecasts

Forecasts of the effects of changes in employment opportunities, cost of living, social and cultural values, and consumer preferences on population growth and migration, are undertaken only at the regional or national level for the population as a whole, with detailed forecasted data on minority and low-income populations at the census block group level not available. Preparing demographic forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local employment, unemployment, income, population growth and migration, and the characteristics of minority and low-income populations, that are difficult to forecast, particularly at the census block group level.

5.5.6 Geology, Soils, and Mining and Mineral Resources

Current Conditions and Context

In Arizona, the decision area is located on Quaternary alluvium in the San Simon Valley at their western ends (Arizona Geological Survey 2002). They each cross the Quaternary volcanics of the Peloncillo Mountains, and further east descend into alluvium and playa sediments of the Animas Valley of New Mexico (Arizona Geological Survey 2002, Green et al. 1997). Mapped normal faults are present in the Animas Valley (New Mexico Bureau of Geology and Mineral Resources, 2003). Following a large gap, the corridor resumes to the east in the alluvium of Lewis Flats. Further east, the corridor and its two eastern tips are located mainly in the Aden Hills, comprised of Upper Santa Fe Group conglomerate and sandstone (Green et al. 1997) which contains numerous mapped normal faults (New Mexico Bureau of Geology and Mineral Resources, 2003).

Soil is poorly developed in alluvial materials in the low areas of the corridor, and it is generally absent in the upland areas of exposed bedrock. Adjacent to some of the western portions of the corridor is irrigated farmland near San Simon, Arizona.

Trends and Forecasts

The decision area extends across an area that is essentially unpopulated with negligible change expected in the geologic, mineralogic, and soil conditions.

5.5.7 Human Health and Safety

General information for hazardous materials and human health that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.7.

Current Conditions and Context

Volcanic Hazards – The designated corridor is not located within the area of influence of an active volcano (BLM and DOE 208, Table 3.14-1). The volcanic hazard is low for this corridor.

Seismic Hazards – The decision area is located has a relatively low earthquake potential. The entire corridor has a 2% probability of horizontal shaking exceeding 8–16%g within 50 years (USGS 2022a). If an earthquake with a PGA in this strength range were to strike near a transmission line or pipeline in the corridor, significant damage to the infrastructure would be unlikely.

Fault Crossings – Faults in which a slip has occurred within the past 10,000 years (Holocene faults) are commonly considered active (USGS 2022b). Several fault lines older than 750,000 years cross the eastern end of the designated corridor (USGS 2021; see Figure 5.5-4). The age of these fault lines indicates a low potential for earthquakes in this area.

Liquefaction Potential – The decision area is not in an area rated low, medium, or high liquefaction potential (DOE and BLM 2008, Figure 3.14-3). This indicates that the risk of liquefaction is low.

Landslide Potential – The designated corridor does not intersect with any areas classified for landslide susceptibility (DOE and BLM 2008, Figure 3.14-5). The risk of landslide at any location near this corridor is low.

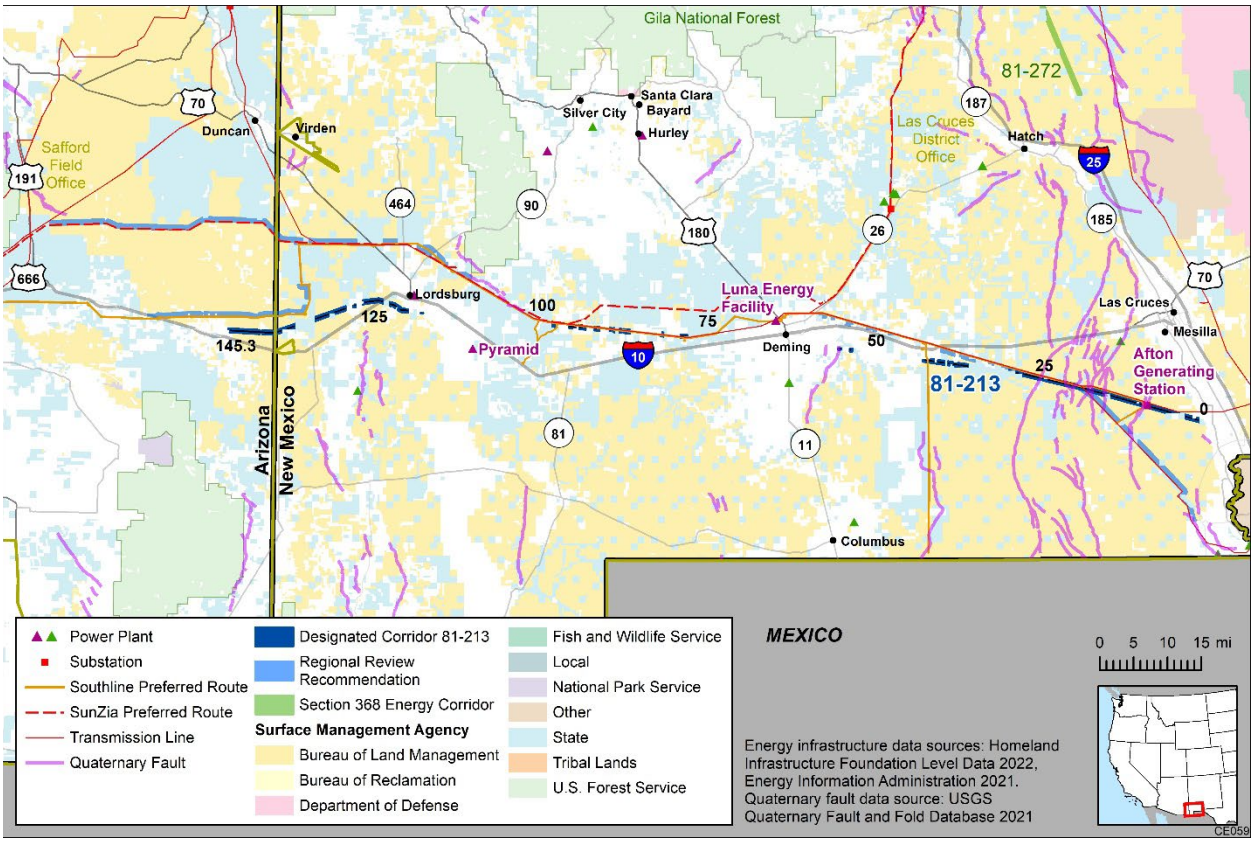

Figure 5.5-4. Fault Crossings in the Vicinity of the Decision Area

Trends and Forecasts

The Corridor 81-213 decision area has a low probability of experiencing a relatively powerful earthquake and/or landslide within the next 50 years.

5.5.8 Hydrology

Current Conditions and Context

The decision area extends across broad alluvial plains and several mountainous areas. The alluvium consists of unconsolidated sand and gravel and is considered a basin-fill aquifer in Arizona and part of New Mexico, and in much of New Mexico, the corridor areas in alluvium are considered part of the Rio Grande Aquifer System (USGS 2000). The bedrock areas do not generally serve as aquifers.

In Arizona, the western ends of the designated corridor cross the ephemeral San Simon River and some of its unnamed ephemeral tributaries (USGS 2022c). In New Mexico, the Regional Review Recommendation along the SunZia Southwest Transmission Line Project authorized ROW is partially situated on the Summit Tank ephemeral lake, and the Regional Review Recommendation along the Southline route is situated directly across the large Lake Tank playa. The corridor segments also cross numerous named and unnamed ephemeral drainages. Further east after a large gap, the corridor segments cross several named or unnamed ephemeral drainages. The eastern ends of the forked corridor are approximately 5 to 8 km west of the Rio Grande River.

The corridor is not located on a sole source aquifer (EPA 2022c), and it does not cross any Wild and Scenic Rivers (USGS 2022c) or any perennial rivers.

Trends and Forecasts

The Corridor 81-213 decision area extends across an area that is essentially unpopulated. Changes in hydrologic conditions are expected to occur on short time scales in response to precipitation events.

5.5.9 Lands and Realty

General information for lands and realty that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.9.

Current Conditions and Context

Current lands and realty management is guided by decisions made in existing RMPs. For the Corridor 81-213 decision area, the planning area includes the BLM-administered lands managed under the Mimbres RMP and (BLM 1993) Safford RMP (BLM 1991). The lands and realty program consists generally of land use authorizations (e.g., ROWs) and land tenure (purchases and acquisitions, sales and exchanges, and withdrawals of public land).

Trends and Forecasts

In general, current management trends for land tenure indicates that the BLM will pursue a long-term program for repositioning public lands toward improved manageability and increased public benefits. Lands may be provide access or facilitate management, or to protect or enhance natural resources (BLM 2007a). Future opportunities for land acquisitions would be contingent on willing sellers, the condition of proposed acquired lands, and the availability of funding (BLM 2023a).

In general, the BLM will continue to consider land exchanges if such exchanges enhance public resource values and improve land ownership patterns and management capabilities of both private and public lands by consolidating ownership and reducing the potential for conflicting land use. Small, isolated parcels of public lands, especially those surrounded by large blocks of individually owned private parcels, are most likely to be considered for disposal in the future. Generally, the BLM would also consider the

disposal of some isolated parcels near communities, if those parcels were deemed necessary for community expansion and economic development. The BLM anticipates an increase in requests from private individuals and communities to acquire public lands in the future (BLM 2019).

The lands and realty program responds to requests for ROWs, permits, leases, withdrawals, and land tenure adjustments from other programs or outside entities. The frequency of such requests is anticipated to increase as neighboring communities grow, and as the demand for use of public lands increases. As a result, future management of the lands and realty program may become more intense, complex, and costly (BLM 2019).

The main land use topics addressed in this section focus on renewable energy; ROWs, particularly utility corridors and, as applicable, roads and railroads; and military flight operations. While military flight operations are not an actual use of BLM-administered lands, they could have potential effects on energy corridors, particularly those involving aboveground transmission lines.

5.5.9.1 Renewable Energy

Current Conditions and Context

In 2005, the BLM signed a ROD implementing a wind energy development program. BLM-administered lands were categorized into areas having a low, medium, or high potential for development of wind energy production based on wind power classifications. Lands categorized as having low potential fall within wind power Classes 1 and 2, lands with a medium potential fall within wind power Class 3, and lands with a high potential fall within wind power Class 4 and higher. Wind resources in Class 4 and higher are generally considered economically developable with current technology. Class 3 wind resources are expected to become more economical as low-wind-speed turbines become increasingly available (BLM 2005).

The Corridor 81-213 decision area (designated corridor and Regional Review Recommendation along Southline and SunZia authorized ROWs) is within areas of low potential for wind energy production (BLM 2005).

In 2012, the BLM approved the Western Solar Plan, implementing RMP amendments for a solar energy development program in six southwestern states, including California and Nevada. The Solar PEIS ROD designated SEZs, areas that the BLM prioritizes for utility scale production of solar energy as well as variance areas, areas that are not prioritized but not excluded from solar energy development. On December 8, 2022, the BLM published a NOI to prepare a PEIS and conduct scoping to evaluate the environmental effects of potential improvements and expansions to the BLM's utility-scale solar energy planning (BLM 2022a). The Afton SEZ is located within or immediately adjacent to the designated corridor from MP 4 to MP 18 (DOE and BLM 2014).

Solar variance areas are located within the Regional Review Recommendation along the existing 500-kV transmission line south of MP 0 to MP 19 of the designated corridor. In addition to the Afton SEZ, solar variance areas are located within the designated corridor from MP 0 to MP 30. Solar variance areas are located within portions of the designated corridor between MP 30 and MP 96. Solar variance areas are also located within the Regional Review Recommendation (along Southline and SunZia authorized ROWs). Most of the BLM-administered lands within the decision area from about MP 118 to the Arizona-New Mexico state line contain some solar variance areas. Other than the mountainous area along the SunZia Preferred Route at the Graham/Greenlee County border near State lands about 16 mi north of San Simon, the entire decision area within Arizona is located within some solar variance areas (DOE and BLM 2014).

Trends and Forecasts

Renewable energy production on BLM public lands has increased in recent years. As of November 2021, permitted renewable energy projects on BLM-managed lands include 36 wind, 37 solar, and 48 geothermal projects with a total combined capacity of more than 12 gigawatts of power (BLM 2023b). Continued growth of responsible renewable energy has recently been supported by Executive Order 14008, the Energy Act of 2020, and Congressional direction to seek to permit at least 25 gigawatts of solar, wind and geothermal energy production on public lands no later than 2025 (BLM 2023c). In addition, laws enacted in most of the western states require energy companies and utilities to provide a portion of their energy from renewable energy sources. As a result, the BLM anticipates an increased interest in the use of public lands for renewable energy development.

The placement of renewable energy facilities depends on a number of factors are not always addressed in BLM land use plans such as economics, proximity to the electrical grid, project design, current technology, and potential resource impacts. However, BLM-administered land use plans can be amended through the public process to accommodate such uses if necessary (BLM 2008a).

Under the Western Solar Plan, areas that are not included as part of the SEZs or variance areas are to be considered as potential exclusion areas for utility-scale solar energy development. Exclusion areas are identified based on the potential for resource conflicts (e.g., Greater Sage-grouse habitat) or because lands are not well suited for utility-scale solar energy development (e.g., areas with slopes greater than 5%) (BLM 2019). The upcoming Solar PEIS may identify additional areas as suitable for utility-scale solar energy development, potentially increasing future solar energy development on BLM-administered land.

As the potential for wind resources are limited within the decision area, it is unlikely that utility-scale wind energy projects will be developed in the area. Solar energy projects are more likely to be developed in the area due to the proximity of solar variance areas and SEZs.

5.5.9.2 Rights-of-Way

Current Conditions and Context

Section 503 of FLPMA provides for the designation of energy corridors and encourages use of ROW collocation to minimize environmental impacts and the proliferation of separate ROWs.

There are existing 345-kV transmission lines, multiple natural gas pipelines, and two refined product pipelines within the designated corridor.

The Southline and SunZia authorized ROWs are also located within the decision area. The SunZia Southwest Transmission Project includes two planned 500 kV transmission lines from central New Mexico to central Arizona. The BLM authorized a 400-ft ROW grant across 183 mi of BLM-administered lands for the SunZia project in 2016. In 2021, SunZia submitted a new application to amend their existing BLM ROW grant. The proposed amendments are comprised of the following four components: changes to access roads and temporary work areas on Federal lands; localized route modifications in five areas along the selected route; three reroute alternatives near Socorro, New Mexico, proposed to address DoD concerns about White Sands Missile Range, parallel another proposed transmission line, and move the east substation closer to proposed wind generation projects; and the addition of a substation (SunZia West) on private land in Arizona. The Southline Transmission Line Project includes a 345-kV transmission line running from southern New Mexico to southern Arizona. The BLM authorized a 400-ft ROW grant across 100 mi of BLM-administered lands for the Southline project in 2016. The Regional Review Recommendation suggested re-routing the designated corridor along the SunZia and Southline authorized ROWs.

Trends and Forecasts

In general, requests for ROWs will continue to increase due to increasing population growth and urban development, which in turn, will increase the demand for energy and the need for improved electric transmission grid reliability. Demand for ROWs may increase within areas that have potential for wind, solar, and geothermal energy. Existing or designated corridors could provide grid connectivity to accommodate for the anticipated growth in renewable energy production. The BLM will continue process and grant ROWs, consistent with national, state, and local plans. BLM will continue to encourage colocation of ROWs to minimize environmental impacts and proliferation of separate ROWs.

As with past and present development, designated energy corridors or colocation with existing infrastructure will continue to be preferred for future development of linear utility infrastructure projects (particularly large, interstate energy transport projects). Colocation of utility infrastructure could continue to concentrate development, and associated surface disturbance, to certain areas, including areas adjacent to highways and major county roads, railroads, Section 368 energy corridors, and other existing or proposed energy corridors (BLM 2019).

The proximity of the Afton SEZ and solar variance areas to the decision area provides the opportunity for the corridor to accommodate transmission tied to renewable energy development (BLM, Forest Service, and DOE 2022).

5.5.9.3 Military Training Flight Operations

Current Conditions and Context

While military training flight operations are not an actual use of BLM-administered lands, they could have a potential effect on energy corridors or renewable energy projects, particularly above-ground transmission lines and wind energy projects. The decision area is located within MTR-VR and SUA. In addition to the SunZia and Southline authorized ROWs, there are other existing transmission lines that also occur within the MTR-VR and SUA. Table 5.5-13 provides information on the MTR-VR and SUA and where they intersect the decision area.

Table 5.5-13. Military Training Routes Intersected by the Corridor 81-213 Decision Area

Military Training Route Type	State	Planning Area	MPs
MTR-VR	New Mexico	Las Cruces District Office	Designated corridor: MP 88 to MP 113 Regional Review Recommendation
	New Mexico and Arizona	Las Cruces District Office and Safford Field Office	(SunZia Route): all of corridor west of MP 89
	New Mexico	Las Cruces District Office	Regional Review Recommendation (Southline Route): MP 88 to MP 133
SUA	Arizona	Safford Field Office	Regional Review Recommendation (along SunZia Route): western 19 mi

[a] MPs for the Regional Review Recommendation utilize the corresponding MPs from the designated corridor.

Trends and Forecasts

The trends and forecasts for military training flight operations are not under the purview of BLM. DoD would consult with BLM if any significant changes or increases in military training flights over BLM-administered lands were planned for the future.

5.5.10 Lands with Wilderness Characteristics

There are no managed lands with wilderness characteristics units within the Corridor 81-213 decision area. Lands with wilderness characteristics are not expected to be affected during this planning effort and will not be discussed further.

5.5.11 Livestock Grazing and Wild Horse and Burro

General information for livestock grazing and wild horse and burros that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.11.

5.5.11.1 Livestock Grazing

Current Conditions and Context

Management direction for livestock grazing comes primarily from the RMPs that provide management for livestock grazing and rangeland health. Most BLM-administered lands are or can be grazed by livestock except for lands considered unsuitable due to steep slopes (greater than 70%) or barren areas (less than 2% vegetation) (BLM 1993, 2008b; DOE and BLM 2008). The number of AUMs could be modified over time—e.g., based on whether or not the allotments meet the land health standards (BLM 2008c). An AUM is the amount of forage necessary to support one cow and calf, five sheep, one horse, or one indigenous animal for one month. There are 25 grazing allotments within the designated corridor and 41 grazing allotments within the Regional Review Recommendation (Table 5.5-14 and Figure 5.5-5). Within the designated corridor, 15 allotments overlap less than 5% of the total size of the allotment and 10 allotments overlap between 5% and 14% of the total size of the allotment. Within the Regional Review Recommendation, 23 allotments overlap less than 5% of the total size of the allotment and 18 grazing allotments overlap between 5% and 19% of the total size of the allotment.

Table 5.5-14. Livestock Grazing Allotments Intersected by the Corridor 81-213 Decision Area[a]

Allotment Name (Allotment Number)	Administrative State	Allotment Acreage	Percentage of the Allotment Within the Decision Area
Designated Corridor			
West La Mesa (03050)	New Mexico	10,518	0.2
West Potrillo (03029)	New Mexico	130,603	0.2
Burro Cienega Lease (04530)	New Mexico	83,290	0.2
Swallow Fork Peak (01057)	New Mexico	15,144	0.2
Lordsburg Draw (01055)	New Mexico	12,085	0.3
Corralitos Ranch (03013)	New Mexico	181,944	0.9
Lordsburg Playa (01034)	New Mexico	47,913	1.0
Grandmother Mountain Lease (02502)	New Mexico	29,151	1.1
Bobcat Canyon Lease (02524)	New Mexico	9,422	1.3
Hay Draw Lease (04525)	New Mexico	38,675	1.4
Jarrell Ranch Lease (01553)	New Mexico	42,306	2.4
East Deming Lease	New Mexico	2,630	2.4
Steins Mountain (01010)	New Mexico	20,954	2.5
Home Ranch (03002)	New Mexico	36,810	2.9
Chamberino (03045)	New Mexico	4,956	4.5
La Mesa (03038)	New Mexico	25,013	5.1
Cow Spring Draw Lease (02541)	New Mexico	5,820	5.5
Akela South (02002)	New Mexico	13,494	6.4
Roostercomb (51250)	Arizona	35,638	9.1
Aden Hills (03001)	New Mexico	20,838	10.2
Black Mesa (03003)	New Mexico	25,290	10.4
Playa (01068)	New Mexico	16,794	12.2
Akela West (02001)	New Mexico	3,152	13

Allotment Name (Allotment Number)	Administrative State	Allotment Acreage	Percentage of the Allotment Within the Decision Area
Shakespeare Ranch (01024)	New Mexico	11,090	13.3
Akela (03041)	New Mexico	3,921	14.1
Regional Review Recommendation			
Walker Pasture (01538)	New Mexico	2,580	0.02
Kilbourne Hole (03023)	New Mexico	96,468	0.04
Corralitos Ranch (03013)	New Mexico	181,944	0.1
Akela West Lease (02501)	New Mexico	19,122	0.1
Swallow Fork Peak (01057)	New Mexico	15,144	0.2
West Potrillo (03029)	New Mexico	130,603	0.2
Beacon (03020)	New Mexico	62,620	0.5
Simpson Lease (02519)	New Mexico	30,364	0.5
Tanque (51080)	Arizona	68,910	0.9
Joy Valley (51150)	Arizona	54,546	0.9
San Simon (51240)	Arizona	1,362	1.3
Akela North (02031)	New Mexico	14,454	1.4
Ballard (01062)	New Mexico	15,236	2.0
Cambray Allotment (03019)	New Mexico	14,259	2.0
Ninemile Hill (01099)	New Mexico	14,277	2.3
Braidfoot (50620)	Arizona	9,179	2.3
Lordsburg Playa (01034)	New Mexico	47,913	2.8
Deming Lease (02508)	New Mexico	24,333	2.9
Aden Hills (03001)	New Mexico	20,838	3.2
Carne Lease (02534)	New Mexico	1,988	3.9
Lazy B (50580)	Arizona	101,898	4.3
Chamberino (03045)	New Mexico	4,956	4.5
Murchison (051180)	Arizona	53,101	4.8
Home Ranch (03002)	New Mexico	36,810	6.1
High Lonesome (50670)	Arizona	29,048	6.5
La Union (03022)	New Mexico	48,329	6.9
Fuller (01094)	New Mexico	48,269	7.2
Akela South (02002)	New Mexico	13,494	7.2
Gold Hill Canyon (01026)	New Mexico	23,429	7.3
Lordsburg Draw (01055)	New Mexico	12,085	7.7
La Mesa (03038)	New Mexico	25,013	8.5
Wood Canyon (01027)	New Mexico	8,103	9.8
Black Mesa (03003)	New Mexico	25,290	10.4
Steins Mountain (01010)	New Mexico	20,954	11.6
Badger Den (51100)	Arizona	49,060	11.7
Playa (01068)	New Mexico	16,794	12.2
Poppy Canyon (51000)	Arizona	17,481	13.1
Shakespeare Ranch (01024)	New Mexico	11,090	13.3
West La Mesa (03050)	New Mexico	10,518	17
Willow (51790)	Arizona	6,296	19
Roostercomb (51250)	Arizona	35,638	19

[a] Allotments are listed if they are on BLM-administered lands within the decision area

[b] Southline and SunZia routes are the Regional Review Recommendation.

Source: BLM (2023d)

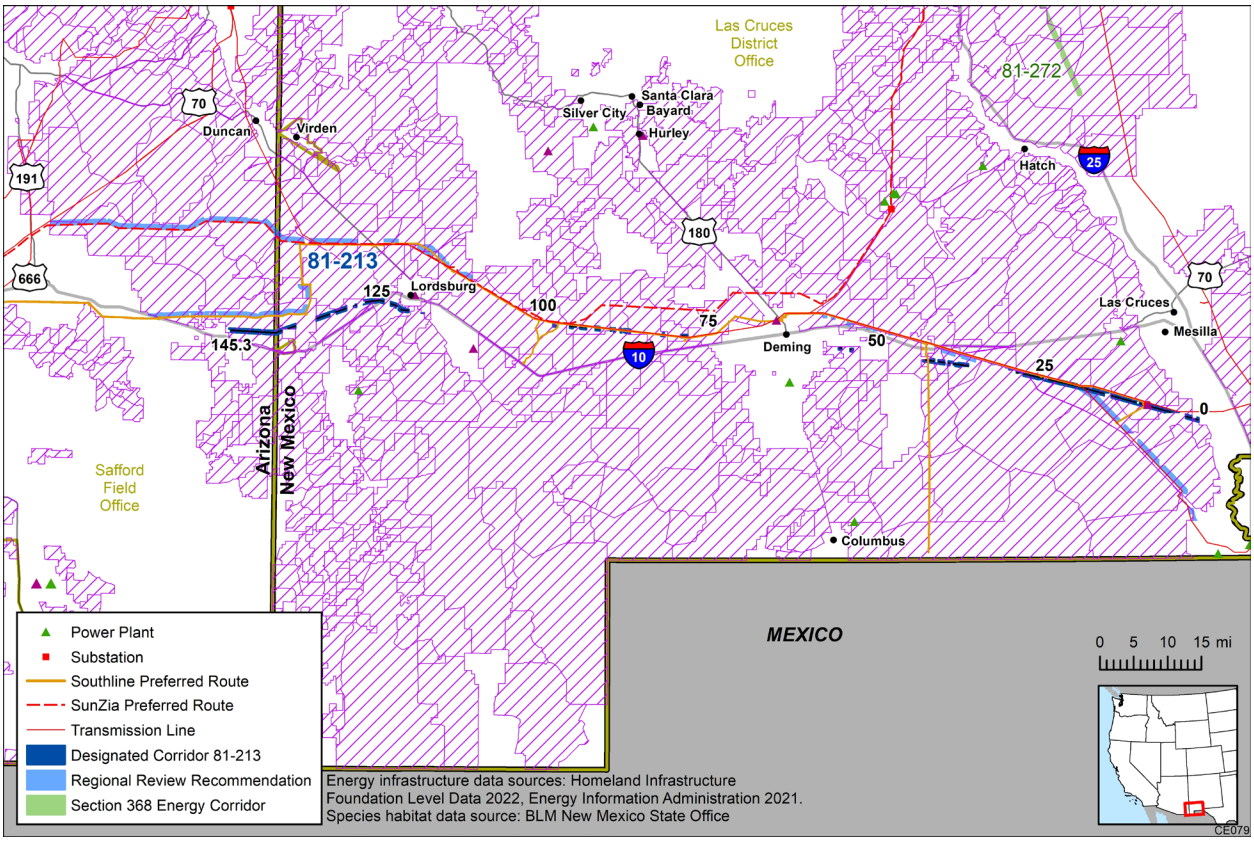

Figure 5.5-5. Grazing Allotments in the Vicinity of the Decision Area.

Trends and Forecasts

Livestock grazing will continue to be managed through existing laws, regulations, and policies. Appropriate BMPs will be followed to protect rangeland resources and, where necessary, to mitigate any conflicts with other uses and values. The BLM will continue to assure compliance with existing permit/lease requirements, modify permits and leases, monitor and supervise grazing use, and to remedy unauthorized grazing use. Management direction for livestock grazing comes primarily from the RMPs that provide current management for livestock grazing and rangeland health. Review of existing AUMs would be conducted on individual allotments through assessment of existing activity plans (i.e., allotment management plans, livestock grazing decisions, habitat management plans, watershed management plans, biological opinions, and multiple-use decisions). BLM enhances range conditions by controlling animal numbers, regulating season of use, regulating duration of use, and periodically resting rangelands as part of livestock management systems and following catastrophic events, such as fire (BLM 2008b).

The occurrence of weather extremes or shifts in climatic variables, such as the increase in frost-free days, change in the timing or amount of precipitation, and warmer summers, is often cited as a growing trend that may be the result of climate change (see Section 5.1.2). Increases in temperatures and shifts in precipitation patterns may reduce livestock forage production alter the livestock carrying capacity on BLM-

administered lands. Season or timing of grazing use and livestock numbers, distribution, intensity, and type of livestock may need to be adjusted on a temporary or long-term basis in response to climatic factors.

5.5.11.2 Wild Horse and Burro

There are no wild horse or burro HMAs within the Corridor 81-213 decision area. Wild horses and burros are not expected to be affected during this planning effort and will not be considered further.

5.5.12 Noise

General information for noise resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.12.

Conditions and Context

At a state level, Arizona and New Mexico do not have regulatory standards limiting noise levels from sources associated with activities along the energy corridor (NPC 2022).

Cochise County in Arizona and Hidalgo, Grant, Luna, and Dona Ana Counties in New Mexico have not established quantitative noise-limit regulations applicable to energy corridor activities.

Noise sources around the decision area include road traffic, railroad traffic, aircraft flyover by military and civilian aviation, agricultural activities, animal noise from nearby wildernesses, industrial activities, and infrequent community activities and events. In addition, crackling or hissing corona noise from transmission lines and humming noise from substation transformers are additional noise sources along the corridor. Except each end of the designated corridor, the decision area is mostly undeveloped, sparsely populated, and remote (except Lordsburg, Deming, and the Mesilla Valley, which is located near the east end of the corridor), the overall character of which is considered mostly pristine to rural.

Airports: The nearest airports are Lordsburg Municipal Airport in Hidalgo County and Dona Ana County at Santa Teresa Airport in Dona Ana County, both of which are about 1 mi (2 km) from the corridor. The next nearest airport is Solar Ranch Airport, about 2 mi (3 km) from the designated corridor in Luna County, followed by Deming Municipal Airport in Luna County, about 4 mi (6 km) from the corridor. Several public and private airports along with heliports in these counties are scattered around the decision area.

Roads and Railroads: East-west running Interstate 10, with which U.S. Route 70 and 180 join with Interstate 80 at Lordsburg and Demining, respectively, crosses the designated corridor several times and runs parallel to the corridor. In addition, several state routes, county roads, and local roads cross or are located around the decision area. The UPRR runs along Interstate 10, and thus either crosses the designated corridor several times or runs parallel to the corridor.

To date, no environmental noise survey has been conducted around the decision area. On the basis of the population density, the L_{dn} or DNL is estimated to be 39 dBA for Dona Ana County in New Mexico, 31 dBA for Luna County in New Mexico, 31 dBA for Grant County in New Mexico, 23 dBA for Hidalgo County in New Mexico, and 35 dBA for Cochise County in Arizona, all which correspond to wilderness areas except rural residential area for Dona Ana County (Cavanaugh and Tocci 1998, Miller 2002).

Trends and Forecasts

Primary noise sources include roads, airports, railroads, and stationary sources. In general, doubling the number of noise sources of the same intensity increase the sound level only by 3 dB, which is a barely noticeable difference. For example, if the number of passenger cars increases from 1,000 to 2,000 vehicles per hour on any road, the noise level increases only by 3 dB. This level of drastic change in activities is not anticipated in the remote and unpopulated area around the designated corridor. As a result, even with population and industrial growth in the region, noise level in the decision area is forecasted to increase slightly and unnoticeably in the near future unless new and noisy sources, to which the receivers have never been exposed before, come into the region.

5.5.13 Paleontology

General information for paleontological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.13.

Current Conditions and Context

Figure 5.5-6 depicts the PFYC Classes within the decision area. The PFYC Classes represent an estimate based on the available regional geologic data; they are not meant to replace project-specific evaluations of potential paleontological resources. The PFYC Classes within the decision area range from Class 1 (very low) to Class 5 (very high). There are few areas of Class 1, mostly in Arizona along the Regional Review Recommendation (SunZia authorized ROW), where the probability of impacting significant paleontological resources would be very low and further assessment of paleontological resources is likely unnecessary. There are PFYC Class 2 (low) areas scattered throughout the decision area. Where the PFYC classification is Class 2, the probability of impacting significant paleontological resources would be low and further assessment of paleontological resources is would likely not be unnecessary, unless paleontological resources are known or found to exist. There are areas along the Regional Review Recommendation (SunZia authorized ROW) both in Arizona and east of Lordsburg, New Mexico, where the PFYC is Class 4 (high). PFYC Class 4 areas indicate a moderate to high probability for impacting paleontological resources. Detailed field assessment is typically required prior to land disturbing activities in PFYC Class 4 areas. Almost the entire decision area from MP 0 to MP 40 is PFYC Class 5 (very high). PFYC Class 5 areas indicate a high probability for impacting significant paleontological resources. The area should be assessed prior to land tenure adjustments and pre-work surveys would likely be required.

In New Mexico, paleontological resources are located throughout the Mimbres planning area, including vertebrate fossils and trace fossils, which are found in sedimentary rock formations. Fossils have been discovered from the paleozoic, cretaceous, and early tertiary age, and younger sediments of Pliocene and quaternary age. Bones from animals have been found in caves in the area as well as within the Aden lava flow (BLM 1992b). Southeastern Arizona contains many paleontological resources; there are 64 invertebrate sites and 77 vertebrate sites on BLM-managed lands within the Safford planning area. The two paleontological areas with greatest significance, Bear Springs Badlands Paleontological Area and 111 Ranch Paleontological Area, are west of the decision area (BLM 1991).

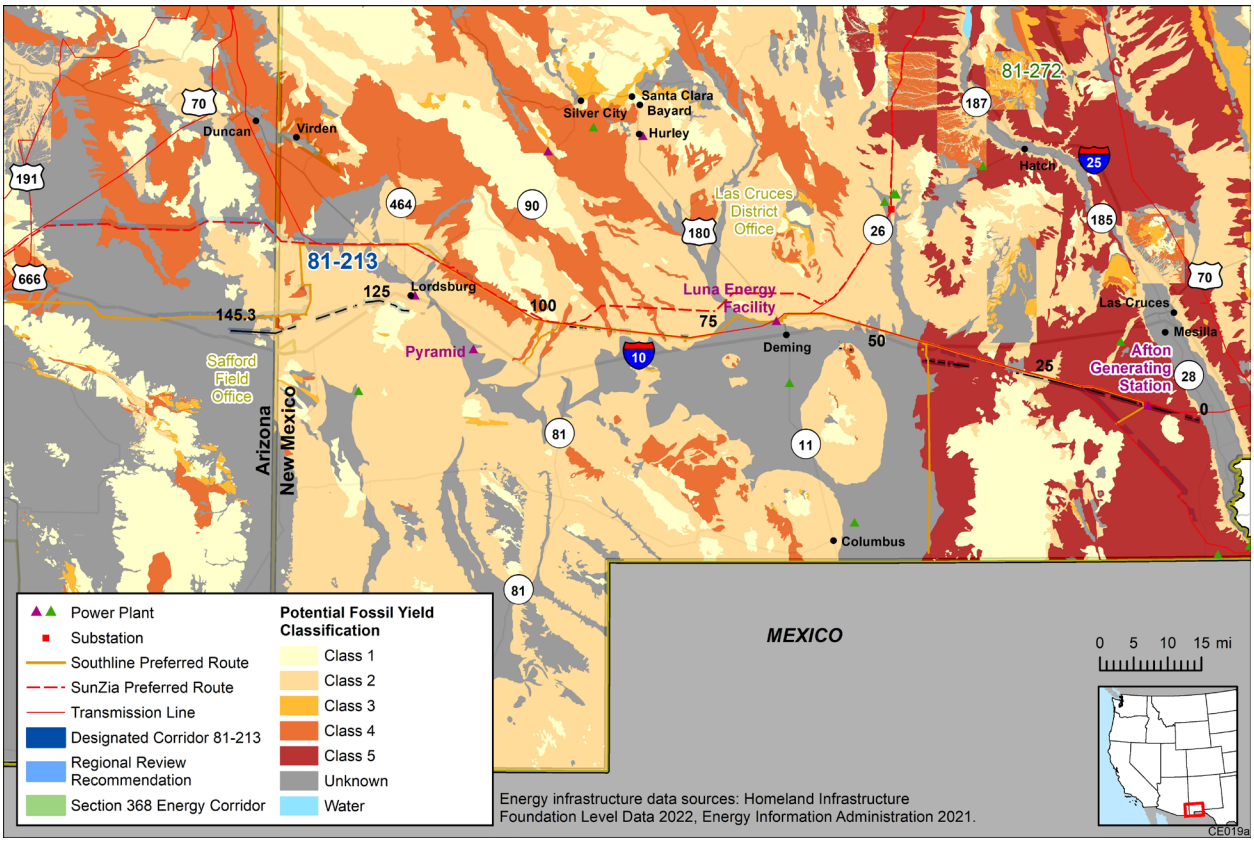

Figure 5.5-6. Potential Fossil Yield Classification in the Vicinity of the Decision Area

Trends and Forecasts

Exploration, development, and disposal of salable minerals within the Mimbres planning area could impact paleontological resources. Other activities that could impact paleontological resources include erosion, OHV use, excavation, theft, vandalism, and surface-disturbing activities, such as trampling by animals and humans (BLM 1992b).

5.5.14 Recreation

General information for recreation that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.14.

Current Conditions and Context

A broad range of outdoor recreation opportunities will continue to be provided on all segments of BLM-administered lands, subject to the demand for such opportunities and the need to protect other resources. SRMAs will receive first priority for operation and maintenance funds (BLM 2001). The Peloncillo Mountains Wilderness Area, Aden Lava Flow and Peloncillo Mountains WSAs, Organ Mountains-Desert Peaks National Monument, Lordsburg Playa Research National Area (type of ACEC), Continental Divide NST, and Butterfield Overland National Historic Trail on BLM-administered lands within the decision area provide numerous recreational opportunities throughout the area.

SRMAs recognize unique and distinctive recreation values and are managed to protect or enhance a targeted set of activities, experiences, benefits, and recreation setting characteristics, which become the priority management focus (BLM 2011). The decision area does not intersect any SRMAs. The Hot Well Dunes SRMA occurs about 0.6 mi north of the Regional Review Recommendation (along the SunZia authorized ROW) in Arizona. This location is about 3 mi west of a large block of Arizona state lands. The SRMA is an open area for OHVs.

No OHV open areas occur within the decision area. An open area occurs about 0.6 mi north of the Regional Review Recommendation (along the SunZia Transmission Line project authorized ROW) in Arizona. This location is about 3 mi west of a large block of Arizona state lands. This OHV open area is overlapped by the Hot Well Dunes SRMA. The remainder of the decision area within the Safford Field Office is designated limited to OHV use. OHV use will be limited to existing roads and trails occurring at the time of designation and any new roads approved for construction during the life of the Safford RMP. The Peloncillo Mountains Wilderness is closed to OHV use (BLM 1991). Other than the Lordsburg Playa that is closed to OHV use due to dust-generating safety concerns, most of the New Mexico portion of the decision area is designated limited to OHV use (BLM 1993, 1998).

Trends and Forecasts

A broad range of outdoor recreation opportunities will continue to be provided on all segments of BLM-administered lands, subject to the demand for such opportunities and the need to protect other resources. SRMAs will receive first priority for operation and maintenance funds (BLM 2001). The Peloncillo Mountains and Aden Lava Flow Wilderness Areas, and Peloncillo Mountains WSA, Organ Mountains-Desert Peaks National Monument, Lordsburg Playa Research Natural Area (type of ACEC), Continental Divide NST, and Butterfield Overland National Historic Trail on BLM-administered lands within the decision area provide numerous recreational opportunities throughout the area.

As population pressures increase, and with them the demand for quality outdoor recreation, the BLM field offices will retain and develop its ability to provide a wide variety of recreational opportunities. In part, this demand would be met by restoration and regular maintenance of existing recreation sites, creation of new recreational facilities, and more intensive management. However, the unspoiled character of natural

landscapes must be preserved and vulnerable areas would be excluded from all development (recreational and otherwise) in order to preserve their pristine, natural condition (BLM 1992b; 1993; 2013a; 2015a; WAPA and BLM 2015a).

The use of developed recreation sites is on an upward trend, following growth trends in adventure tourism and heritage tourism, and increased populations in communities.

It is reasonable to expect that there will be a continuing need to construct recreation facilities in response to community and tourism industry growth. With visitation to BLM-administered public lands continuing to increase (and with present visitation already creating the need for additional facilities), facilities to provide for these visitors must keep pace so as to protect the land and to provide for human sanitation. Current use levels continue to degrade resources, and additional facilities are needed to accommodate visitation and to stabilize resource values (BLM 2019).

OHV use has become a substantial issue because of the number of users who participate in this recreation opportunity and because of concerns related to the potential resource degradation that can result from high levels of unmanaged use in sensitive areas. OHV use has become one of the fastest growing recreation activities. Visitors are drawn to these areas to experience the numerous roads and trails available for OHV use, the diverse backcountry opportunities, the spectacular scenery, and the challenging OHV opportunities the landscape and terrain provide. This trend is expected to continue (BLM 2019). Increasing OHV traffic on public lands has caused the uncontrolled proliferation of user-created, undesignated trails arising from repeated cross-country travel. Unauthorized motorized use causes natural resource damage (e.g., to soils and habitat) and increased public safety concerns (WAPA and BLM 2015b). The development of field office-wide OHV plans will help to control the social and environmental impacts related to this activity (BLM 2007a).

5.5.15 Socioeconomics

Current Conditions and Context

Socioeconomic data are presented for an ROI around the decision area, composed of the counties in which the corridor would be located. The ROI for the decision area includes Cochise, Graham, and Greenlee counties in Arizona, and Dona Ana, Grant, Hidalgo, and Luna counties in New Mexico.

Population

The nearest population centers along this corridor include Las Cruces New Mexico about 15 mi (25 km) north of MP 0 (2020 population of about 103,000), Deming New Mexico at about MP 62 (2020 population of about 14,000), and Lordsburg New Mexico about 2.5 mi (4 km) north of MP 118 (2020 population of about 2,000).

In 2020, the population of the seven-county ROI was 450,894 people (Table 5.5-15). During the period 2010 to 2020, population increased at low annual average rates in Greenlee County, Dona Ana County, Grant County and Luna County, and declined in

Cochise County and Hidalgo County, also at low annual average rates. Population in the ROI as a whole increased at an average annual rate of less than 0.01% during this time.

Employment and Income

Table 5.5-16 presents the average civilian labor force statistics for the ROI in 2021. More than 178,400 people were employed in the ROI as a whole, and 12,155 were unemployed. Unemployment rates ranged from 4.0% for Greenlee County to 15.2% for Luna County (Table 5.5-16). Wage and salary employment (i.e., not including self-employed persons) by industry for 2020 is provided in Table 5.5-17. More than 88,500 people in the ROI were employed in services (52.3% of the total), with 20,500 (12.1%) persons employed in wholesale and retail.

Table 5.5-15. ROI Population

County	Population			Average Annual Growth Rate, 2010-2020 (%)
	2010	2020	2040	
Cochise, Arizona	131,346	125,447	130,500	-0.01
Graham, Arizona	37,220	38,533	45,300	
Greenlee, Arizona	8,437	9,563	11,900	>0.01
Dona Ana, New Mexico	209,233	219,561	n/a	0.01
Grant, New Mexico	29,514	28,185	n/a	0.01
Hidalgo, New Mexico	4,894	4,178	n/a	-0.02
Luna, New Mexico	25,095	25,427	n/a	<0.01
ROI Total	445,739	450,894	n/a	<0.01

Sources: Arizona Commerce Authority 2022; U.S. Census Bureau 2022c, 2022d.

Table 5.5-16. ROI Civilian Labor Force Statistics, 2021

County	Employed, 2021	Unemployed, 2021	Unemployment Rate, 2021
Cochise, Arizona	46,667	2,360	4.8
Graham, Arizona	15,047	648	4.1
Greenlee, Arizona	4,169	174	4.0
Dona Ana, New Mexico	91,648	6,522	6.6
Grant, New Mexico	10,626	831	7.3
Hidalgo, New Mexico	1,786	102	5.4
Luna, New Mexico	8,471	1,518	15.2
Total	178,414	12,155	6.4

Source: U.S. Department of Labor 2022.

Table 5.5-17. ROI Wage and Salary Employment by Industry, 2020

Sector	County							ROI Total	Share of ROI Total (%)
	Cochise, Arizona	Graham, Arizona	Greenlee Arizona	Dona Ana, New Mexico	Grant, New Mexico	Hidalgo, New Mexico	Luna, New Mexico		
Agriculture, forestry, fishing and hunting	1,001	374	41	2,216	194	166	506	4,508	2.7
Mining, quarrying, and oil and gas extraction	279	1,200	1,534	629	1,073	116	473	5,304	3.1
Utilities	561	230	13	1,183	114	42	127	2,270	1.3
Construction	2,562	1,290	367	6,639	654	74	638	12,224	7.2
Manufacturing	1,713	485	39	3,656	261	57	563	6,774	4.0
Wholesale and retail trade	5,467	1,971	339	10,550	975	182	1,016	20,500	12.1
Transportation and warehousing	1,918	321	73	3,415	85	50	412	6,147	3.6
Finance, insurance, and real estate services (FIRE)	1,845	615	163	3,781	335	7	251	6,997	4.1
Services, not incl. FIRE	21,461	5,938	1,306	49,999	5,559	655	3,601	88,519	52.3
Public Administration	7,412	966	140	6,565	312	179	390	15,964	9.4
Total	44,219	13,390	4,025	88,633	9,562	1,528	7,850	169,207	

Source: U.S. Census Bureau 2022e

Table 5.5-18 details income in the ROI for 2020. Total personal income stood at $18.6 billion, generated primarily in Dona Ana County ($8.9 billion) and Cochise County ($5.8 billion) while median annual income ranged from $32,251 for Luna County to $66,368 for Greenlee County.

Table 5.5-18. ROI Personal Income, 2020

County	Total Personal Income ($ billions)	Median Income ($)
Cochise, Arizon	5.8	51,505
Graham, Arizona	1.4	55,693
Greenlee, Arizona	0.4	66,368
Dona Ana, New Mexico	8.9	44,024
Grant, New Mexico	1.2	37,453
Hidalgo, New Mexico	0.2	44,722
Luna, New Mexico	0.9	32,251
ROI Total	18.6	

Sources: U.S. Census Bureau 2022f; U.S. Department of Commerce 2022.

Housing

Table 5.5-19 details housing characteristics in the ROI in 2020. There were 4,941 vacant rental housing units in the ROI as a whole, with rental vacancy rates ranging from 1.5% in Luna County to 5.2% in Greenlee County.

Table 5.5-19. ROI Housing Characteristics, 2020

County	Housing Units		
	Total	Vacant Rental	Vacancy Rate (%)
Cochise, Arizona	61,380	1,175	1.9
Graham, Arizona	13,678	436	3.2
Greenlee, Arizona	4,465	234	5.2
Dona Ana, New Mexico	88,937	2,529	2.8
Grant, New Mexico	15,105	334	2.2
Hidalgo, New Mexico	2,467	62	2.5
Luna, New Mexico	11,318	171	1.5
ROI Total		197,350	4,941

Source: U.S. Census Bureau 2022g, 2022h).

Trends and Forecasts

In 2020, the population of the seven-county ROI was 450,894, with the majority of people, 219,561, living in Dona Ana County (Table 5.5-15). Population is projected to grow slightly in Graham County and Greenlee County, at an annual rate of 0.01%, and increase at a smaller rate in Cochise County, between 2020 and 2040. Population in the three Arizona counties is projected to reach 187,700 by 2040. No population projections are available for the New Mexico counties.

Given the lack of appropriate geographic-specific forecasts for changes in employment opportunities, business costs, cost of living, and consumer preferences, the effects of which may be more easily to predict at the regional or national level, forecasts of their effects on employment, employment by industry, unemployment, income and housing at the county-level are not available. Preparing forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local economic activity that are difficult to forecast.

5.5.16 Special Designations

General information for special designations that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.16.

Special designations are addressed in this section only if they are intersected by or located within close proximity to the decision area. These include:

- Aden Lava Flow Wilderness Area and Peloncillo Mountains Wilderness Area;
- Peloncillo Mountains WSA;
- Organ Mountains-Desert Peaks National Monument;
- Lordsburg Resource Natural Area;
- Continental Divide National Scenic Trail; and
- Butterfield Overland National Historic Trail.

The proximity of the special designation areas to the decision area are depicted in Figure 5.5-7.

5.5.16.1 Wilderness Areas

Current Conditions and Context

Aden Lava Flow Wilderness Area

The 27,673-ac Aden Lava Flow Wilderness Area is located within 0.4 mi of the Regional Review Recommendation (along existing 500-kV transmission line from MP 0 to MP 18). The Aden Lava Flow Wilderness Area is characterized by basalt flows, volcanic craters, and coppice sand dunes. The lava flow includes pressure ridges, lava tubes, and steep-walled depressions of up to 100-ft wide. Grass and shrubs grow on the flow with many cacti and yucca. Vegetation consists of grasslands and desert shrubs, such as mesquite and creosote. Vent tubes and the many crevices found in the lava provide cover and den sites for wildlife. The WSA is accessed via dirt road in various conditions, which limits usage levels for recreation purposes (WAPA and BLM 2015a).

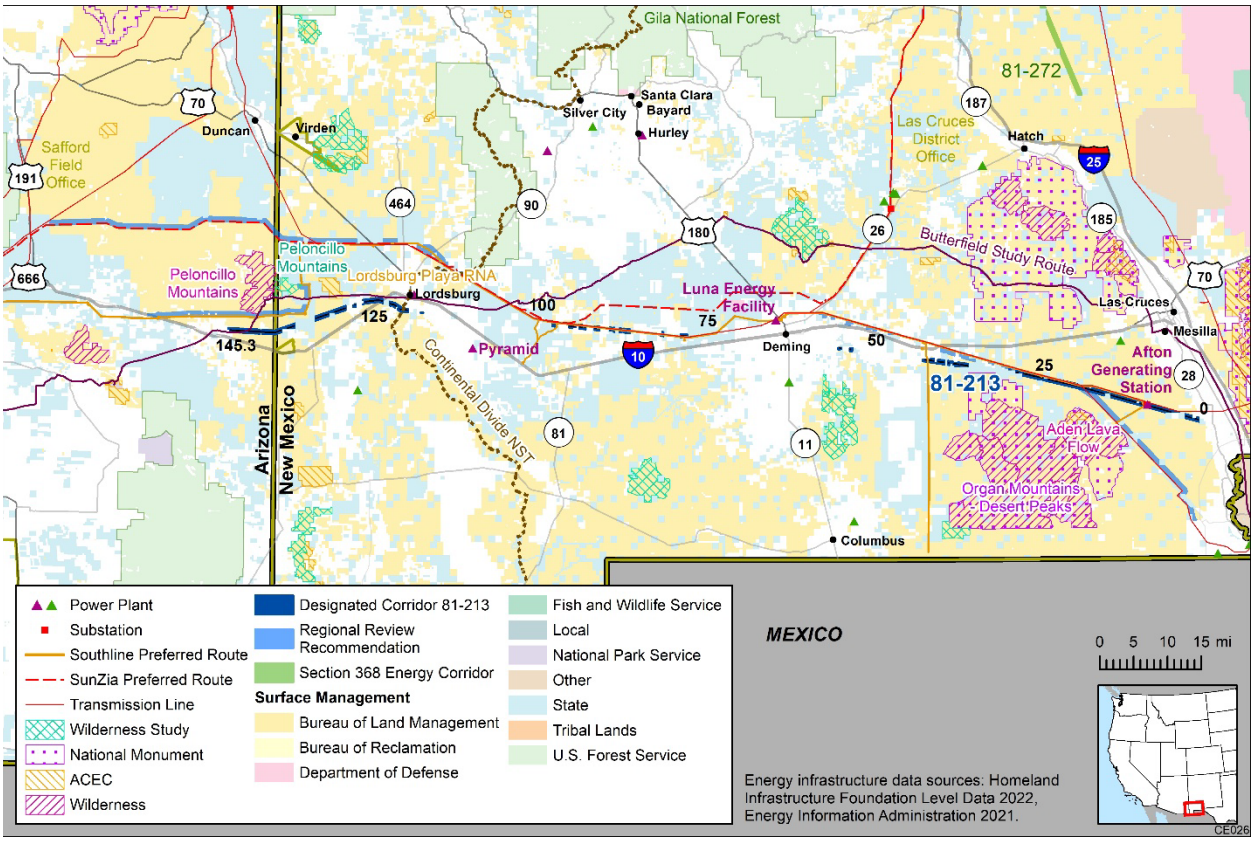

Figure 5.5-7. Special Designations in the Vicinity of the Decision Area

The 19,440-ac Peloncillo Mountains Wilderness is about 0.5 mi north of the Regional Review Recommendation along the Southline Transmission Line Project route. The Peloncillo Mountains Wilderness Management Plan establishes the objectives, policies, and actions by which the Peloncillo Mountains Wilderness is managed. The Peloncillo Mountains Wilderness Area totals nearly 20,000 ac within the Peloncillo Range, which extends from the Gila River into Mexico, near the border between Arizona and New Mexico. This remote and primitive area shows little signs of human activity and affords opportunities for primitive recreation, including hiking, backpacking, rock scrambling, hunting, and sightseeing. The higher country offers long-distance views, and excellent scenery enhances wilderness values in the rugged mountains and canyons (WAPA and BLM 2015a). The Peloncillo Mountains Wilderness Plan recognizes the entire wilderness area as an exclusion area. No project facilities would be constructed in the wilderness area since it expressly prohibited by the enabling legislation of the Wilderness Act, in addition to the Safford RMP and Peloncillo Mountains Wilderness Plan (WAPA and BLM 2015a).

Trends and Forecasts

There will be an ongoing long-term protection and preservation of the Wilderness Areas under the principle of non-degradation. The naturalness and untrammeled condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational,

scenic, or historic value will be managed so that they remain unimpaired (BLM 2007b, 2010).

5.5.16.2 Wilderness Study Areas

Current Conditions and Context

The 4,061-ac Peloncillo Mountains WSA borders the Regional Review Recommendation the Southline Transmission Line Project route, north of the designated corridor. The Peloncillo Mountains WSA is approximately 3,109 ac. This WSA is adjacent to the designated Peloncillo Mountain Wilderness Area in Arizona, as well as the Northern Peloncillo Mountains ACEC in New Mexico. The WSA is accessed via dirt roads in various conditions, which limits usage levels for recreation purposes. The Peloncillo Mountains WSA has no marked trails, and four-wheel drive is required to access the WSA. The WSA offers primitive and dispersed recreation opportunities and activities (WAPA and BLM 2015a).

Trends and Forecasts

Demand for dispersed activities such as hiking and backpacking, hunting, and wildlife-viewing, photography, and the study and contemplation of nature is expected to increase on BLM-administered lands. Preserving key wilderness characteristics of WSAs will ensure the preservation of lands suitable for these, and other, activities (BLM 2007a). Should any WSA, in whole or in part, be released from wilderness consideration, such released lands will be managed in accordance with the goals, objectives, and management prescriptions established in the RMP for the field office where the WSA is located, unless otherwise specified by Congress in its releasing legislation. The BLM will examine proposals in the released areas on a case-by-case basis but will defer all actions that are inconsistent with RMP goals, objectives, and prescriptions, until it completes a land use plan amendment (BLM 2015b).

5.5.16.3 National Monument

Current Conditions and Context

The 496,529-ac Organ Mountains-Desert Peaks National Monument is located within 0.4 mi of the Regional Review Recommendation (south of the designated corridor at MP 11 and 0.5 mi from MP 31).

Trends and Forecasts

There will be an ongoing long-term protection and preservation of the National Monuments under the principle of non-degradation. The naturalness and untrammeled condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational, scenic, or historic value will be managed so that they remain unimpaired (BLM 2015c, 2017).

5.5.16.4 ACEC

Current Conditions and Context

There are no ACECs within or adjacent to the decision area. However, the Lordsburg Playa Research Natural Area, a type of ACEC, is about 1.2 mi north of the designated corridor at MP 128.

Lordsburg Playa Research Natural Area is located 10 mi west of Lordsburg, New Mexico. The Research Natural Area is approximately 3,833 ac. The playa is a flat, dry lakebed that is devoid of vegetation except around the outer edges. It is a relatively pristine and undisturbed relict of the large Pleistocene lakes that covered many of the intermountain basins of the southwestern United States during the last glacial period. The playa provides an important stop-off or wintering site for migrating shorebirds and waterfowl when conditions permit (e.g., wet years) (WAPA and BLM 2015a).

Trends and Forecasts

Public lands in ACECs will be retained in federal ownership; while non-federal lands within or adjacent to an ACEC may be acquired for the purposes of conservation of relevance and importance values, through purchase, exchange, or donation. Acquired lands will be incorporated into the ACEC and managed in accordance with the prescriptions applied to the remainder of the ACEC (BLM 2016b).

Desired future conditions common for all ACECs are to provide protection for relevant and important resource values within designated ACECs, including special status species, wildlife, scenic, riparian, and significant cultural resources. Vegetation diversity within ACECs will be maintained in accordance with ecological site description guidelines. The viewsheds and landscape character of ACECs is maintained to the extent practicable through the BLM's VRM system (BLM 2010). The Lordsburg Research Natural Area is closed to OHV access (BLM 1993).

5.5.16.5 National Historic and Scenic Trails (Including National Study Trails)

Current Conditions and Context

Continental Divide NST

Near Lordsburg, New Mexico, the Continental Divide NST crosses the designated corridor at MP 118 and also intersects the Regional Review Recommendation (Southline and SunZia authorized ROWs). The Continental Divide NST traverses landscapes primarily on public lands within 50 mi of the geographic feature known as the Continental Divide. Extending 3,100 mi between Mexico and Canada, the nature and purpose of the Continental Divide NST is to provide for high-quality, scenic, hiking, and horseback riding opportunities and to conserve natural, historic, and cultural resources (Forest Service 2009). The Continental Divide NST crosses through the town of Lordsburg, New Mexico, and the I-10 corridor within developed/rural areas (WAPA and BLM 2015a).

Butterfield Overland National Historic Trail

The Butterfield Overland National Historic Trail is located within the designated corridor from MP 142 to MP 145. The Butterfield Overland National Historic Trail also crosses the Regional Review Recommendation (Southline and SunZia authorized ROWs). The Butterfield Overland Mail and Stage Route, also known as the Butterfield Trail, the Oxbow Route, the Butterfield Overland Mail, and the Butterfield Stage, was a stagecoach route used between St. Louis, Missouri, Memphis, Tennessee, and San Francisco from 1858 to 1861. The Butterfield Trail and associated stage station localities are considered to have significant regional, historical, and archaeological significance. The remains of the trail and stations are fragile and nonrenewable cultural resources which are deserving of preservation, research, and interpretation to the general public (BLM 1993). The trail was designated as the Butterfield Overland National Historic Trail on January 22, 2023.

Trends and Forecasts

The BLM will continue to preserve, protect, and maintain the historic and scenic values, and cultural landscapes and viewsheds of NHTs, NSTs, and Study Trails (BLM 2012). Prior to changing Section 368 energy corridor designation, the BLM would need to identify and mitigate any potential impacts on NSTs and NHTs.

5.5.17 Tribal Interests

General information for tribal interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.17.

Current Conditions and Context

The BLM has identified 16 Federally recognized Tribes with cultural affiliation and an interest in the decision area (Table 5.5-20). Fort Sill Apache Reservation is the only Indian Reservation and area with lands held in Trust near the decision area (BLM 2022b; HUD 2022; BIA 2022; Heizer 1978a, 1978b, 1978c). The reservation is about three mi from the designated corridor between MP 41 and MP 43. Due to a history of removal and displacement since the early 1800s, it is difficult to identify all Tribes with affiliation to the project area. Any additional Tribes not mentioned in this document should be identified through ongoing formal outreach and consultation.

Table 5.5-20. Federal Indian Reservations Near the Decision Area

Reservation, Tribe	Federally recognized Tribes	County, State
Fort Sill Apache Reservation	Fort Sill Apache Tribe	Luna County, Arizona
San Carlos Reservation	San Carlos Apache Tribe	Graham County, Arizona, Pinal County, Arizona, Gila County Arizona
Fort Apache Reservation	White Mountain Apache Tribe	Gila County, Arizona, Navajo County Arizona, Apache County Arizona

The following Tribes have been identified as having cultural affiliation with the lands near the decision area:

- Ak-Chin Indian Community
- Comanche Nation
- Fort Sill Apache Tribe
- Quechan Tribe of the Fort Yuma Indian Reservation
- Gila River Indian Community
- Hopi Tribe of Arizona
- Kiowa Indian Tribe of Oklahoma
- Mescalero Apache Tribe
- Pascua Yaqui Tribe of Arizona
- Salt River Pima-Maricopa Indian Community
- San Carlos Apache Tribe
- Tohono O'Odham Nation
- Tonto Apache Tribe
- White Mountain Apache Tribe
- Ysleta Del Sur Pueblo of Texas
- Zuni Tribe of the Zuni Reservation

In the decision area, there is a wide variety of archaeological site types and areas that may be of significant cultural importance to Tribes affiliated with the designated corridor (see Section 5.5.3).

Certain regions discussed during the SunZia Southwest Transmission Line Project align with the decision area. Areas of concern previously identified through consultation include Mount Graham, Bosque del Apache; Rio Grande; Mesilla Valley; Klondyke and Duncan, Arizona; Deming, New Mexico; Salinas Pueblo Missions National Monument, including Grand Quivira; and San Simon, Sulphur Springs and San Pedro valleys. Concern with spiritual communication paths between cultural sites (BLM 2013).

Viewsheds obstructed by any future proposed project within a Section 368 energy corridor may impact areas of traditional cultural importance (BLM 2022b, 2022c). Native American Tribes may desire access to other BLM administered lands to practice traditional cultural ceremonies. The San Carlos and other Apache Tribes have expressed concerns regarding potential cultural and visual impacts on Mount Graham (within the Pineleño Mountains); this area is considered a culturally sensitive place (BLM 2013). The designated corridor is near this mountain peak and may cause a visual obstruction that may be of concern to Tribes. The Regional Review Recommendation begins in the desert basin between the Rio Grande's Mesilla Valley and Portillo Mountains portion of the Organ Mountains – Tribes have expressed interest in protecting areas of the Rio Grande and Mesilla Valley through previous BLM consultations (BLM 2022c; BLM 2013). More information on potential areas of viewshed concerns can be found in Section 5.5.18.

Beale's Wagon Road Historic Trail stretches from Fort Smith, Arkansas to the Colorado River and was used by European ranchers and immigrants in the late 1800s. The road

includes scenery of high mountain peaks and broad vistas. A portion of the trail encompasses the Mojave Trail — a prehistoric trail used by the Mojave People to access lands and resources between the Black Mountains and Colorado River (BLM 2006; Forest Service 2022). This trail is about five mi east of where the designated corridor begins (BLM 2022b).

Tribes previously have been interested in working with BLM to collect flat rock — volcanic decorative rock occurring in relatively thin (often less than an inch) layers in northeast California — that has commonly been used by some southeastern Tribes in sacred ceremonies and practices (BLM 2007c). There previously also have been Tribal interests in preservation of pinyon, juniper, and sage-grouse habitats that are present within the decision area (see Section 5.5.4.4) (BLM 2007c; BLM 2015b; BLM 2020). Pinyon pine nuts are a traditional food source for several Native American groups and is considered an important resource in traditional ceremonies and festivals (BLM 2008b).

Representatives from the San Carlos Apache Tribe expressed concerns for the protection of water sources such as springs, streams, and places associated with water such as wet meadows due to the sacred relationship the Apache has with water. Mountain tops and foothills are also commonly considered sacred locations (WAPA and BLM 2015a).

Not all Tribal cultural practices involving natural and cultural resources of religious and cultural importance are known. Tribes have a deep understanding and history with the land that has been passed down through generations that cannot be properly identified by archaeological fieldwork alone. Therefore, formal government-to-government consultation concerning future projects and resource management remains the best means for identifying and addressing Tribal land use concerns and interests.

Trends and Forecasts

Tribes have previously expressed interest in implementing a new IOP for Tribal concerns that include a component to conduct ethnographic studies that would increase understanding of significant resources of concern to Tribes. The existing IOP from the 2009 WWEC PEIS ROD focused only on identifying sacred sites, sacred landscapes, gathering grounds, and burial areas, along with avoiding, minimizing, or mitigating impacts on these places through project proponents, consultation with Tribes, and relevant parties (BLM 2022c).

5.5.18 Visual Resources

General information for visual resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.18.

Current Conditions and Context

The decision area runs from east to west through the Chihuahuan Desert, beginning in New Mexico and ending in Arizona. The basin and range topography of the Chihuahuan Desert consists of broad desert valleys bordered by terraces, mesas, and jagged

mountains (NPS 2022). Prominent, gently sloping dune fields composed of quartz or gypsum sand are common, and sparse desert grassland and scrub are the most prevalent landcover (NPS 2022). This barren, open landscape provides important broad views for recreationists who enjoy OHV, mountain biking, and hiking.

Table 5.5-21 lists the key features for visual resources within the decision area and Figure 5.5-8 depicts VRM classes within the vicinity of the decision area.

Table 5.5-21. Key Features in the Decision Area

Key Feature	State	Agency	Physical Attributes (Land Form, Water, Vegetation, Structures	Viewer Groups and Experiences	BLM VRM Class Designation
Afton SEZ	New Mexico	BLM			Class IV
Organ Mountains Desert Peaks National Monument: The Potrillo Mountains	New Mexico	BLM	A flat, open volcanic landscape of relatively low and gently sloping cinder cones, lava flows, and craters. Terrain is rugged with rough outcroppings of volcanic rock and course-grained grass and shrubland.	Offers biking, climbing, camping, hiking, horseback riding, OHV, wildlife viewing, and education and interpretive programming.	Class I
Kilbourne Hole Volcanic Crater NNL	New Mexico	BLM	Part of the Organ Mountains Desert Peaks National Monument. Crater is 1.7 mi long and over a mile wide with a depth of 443 ft. The basalt crust of the crater's rim is dull black to brown,creating the appearance of a long, dark plateau rising sharply out of the light tan to green grassland below.	Recreation includes limited hiking and exploration of the crater.	Class II
Aden Lava Flow Wilderness	New Mexico	BLM	Part of the Organ Mountains Desert Peaks National Monument. Broad landscape with small peaks comprised of basalt volcanic flows, craters, and coppice sand dunes. The lava flow includes pressure ridges, lava tubes, and steep-walled depressions of up to 100 ft wide. Grass and shrubs grow on the flow with many cacti and yucca. Vegetation consists of grasslands and desert shrubs such as mesquite and creosote.	Visitors enjoy hiking and exploring the unique landforms and wildlife viewing.	Class I
Aden Hills OHV Area	New Mexico	BLM	Includes 8,700 ac of Chihuahuan Desert scrub environment characterized by low mesquite or creosote-stabilized coppice dunes, and a variety of dropseed grasses, yucca, and cacti. Landscape is broad and rugged.	Activities in the area include off-highway vehicle use of motorcycles and all-terrain vehicles. It is used as a venue for periodic ATV/UTV training and up to 2 times per year for an organized motorcycle race.	Class III

Key Feature	State	Agency	Physical Attributes (Land Form, Water, Vegetation, Structures	Viewer Groups and Experiences	BLM VRM Class Designation
Potrillo Mountains Wilderness	New Mexico	BLM	Part of the Organ Mountains Desert Peaks National Monument. Landscape is predominantly broad, open black lava fields and desert grassland, with 48 gentle volcanic cinder cones, small sand dunes, and scattered shrubs. Indian Basin, a natural depression at the southwest end of the West Potrillo Mountains, fills with water during the rainy season providing a temporary pond for ducks.	Recreation consists of limited hiking and exploring the unique volcanic landforms and numerous high points.	Class I
Round Mountain Rockhound Area	Arizona	BLM	Very broad, open landscape with gently-sloping low mountains and hills, rugged, coarsely textured grassland, and sparse shrubs.	Round Mountain Rockhound Area is very remote with primitive camping. It is used for rockhounding and boondocking and is considered to be among the richest areas in the world for collecting fire agates.	Class IV
Peloncillo Mountains WSA	New Mexico	BLM	Includes low mountains, cliffs, and numerous canyons, with gentle hills covered in desert grasses and shrubs.	Recreation includes hiking and wildlife viewing.	
Peloncillo Mountains Wilderness	Arizona	BLM	Comprised of ragged and rugged mountains with a maze of canyons extending in all directions formed by volcanic upheaval. Mountain elevations range from about 4,000 ft to 6,401 ft. Many of the canyons are lined with scenic cliffs, some with extensive white oak groves along drainage bottoms. Common vegetation in this high, dry land is mesquite, creosote, agave, prickly pear, and juniper.	Recreation includes camping, hiking, climbing, hunting, and wildlife viewing.	Class I
Hot Well Dunes Recreation Area	Arizona	BLM	The sands at the Hot Well Dunes Recreation Area were a beach surrounding a lake approximately two million years ago. What remains today are hot springs surrounded by 2,000 ac of sand dunes.	Hot Well Dunes is one of the most unique recreation spots in Arizona. Recreation includes camping, OHV use, and wildlife viewing. It is a popular tourist attraction for visitors who enjoy relaxing in the hot springs and viewing the scenery or using ATV on the sand dunes.	Class IV

Key Feature	State	Agency	Physical Attributes (Land Form, Water, Vegetation, Structures	Viewer Groups and Experiences	BLM VRM Class Designation
Dos Cabezas Mountains Wilderness	Arizona	BLM	The rugged Dos Cabezas Mountains Wilderness rises in elevation from about 4,000 ft to 7,587 ft on Government Peak, in the southeast corner. Seasonally, water trickles down boulder-strewn streams from springs in Government Peak. Though Dos Cabezas Peaks are not included in the wilderness, two other peaks rise above 7,000 ft. The scenic Indian Bread Rocks, a formation of granite domes and interestingly shaped boulders, is located in the northeastern part of the wilderness.	Recreation includes camping, hiking, climbing, and wildlife viewing. From the high elevations, visitors are rewarded with outstanding views of Sulphur Springs and San Simon Valleys and the faint outlines of numerous mountain ranges in the distance.	Class I

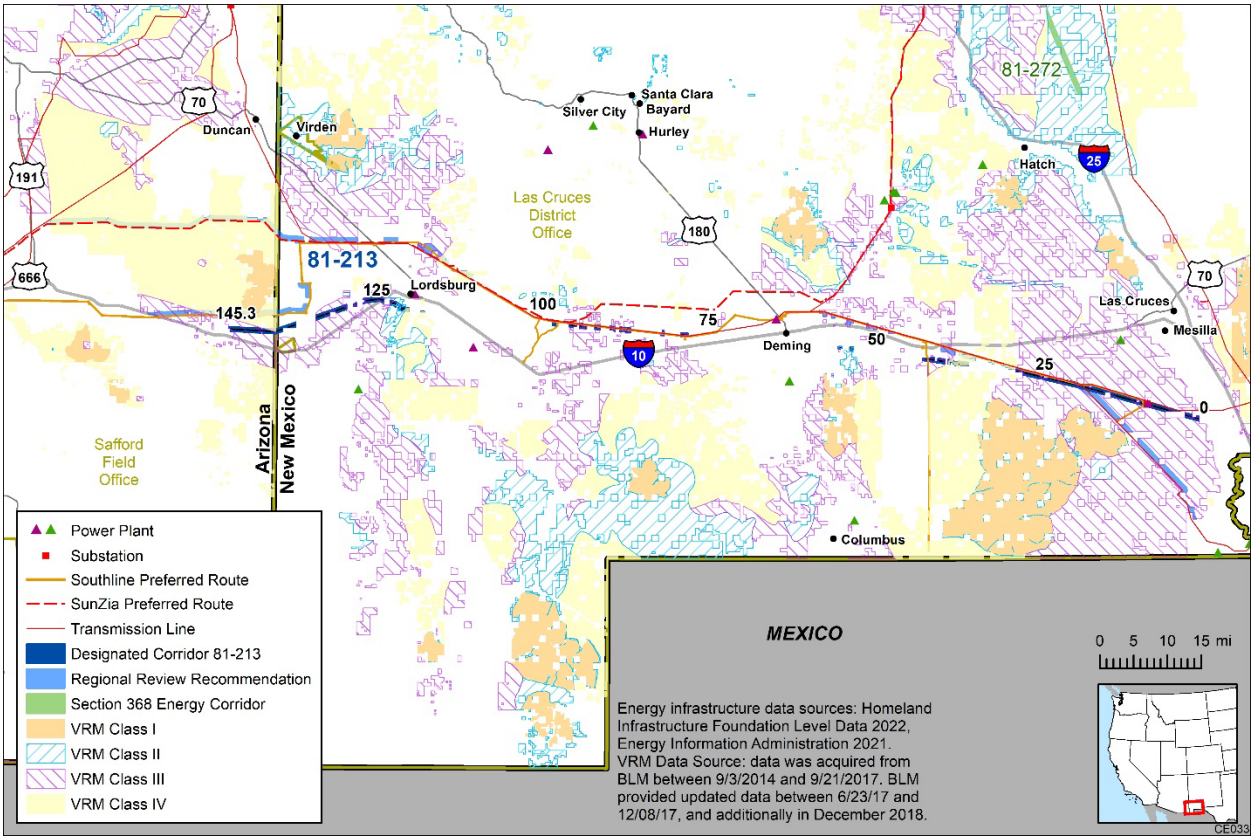

Figure 5.5-8. VRM Classes within the Vicinity of the Decision Area

The Regional Review Recommendation along the existing 500-kV transmission line between MP 0 and MP 18 starts in a desert basin between the Rio Grande's Mesilla Valley and the Potrillo Mountains portion of the Organ Mountains – Desert Peaks National Monument. This segment follows an existing 345-kV transmission line and replaces the current alignment that runs to the north through the Afton SEZ (MP 0 to MP 18).

The Mesilla Valley to the east of the decision area contains a patchwork of agriculture and small settlements. To the west, the Potrillo Mountains are the most remote section of the Organ Mountains — Desert Peaks National Monument. They are comprised of a volcanic landscape of cinder cones, lava flows, and craters (BLM n.d. a). This portion of the Organ Mountains — Desert Peaks National Monument includes a number of wilderness areas that offer biking, climbing, camping, hiking, horseback riding, OHV, wildlife viewing, and education/interpretive programming.

The Kilbourne Hole Volcanic Crater, with an elevation of 4,358 ft, is located in the easternmost portion of the Portillo Mountains National Monument closest to the beginning of the designated corridor. Kilbourne Hole is 1.7 mi long and the crust of its rim is dull black to brown, creating the appearance of a long, dark plateau rising sharply out of the light tan to green grassland below (BLM n.d. b).

Northwest of Kilbourne Hole is the Aden Lava Flow Wilderness. The wilderness is characterized by rugged but gently sloping black basalt volcanic flows, volcanic craters, and coppice sand dunes. The lava flows include pressure ridges, lava tubes, and steep-walled depressions of up to 100 ft wide. Grass and shrubs grow on the flow along with scattered cacti and yucca (BLM n.d. c).

Directly adjacent to the north of the designated corridor is the Aden Hills OHV Area, which encompasses approximately 8,700 ac of broad, rugged Chihuahuan Desert scrub and coppice dune landscape. Vegetation includes low mesquite or creosote, and a variety of dropseed grasses, yucca, and cacti. The OHV Area is used up to two times per year for organized motorcycle races and is also a venue for periodic ATV/UTV training (BLM n.d. d).

To the west through the middle section of the designated corridor (MP 25 to MP 78), the Regional Review Recommendation realignment follows the Southline Transmission Project's Preferred Route north of the existing corridor. To the south of this segment is the Potrillo Mountains Wilderness Area, a series of 48 volcanic cinder cones with small sand dunes, playas, and lava fields in-between. The cones range in elevation from 4,767 ft to 5,546 ft. The vegetation consists of desert grasses and shrubs. (BLM n.d. e).

To the north are the Apache Flats at maximum elevation of about 4,900 ft. These are part of the Desert Peaks portion of the Organ Mountains — Desert Peaks National Monument which is characterized by desert mountains rising steeply from flat plains.

The designated corridor then passes through the northern outskirts of Deming, New Mexico, located in the Akela and Lewis Flats northwest of the Potrillo Mountains. Here the corridor crosses the Mimbres River and continues to follow the Southline Preferred Route west to the north of Lordsburg, New Mexico. To the northeast of Lordsburg, it passes south of the Gila National Forest.

Across the Arizona border, the corridor becomes braided. One branch runs through the Peloncillo Mountains north of the Peloncillo Mountains WSA and Wilderness Area. The Peloncillo Mountains WSA landform is comprised of low mountains, cliffs, and numerous canyons, with gentle hills covered in desert grasses and shrubs (BLM n.d. f).

The Wilderness Area totals 19,440 ac and offers camping, climbing, hiking, hunting, and wildlife viewing. The Peloncillo Mountains were formed by volcanic upheaval that created a maze of canyons extending in all directions. Many of the canyons are lined with scenic cliffs, some with extensive Emory and Arizona white oak groves along drainage bottoms (Wilderness Connect n.d. a). Mountain elevations in the wilderness area range from about 4,000 ft to 6,401 ft. The Round Mountain Rockhound Area is also immediately adjacent to the north of this section of the corridor (BLM n.d. g).

Through the San Simon Valley to the west, this section of the decision area passes directly south of the Hot Well Dunes. The sands at the Hot Well Dunes Recreation Area were once a beach surrounding a lake approximately two million years ago. What remains today is a number of hot springs surrounded by 2,000 ac of sand dunes (BLM n.d. h). The branch ends east of the Pinaleno Mountains.

The southern branch runs immediately south of the Peloncillo Mountains Wilderness, also through the San Simon Valley, and ends to the northeast of the Dos Cabezas Mountains Wilderness. San Simon Valley is popular for its diverse recreational opportunities such as off-highway vehicle riding and hot-water soaking (BLM n.d. i).

The 11,700-ac Dos Cabezas Mountains Wilderness contains Government Peak in its southeast corner, which rises in elevation from about 4,000 ft to 7,587 ft. The scenic Indian Bread Rocks, a formation of granite domes and interestingly shaped boulders, is in the northeastern part of the wilderness. The Wilderness' high elevations are popular with tourists for their outstanding views of Sulphur Springs and San Simon Valleys (Wilderness Connect n.d. b).

Trends and Forecasts

The Reginal Review Recommendation (realigning the corridor along the Southline and SunZia transmission line authorized ROWs) would avoid VRM Class II areas.

The Covid-19 Pandemic has resulted in increased attendance on public lands. The increase in visitors to some of the national parks in 2021 broke the previous visitor records of 2020. The record turnout has particularly impacted parks out west (The Guardian 2022). This trend can be expected to continue in popular tourist sites within the decision area, such as Hot Well Dunes Recreation Area.

5.5.18.1 Night Sky

Night sky can be impacted by required utility lighting. The FAA Advisory Circular 70/7460-1K (2007) requires that all airspace obstructions higher than 200 ft or close to an airfield have appropriate lighting. Some transmission towers will require obstruction warning lighting, and lights may be placed at higher elevations if blocked by trees or terrain. For very tall towers, this includes daytime strobe lighting as well as nighttime lighting (FAA 2007).

5.6 Corridor 113-114

Corridor 113-114

Designated Corridor:
Section 368 Energy Corridor 113-114 as designated in the 2009 *ARMPA/ROD for Designation of Energy Corridors on BLM-administered Lands in the 11 Western States* (BLM 2009)

Regional Review Recommendation:
Add a corridor braid from MP 0 to MP 104 along the TransWest Express Transmission Line ROW as well as a connector at MP 30, connecting the designated corridor to the authorized TransWest Express Transmission Project ROW in eastern Nevada.

Decision Area:
- The BLM-administered lands within the designated energy corridor from MP 0 to MP 104.
- The BLM-administered lands along the TransWest Express Transmission Line ROW from where it intersects with Corridor 113-114 at MP 0 to where it intersects with Corridor 113-114 at MP 104.
- Corridor connector from TransWest Express Transmission Line ROW to the designated corridor at MP 30 along Highway 546.

Planning Area:
The BLM-administered lands managed under the Cedar Beaver Garfield Antimony RMP, Ely District RMP, Pinyon MFP, and St. George RMP and lands under other administration within the vicinity of the decision area.

Corridor 113-114 is located within the BLM Nevada Caliente Field Office and the BLM Utah Cedar City and St. George field offices (Table 5.6-1). The designated corridor is a 127-mi (204 km) corridor that provides a northeast-southwest pathway for energy transport through southwest Utah into Nevada. Corridor 113-114 connects to other Section 368 energy corridors, creating a continuous corridor network across BLM- and Forest Service-administered lands. Corridor 113-114 contains existing infrastructure (138-, 345-, and 500-kV transmission lines) along its entire length. The designated energy corridor has a variable width, ranging from 3,500 ft to 10,800 ft and is designated multi-modal to accommodate both transmission lines and pipeline infrastructure. Corridor 113-114 is also designated on Forest Service lands, but this planning effort will only consider changes to the corridor on BLM-administered lands.

The regional review recommended adding a corridor braid along the authorized TransWest Express Transmission Line ROW west of the designated corridor and a braid connecting the TransWest Express authorized ROW to MP 30 to provide transmission access to Washington County (BLM, Forest Service, and DOE 2022). The regional review concluded that the current route through the Dixie National Forest is not likely to accommodate additional large transmission lines; therefore, the additional corridor segment would increase capacity for north-south development in the region while also preserving the designated corridor for future upgrades and providing a connection to Washington County. The regional review also concluded that the changes would avoid Inventoried Roadless Areas, the Beaver Dam Slope ACEC, GRSG PHMA, Dixie National Forest, Mountain Meadow Massacre National Historic Landmark, and Old Spanish NHT, while retaining the route through Dixie National Forest for upgrades to existing infrastructure. The decision area (that is, the actual parcels under BLM management that could be affected by the change in the corridor designation) for Corridor 113-114 is depicted in Figure 5.6-1 and includes:

- the BLM-administered lands within the designated energy corridor from MP 0 to MP 104;
- the BLM-administered lands that follow the TransWest Express transmission line ROW west of the designated corridor; and
- the BLM-administered lands connecting the TransWest Express transmission line ROW to the designated corridor near MP 30 along Highway 546 from Modena to just before the Utah-Nevada state line near SR 319.

The planning area (that is, the wider area that could be impacted by a change in corridor designation, including both BLM-managed lands and lands under other administration) includes the BLM-administered lands managed under the Cedar Beaver Garfield Antimony RMP, Ely District RMP, Pinyon MFP, and St. George RMP (Figure 5.6-1).

Table 5.6-1. BLM Administration Boundaries for Corridor 113-114 Decision Area

State	District/Field Office	Milepost (MP)
Nevada	BLM Nevada, Caliente Field Office	MP 0 to MP 12
Utah	BLM Utah, St. George Field Office	MP 13 to MP 60
Utah	BLM Utah, Cedar City Field Office	MP 61 to MP 104

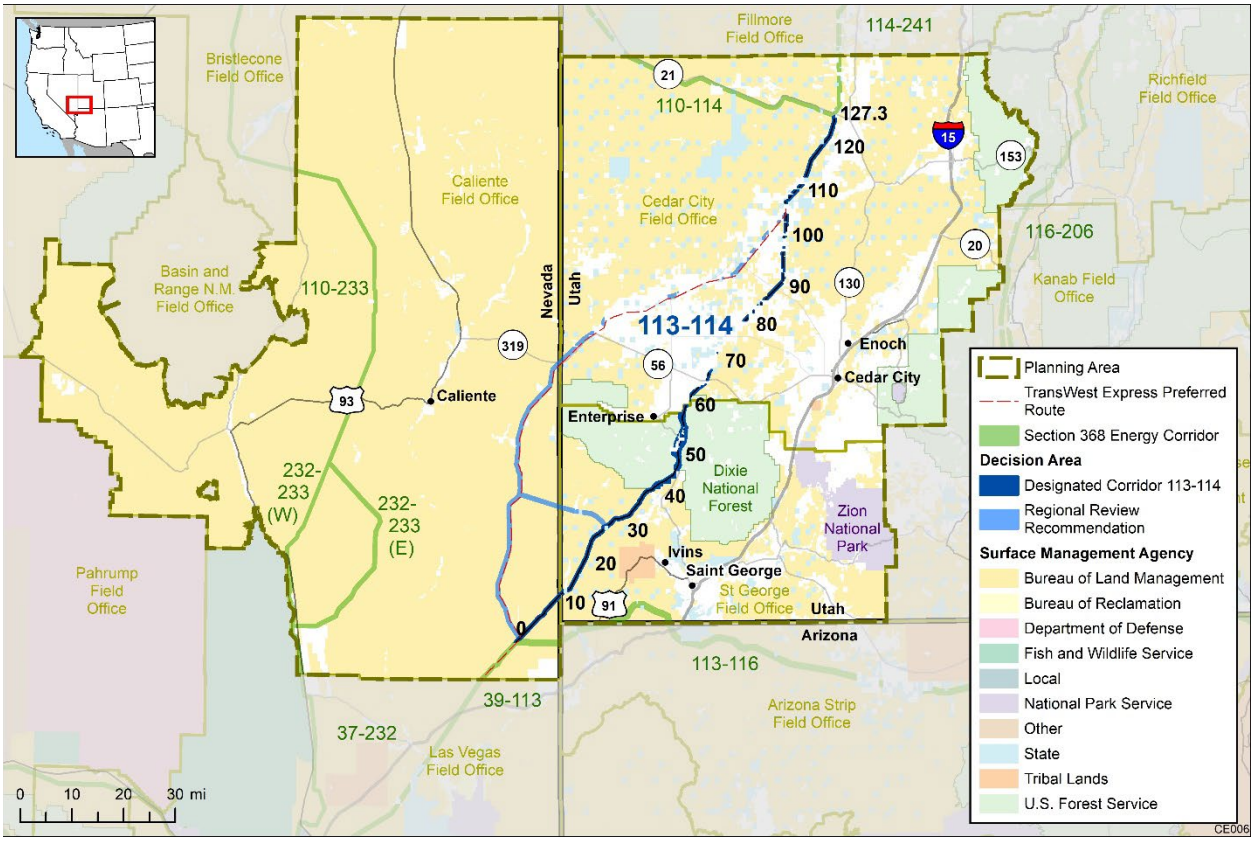

Figure 5.6-1. Corridor 113-114 Planning Area

Key Findings

Table 5.6-2 highlights the potentially affected resources that warrant analysis and summarizes the most important conclusions drawn from each of the Area Profile resource sections within the Corridor 113-114 decision area. In general, these resources could be impacted by changes to the designated Corridor 113-114 resulting from this planning effort.

Table 5.6-2. Key Findings for Corridor 113-114 Decision Area

Resource	Key Finding
Air Quality	Federal Class I areas within a range of 100 km (62 mi)[26] of the decision area include in order of distance from the corridor: Zion National Park and Grand Canyon National Park. There are no Tribal Class I areas in the 100-km (62-mi) range. The decision area is in unclassified/attainment areas for all criteria pollutants. In general, ambient air quality around the decision area is good: both NO_2 and $PM_{2.5}$ concentrations were well below the standards, while O_3 concentrations have approached just below the standard. Mesquite, Nevada has experienced occasional excursions of 24-hr PM_{10} concentrations above the standard
Climate	Wide variations in elevation and topographic features within the decision area have an impact on wind patterns, temperatures, precipitation, and other meteorological parameters Annual average temperature has increased about 2° F to 3°F (1.1°C to 1.7°C) in the area. Climate change is leading to changes in disturbance regimes and severities (i.e., drought, fire, flood, insects, and disease) and these changes are expected to continue.
Cultural Resources	The Old Spanish NHT crosses the designated corridor in several places between MP 44 and MP 74 and crosses the Mountain Meadows Massacre Site and NHL within the Dixie National Forest. The Regional Review Recommendation along the authorized TransWest Express authorized ROW avoids most known cultural resource concerns including the Mountain Meadows Massacre Site and National Historic Landmark, although there are visual resource concerns.
Ecology	
Vegetation	The decision area is located within the MBR and CBR Ecoregions. Vegetation communities are primarily Sonoran-Mojave creosote bush-white bursage desert scrub. Other vegetation communities in the vicinity of the decision area consist of pinyon-juniper woodland, big sagebrush shrubland in the northern portion of the decision area, and mixed salt desert scrub in the southern portion of the decision area.
Fire and Fuels	Invasive grasses have increased fire size, frequency, and intensity throughout the Mojave Desert by acting as fuel in the gaps between the desert shrubs, creating a continuous and highly flammable fine fuel source.
Invasive Species	Invasive species include Russian olive, Scotch thistle, tamarisk, cheatgrass, red brome, and a number of exotic noxious forbs.
Terrestrial Wildlife	Mule deer, pronghorn antelope, Desert bighorn sheep, Rocky Mountain elk, and mountain lion ranges are within the decision area, as well as upland game birds and waterfowl. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways.
Fish and Aquatic Species	Aquatic habitat in the region consists primarily of springs and intermittent streams.

[26] EPA has noted that a 100-km (62-mi) range is generally acceptable for AQRVs impact modeling but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Given the magnitude and schedule of the project along the corridor, these emissions are relatively small, and their release heights are at ground- or near-ground level, so potential impacts would be anticipated to be limited locally.

Resource	Key Finding
Special Status Species	The decision area intersects habitat for the Mojave Desert Tortoise and the GRSG. The decision area intersects both PHMAs and GHMAs for the GRSG. Other special status species habitat that could intersect the decision area include monarch butterfly, burrowing owl, long-billed curlew, kit fox, dark kangaroo mouse, pygmy rabbit, and Utah prairie dog.
Environmental Justice	The minority population in the 2 mi buffer does not exceed 50% and is not meaningfully greater than the countywide averages. The number of persons at or below twice the Federal poverty rate within the buffer exceeds the countywide levels in Beaver County, but does not exceed 50% in the buffer in any of the counties.
Geology, Soils, and Minerals	The decision area is located in rugged, mountainous terrain of mixed lithologies and several alluvial plains.
Human Health and Safety	Within the decision area, there is moderate probability of an earthquake and/or landslide within the next 50 years.
Hydrology	Water resources in the region are limited. There are numerous ephemeral washes, an adjacent ephemeral reservoir, several named springs, and alluvial basin-fill aquifers within the decision area.
Lands and Realty	Transmission lines and pipelines are located within the designated corridor. A railroad follows a portion of the Regional Review Recommendation along the authorized TransWest Express ROW. Solar energy variance areas are located within the decision area and two SEZs are located within 10 mi of the decision area. Most of the decision area has low potential for wind energy production. MTR-visual and instrument routes and SUA routes are located within the decision area.
Lands with Wilderness Characteristics	The decision area within Utah intersects lands with wilderness characteristics (i.e., more than 20 mi within the designated corridor and more than 5 mi for the Regional Review Recommendation along the authorized TransWest Express ROW).
Livestock Grazing and Wild Horse and Burro	
Livestock Grazing	There are 19 grazing allotments within the designated corridor and 26 grazing allotments within the Regional Review Recommendation.
Wild Horse and Burro	Three wild horse HMAs intersect with or are in close proximity to the decision area and the HMAs contain a maximum total of 276 wild horse AMLs (estimated population 832 horses).
Noise	On the basis of the population density, the L_{dn} or DNL is estimated to correspond to wilderness for Lincoln County in Nevada and Iron County in Utah, and rural residential for Washington County in Utah.
Paleontology	The PFYC Classes within the decision area along the designated corridor range from Class 1 (very low) to Class 4 (high). Within the Regional Review Recommendation (along TransWest Express authorized ROW), the area is mostly PFYC Class 2 in Utah. Most of the area in Nevada is unclassified, but there is a small portion of PFYC Class 3 at the southern end. The Regional Review Recommendation (along the east-west connector) contains unclassified and Class 3 PFYC areas.
Recreation	Dispersed recreation within the decision area includes hiking, biking, horseback riding, climbing, and camping, particularly within the lands with special designations and lands with wilderness characteristics. The decision area is designated as limited or open OHV access.
Socioeconomics	In 2020, the population of the three-county ROI (Lincoln County, Nevada, Iron and Washington Counties, Utah) was 242,067 people and median income ranged from $52,045 for Iron County to $61,747 for Washington County. The unemployment rate ranged from 2.8% in Iron County to 3.4% for Lincoln County in 2021, with the largest share of workers employed in wholesale and retail trade industries.

Resource	Key Finding
Special Designations	The Beaver Dam Wash NCA, Clover Mountains Wilderness Area, lands with wilderness characteristics, Beaver Dam Slope ACEC, and Old Spanish National Historic Trail are within the decision area.
Tribal Interests	There are 10 Federally recognized Tribes with cultural affiliation and an interest in the decision area. The Paiute Indian Tribe Reservation is the only reservation and area with lands held in Trust near the decision area.
Visual Resources	The decision area intersects or is in close proximity to VRM Class I areas: Mormon Mountains Wilderness, Clover Mountains Wilderness, and Tunnel Spring Wilderness. The decision area is adjacent to VRM Class II areas, but is located entirely within VRM Class 3 areas.

5.6.1 Air Quality

General information for air quality resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.1.

Current Conditions and Context

National parks and wilderness areas designated as mandatory Federal Class I areas under the CAA and other areas re-designated as Class I at the request of a state or Indian Tribe have special air quality protections under federal law. Federal Class I areas within a range of 100 km (62 mi) of the decision area include, in order of distance from the corridor: Zion National Park and Grand Canyon National Park. There are no Tribal Class I areas in the 100-km (62-mi) range.

Each state can have its own SAAQS. Nevada has its own SAAQS (Nevada Administrative Code [NAC] 445B.22097) and has standards for 1-hr O_3 (for Lake Tahoe Basin, #90), 8-hr CO (≥5,000 ft above mean sea level), for 24-hr and annual SO_2, and for 1-hr H_2S in addition to those included in NAAQS but excludes annual (secondary) $PM_{2.5}$ standard. Utah does not have its own SAAQS (UDEQ 2022).

The NDEP and Utah Department of Environmental Quality are responsible for monitoring the ambient air quality and ensuring that the ambient air quality levels are maintained in accordance with federal and state standards. The NDEP does not designate areas as attainment or nonattainment based on the SAAQS. Ambient air quality monitoring refers to collecting and measuring samples of ambient air to evaluate the status of the air pollutants in the atmosphere as compared to clean air standards and historical information.

Lincoln County in Nevada and Washington and Iron Counties in Utah, where the Corridor 113-114 decision area is located, are in unclassified/attainment areas for all criteria pollutants (EPA 2022a). There are air monitoring stations in Washington County and Iron County, Utah for NO_2, O_3, and $PM_{2.5}$ but these are located more than 20 mi (32 km) from the designated corridor. There are no air monitoring stations in Lincoln County, Nevada where the Regional Review Recommendation along the authorized TransWest Express authorized ROW is located. However, O_3 data have been collected since 2001 and both PM_{10} and $PM_{2.5}$ data have been collected since 2021, at Mesquite in Clark County, Nevada, which is the closest station to the south end of the designated corridor

(about 12 mi [19 km]). In general, ambient air quality around the decision area is good even though the area is located directly downwind of Las Vegas metropolitan area. Based on 2019-2021 data at all stations, both NO_2 and $PM_{2.5}$ concentrations were well below the standards, while O_3 concentrations have approached just below the standard. However, Mesquite, Nevada has experienced occasional excursions of 24-hr PM_{10} concentrations above the standard (EPA 2022b).

Trends and Forecasts

This section uses available air monitoring data between 2012 and 2021 at air monitoring stations and "design values" for NO_2, O_3, and $PM_{2.5}$ at Hurricane, Washington County and O_3 at Mesquite, Clark County (EPA 2022b). There is no air monitor collecting data in Lincoln County, Nevada. For 1-hr NO_2 at Hurricane, design values vary from year to year but shows an increasing trend over time. During the ten-year period, the 1-hr NO_2 concentrations have never exceeded the standard. For 8-hr O_3, design values tend to increase slightly at Hurricane but decrease slightly at Mesquite. On average, one O_3 exceedance of the standard occurred every year at Hurricane and every other year at Mesquite. For 24-hr $PM_{2.5}$, there is a discernable upward trend although design values are well below the standard. During the ten-year period, two exceedances of the standard were observed only in 2021. The air monitoring stations along the Interstate 15 are some distance from the corridor and the corridor is at higher elevation, so concentrations around the corridor might be lower than aforementioned values.

The decision area extends across areas that are largely developed, sparsely populated, and remote. In the area along the corridor, new activities that could trigger air pollution issues are not identified as of now. Even if they occur in the near future, their emissions would be controlled under the permits designed to ensure that those emissions are consistent with applicable regulations along with mitigation measures.

5.6.2 Climate

General information for climate that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.2.

Current Conditions and Context

Wide variations in elevation and topographic features within the decision area have an impact on wind patterns, temperatures, precipitations, and other meteorological parameters. The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. The prevailing wind direction aloft over the region is from the west (the westerlies), as it is in most of the U.S.; however, complex terrains in the area are responsible for deflecting these winds. Accordingly, wind patterns are sometimes dissimilar even over short distances.

The southern part of the decision area at lower elevation is in the northeast Mojave Desert, while the northern part of the decision area at higher elevation is in a high desert. The decision area is in a semi-arid climate regime of the Mountain West. The area is characterized by relatively mild temperatures but significant diurnal variations,

light rainfall, abundant sunshine, and low relative humidity; frequent extreme coldness and heavy snowfall occurred in the northern part of the corridor (NCEI 2022a).

There are no meteorological stations in the immediate vicinity to the decision area, so meteorological data at stations closely representing the decision area in terms of proximity and topography are presented here.

Wind. Average wind speeds among stations ranged from about 5.9 mph (2.6 m/s) at St. George Municipal Airport to 10.7 mph (4.8 m/s) at Milford Municipal Airport (NCEI 2022b). Southwesterly winds prevail at both Cedar City and Milford, winds at which are strongly affected by nearby mountains that are aligned in a northeast-southwest direction. At St. George, no prevailing wind direction exist but southeasterly winds occurred more frequently, followed by winds blowing from east-southeast through west. Wind speeds categorized as calm (less than 1 mph [0.5 m/s]) occurred more frequently, about 23% of the time at Cedar City and 32% of the time at St. George, because of the stable conditions caused by strong radiative cooling in the arid environment. However, calm winds at Milford occurred less frequently (about 9% of the time), where average wind speed is relatively high.

Temperature. Historical annual average temperatures in the decision area are as low as 47.9°F (8.8°C) and as high as 60.9°F (16.1°C), as shown in Table 5.6-3 (WRCC 2022). Monthly average temperature extremes range from a low of 12.6°F (-10.8°C) to a high of 102.2°F (39.0°C). December was the coldest month, except January at Beryl Junction, and July was the warmest month. Each year, about 33-125 days had a maximum temperature of ≥90°F (32.2°C), while about 92-204 days had minimum temperatures at or below freezing (32°F [0°C]), with about 0-10 days below 0°F (-17.8°C). Temperature data at stations in the northern part are in marked contrast with those in the southern part of the decision area, including differences in temperature about 10°F (5.6°C).

Precipitation. The south end of the corridor lies within the Mojave Desert, which has low precipitation, but the remaining area is at higher elevation. Historical annual precipitation ranged from 9.98 in (25.3 cm) to 14.58 in (37.0 cm), as shown in Table 5.6-3 (WRCC 2022). Except Beryl Junction, precipitation is most frequent in winter (ranging 31-43%) and least frequent in summer (ranging 14-19%). At Beryl Junction, precipitation is relatively uniformly distributed by season. In the southern part of the decision area, annual average snowfall ranged about 0.9 to 1.2 in (2.3 to 3.0 cm) with the snowiest month in either February, March, or December. In the northern part of the decision area, annual average snowfall ranged about 28.4 to 32.9 in (72.1 to 83.6 cm), with the snowiest month in January, followed by December.

Table 5.6-3. Temperature and Precipitation Summaries at Selected Stations in the Vicinity of the Decision Area[a]

Station	Temperature						Annual Precipitation	
	Monthly Averages[b]			Number of Days with:				
	Min.	Max.	Mean	Max. ≥90°F	Min. ≤32°F	Min. ≤0°F	Water Equivalent	Snowfall
Elgin, Nevada	27.8°F (-2.3°C)	99.2°F (37.3°C)	58.9°F (14.9°C)	103.1	92.3	0.0	11.83 in (30.0 cm)	0.9 in (2.3 cm)
Lytle Ranch, Utah	26.1°F (–3.3°C)	102.2°F (39.0°C)	60.9°F (16.1°C)	124.7	94.3	0.0	10.43 in (26.5 cm)	1.2 in (3.0 cm)
Enterprise, Utah	13.1°F (-10.5°C)	89.0°F (31.7°C)	48.8°F (9.3°C)	33.4	186.6	10.4	14.58 in (37.0 cm)	32.9 in (83.6 cm)
Beryl Junction, Utah	12.6°F (–10.8°C)	90.7°F (32.6°C)	47.9°F (8.8°C)	42.9	203.5	10.4	9.98 in (25.3 cm)	28.4 in (72.1 cm)

[a] Summary data presented in the table are based on the period of record: from 1951 to 2012 (Elgin); from 1988 to 2012 (Lytle Ranch); from 1905 to 2012 (Enterprise); and from 1940 to 2008 (Beryl Junction).

[b] "Minimum Monthly Averages" denote the lowest monthly average of daily minimum during the period of record, which normally occur in December except Beryl Junction in January. "Maximum Monthly Averages" denote the highest monthly average of daily maximum during the period of record, which normally occur in July.

Source: WRCC (2022).

Trends and Forecasts

In the last century, both Nevada and Utah have warmed about 2°F (1.1°C). Annual average temperature has increased about 2 to 3°F (1.1 to 1.7°C) in the area, which encompasses the designated corridor (EPA 2016a, 2016b). Temperatures in Nevada and Utah have risen almost 2.4°F (1.3°C) and more than 2.5°F (1.4°C) since the beginning of the 20th century. In Nevada, over the last 26 years, the annual number of very hot days has been above average, with the highest 5-year average occurring during the 2015–2020 period, partly because of very high annual values in 2017, 2018, and 2020. In Utah, the period since 2012 has been the warmest on record, with 8 of the 10 warmest recorded years. The highest number of extremely hot days in the historical record occurred during 2000–2004 (NCEI 2022c).

Evaporation increases as the atmosphere warms, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others. The changing climate is likely to increase the need for water but reduce the supply. Rising temperatures increase the rate at which water evaporates into the air from soils, which are likely to be drier, and surface waters along with transpiration from plants. But less water is likely to be available because precipitation is unlikely to increase as much as evaporation (EPA 2016a, 2016b). Precipitation is highly variable from location to location and from year to year. In Nevada, after wet conditions in the late 1990s, total annual precipitation has been near or below average since 2000 but shows no overall trend across the 126-year period of record. Seasonal precipitation patterns vary across the state, with most locations receiving the majority of their precipitation during the winter months. Unlike many areas of the U.S., Utah and other southwestern states have not experienced an upward trend in the frequency of 1-in. extreme precipitation events. The driest consecutive 5 years was 1952–1956, and the wettest 5-year period was 1980–1984 (NCEI 2022c).

As the climate warms, less precipitation falls as snow, and more snow melts during the winter. That decreases snowpack—the amount of snow that accumulates over the winter. This snowpack melts during spring and summer, which provides water supply for cities and farms. Since the 1950s, the snowpack has declined in both Nevada and Utah. On average, about 5% of the land in Nevada has burned per decade since 1984. Utah experienced the Milford Flat Fire in 2007, which was the largest wildfire ever recorded in Utah. Higher temperatures and drought due to global warming are likely to increase the severity, frequency, and extent of wildfires, which reduce air quality and harm human health and ecosystems (EPA 2016a, 2016b).

Over the next few decades, annual average temperature over the contiguous U.S. is projected to increase by about 2.2°F (1.2°C) relative to 1986-2015, regardless of future scenario (USGCRP 2018). As a result, recent record-setting hot years are projected to become common in the near future. Much larger increases in Nevada and Utah are projected by late century: 4-5°F (2.2-2.8°C) under a lower scenario (RCP4.5) and ≥7°F (≥3.9°C) under a higher scenario (RCP8.5) relative to 1986-2015.[27]

In the late century, the greatest precipitation changes are projected to occur in winter and spring, with similar geographic patterns to observed changes: increases across the Northern Great Plains, the Midwest, and the Northeast (USGCRP 2018). In Nevada and Utah, precipitation projections decrease in spring through fall but increase in winter. Note that changes in average precipitation is much more difficult for climate models to predict than temperature. Surface soil moisture over most of the U.S. is likely to decrease, accompanied by large declines in snowpack in the western U.S. and shifts to more winter precipitation falling as rain rather than snow, which is conducive to more wildfires.

Associated with ongoing global warming, large wildfire frequency, fire duration, and fire season length have increased substantially in the western U.S. in recent decades and are projected to increase, especially in the Southwest (USGCRP 2018). This is due primarily to earlier spring snowmelt and warmer temperatures that increase evaporation rates (i.e., reduce the moisture availability) and thus dry out the vegetation that provides the fuel for fires. In addition, Nevada and Utah snowpack plays a critical role in water supply and flood risk. (NCEI 2022c).

5.6.3 Cultural Resources

General information for cultural resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.3.

[27] For climate projections, the international scientific community developed four RCPs, i.e., RCP2.6, RCP4.5, RCP6.0, and RCP8.5, in which radiative forcing is stabilized at 2.6, 4.5, 6.0, and 8.5 W/m^2 in the year 2100, respectively. RCP4.5, called as a lower scenario, is generally associated with lower population growth, more technological innovation, and lower carbon intensity of the global energy mix, while the reverse is true for RCP8.5, called as a higher scenario.

Current Conditions and Context

A detailed cultural resource impact assessment was performed for the TransWest Express Transmission Line project (WAPA and BLM 2015). The decision area is located in the TransWest Express Region III analysis area, and therefore, only resources relating to the TransWest Express Region III analysis area are summarized here. Two TransWest Express alternative routes align with the designated corridor and the Regional Review Recommendation: the TransWest Applicant Proposed III-A route, which aligns with the designated corridor that runs through the Dixie National Forest, and the Agency Preferred III-D, which aligns with the Regional Review Recommendation (authorized TransWest Express ROW) that runs east and north around Dixie National Forest.

The analysis area for TransWest Express Region III encompasses a 2-mi-wide area within which all available, previously conducted surveys and recorded sites were compiled for the baseline study. The environmental consequences discussion was restricted to a 500 ft-wide APE centered on each route alternative.

Prehistoric sites within the TransWest Express Region III analysis area are mainly surficial remains relating to hunter-gatherer campsites, often repeatedly used over several millennia. Other buried and stratified sites are present in the region and demonstrate a wide range of activities such as lithic production, animal butchering, plant processing, and cooking. Other less-common sites include rock shelters, wooden structures, rock art, burials, stone circles, cairns, and house pits.

Within the Utah portion of the TransWest Express Region III analysis area, prehistoric sites date from ca. 11,000 – 200 B.P. with an overlapping protohistoric phase (ca. 500-150 B.P.). In addition to the above site types, ceramic and ground stone scatters as well as thermal features are found on several Archaic sites. Most Formative period sites are artifact scatters. A number of inhabited rock shelters and caves are also present, along with Fremont mounds, villages, pit house remains, and burials. Late Prehistoric sites are mainly campsites, caves, and shelters. Other significant cultural resource areas within the analysis area include the Rock Art ACEC, Nine Mile Canyon ACEC, and Browns Park SRMA. These projected areas contain exemplary prehistoric rock art, petroglyphs and pictographs as well as granaries, village sites, pit houses, and historic period cabins and ranches. Browns Park SRMA contains some of the earliest Fremont culture remains.

The Nevada portion of the TransWest Express Region III analysis area bears a prehistoric phase dating from ca. 13,100 B.P. through A.D. 1300, which signaled the end of the Puebloan era. Earliest Paleoarchaic sites (only six recorded in the area) consist of lithic scatters, projectile points, and a rock shelter. Archaic site types are comparable to those described above for the Utah portion of the analysis area. The Puebloan era included several cultural branches, with the Numic tradition being associated with the immediate ancestors of the Paiute and Chemehuevi people of southern Nevada. Sites within the analysis area include rock shelters, ceramic and artifact scatters, roasting pits, and habitation sites. Other significant areas within the analysis area include two National Register areas (one is a TCP), two ACECs, and two proposed ACECs. The Panaca Summit Archaeological District contains over 70 prehistoric sites, ranging from

5,500 B.C. to the Protohistoric Period. The remaining protected areas contain significant prehistoric and multi-component habitation sites, rock art, and rock shelters.

Historic resources within the Utah portion of the TransWest Express Region III analysis area include railroads, roads, canals and ditches, homesteads, mining sites, trash dumps, and telegraph lines. A number of notable historic sites are present, including the Old Spanish National Historic Trail and the Mountain Meadows Massacre Site, which is listed on the National Register and became a NHL in 2011. The designated corridor crosses the Old Spanish Trail between MP 44 and MP 74.

The Nevada portion of the TransWest Express Region III analysis area contains historic site types similar to the Utah portion. Some components are affiliated with Native American, Chinese/Oriental, or Euro-American cultures. Notable sites include the Old Spanish Trail, other built environments, and five historic or archaeological districts listed on the National Register. The Old Spanish Trail segment in southern Nevada is also known as the Mormon Road (WAPA and BLM 2015).

Tables 5.6-4 and 5.6-5 below summarize known sites and status within the TransWest Express Region III analysis area and APE respectively.

Table 5.6-4. Site Types and NRHP Status within the TransWest Express Region III Analysis Area

State	Summary of Site Types					Summary of NRHP Status			
	Prehistoric Sites	Historic Sites	Multi-component Sites	Potential TCPs	No Information	Listed	Eligible for Listing	Not Eligible	Unevaluated
Utah	530	27	18	27	22	1	284	235	78
Nevada	763	103	20	188	122	0	150	563	295

Source: WAPA and BLM 2015

Table 5.6-5. Site Types and NRHP Status within the TransWest Express Region III APE

State	Summary of Site Types					Summary of NRHP Status			
	Prehistoric Sites	Historic Sites	Multi-component Sites	Potential TCPs	No Information	Listed	Eligible for Listing	Not Eligible	Unevaluated
Utah	153	12	6	0	7	0	130	39	9
Nevada	145	30	4	32	25	0	39	116	49

Source: WAPA and BLM 2015

Trends and Forecasts

Visual impacts on resources where visual setting is significant may occur where transmission line elements are introduced to the area where such resources exist. National Register guidelines define site integrity to include the ability to convey significance within its environment, based on which, the types of sites most sensitive to visual impacts include National Historic Monuments, Districts, Landmarks, Trails, and TCPs. Primary visual resource concerns within Region III of the TransWest authorized ROW include the Old Spanish Trail and Mountain Meadows Massacre Site and NHL. The Regional Review Recommendation (TransWest Express authorized ROW), would cross

the Old Spanish Trail in Utah and Nevada, and while the route would avoid the Mountain Meadows Massacre Site and NHL, there are concerns about visual effects. The designated corridor would cross the Mountain Meadows Massacre Site and NHL, and therefore, visual impacts on the site would be a concern.

Table 5.6-6 summarizes impacts for cultural resources in Region III of the TransWest Express Alternative Route.

Table 5.6-6. Summary of TransWest Express Region III Alternative Route Impacts for Cultural Resources

Parameter		Alternative III-A	Alternative III-B	Alternative III-C	Alternative III-D
Site Type	Prehistoric	72	107	119	115
	Historic	17	9	16	9
	Multi-component	4	2	4	2
	Potential TCPs	5	21	6	20
	No Information	9	7	16	7
Site Totals		107	146	161	153
Historic Trail Crossed and Visibility	Old Spanish Trail	2 to 4 segments crossed (1 eligible); 1 NHT-I, 3 unrated	1 segment crossed; 1 segment NHT-I; 1 segment not categorized	1 segment crosses; 1 segment NHT-I; 1 segment not categorized	1 segment crossed; 1 segment NHT-I; 1 segment not categorized
	Visibility of the alternative from the Trail	Visible along 53 mi (8 mi NHT-I, 2 mi NHT-II, <0.1 mi NHT-IV; 43 mi unevaluated)	Visible along 38 mi (5 mi NHT-I, 1 mi NHT-II, <0.1 mi NHT-IV; 32 mi unevaluated)	Visible along 6 mi (none evaluated)	Visible along 38 mi (5 mi NHT-I, 1 mi NHT-II, <0.1 mi NHT-IV; 32 mi unevaluated)
Approximate APE Percent Inventory Coverage		24%	26%	21%	27%
Average Site Density		2.5 sites per 100 ac inventoried	3 sites per 100 ac inventoried	4 sites per 100 ac inventoried	2.8 sites per 100 ac inventoried
Initial Disturbance		3,588 ac	3,558 ac	3,797 ac	3,500 ac
Miles of Transmission Line and Access Roads		276 mi; 335 mi	284 mi; 320 mi	308 mi; 338 mi	281 mi; 303 mi
NRHP Status	Listed	0	0	0	0
	Eligible for Listing	61	44	64	51
	Not eligible	30	49	76	49
	Unevaluated	11	32	15	33

Source: WAPA and BLM 2015

5.6.4 Ecology

General information for ecological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.4.

5.6.4.1 Vegetation and Fire

Current Conditions and Context

The decision area is primarily in the CBR Ecoregion with a small portion of the southern end of the corridor located in the MBR Ecoregion (Comer et al. 2013a; Comer et al. 2013b). Vegetation communities in the vicinity of the decision area consist of pinyon-juniper woodland, big sagebrush shrubland in the northern portion of the corridor, and mixed salt desert scrub in the southern portion of the corridor (Figure 5.6-2) (Comer et al. 2013a). Woodland species potentially include pinyon pine species (*Pinus* spp. L.) and juniper (*Juniperus* spp. L.). The Sonora-Mojave creosote bush-white bursage desert scrub are dominant ecosystems. Other common species include blackbrush cacti (Cactaceae), Mormon tea, broom snakeweed (*Gutierrezia sarothrae*), blackbrush (*Coleogyne ramosissima*), and native grasses like big galleta (*Pleuraphis rigida*) and bush muhly (*Muhlenbergia porteri*) (Figure 5.6-2).

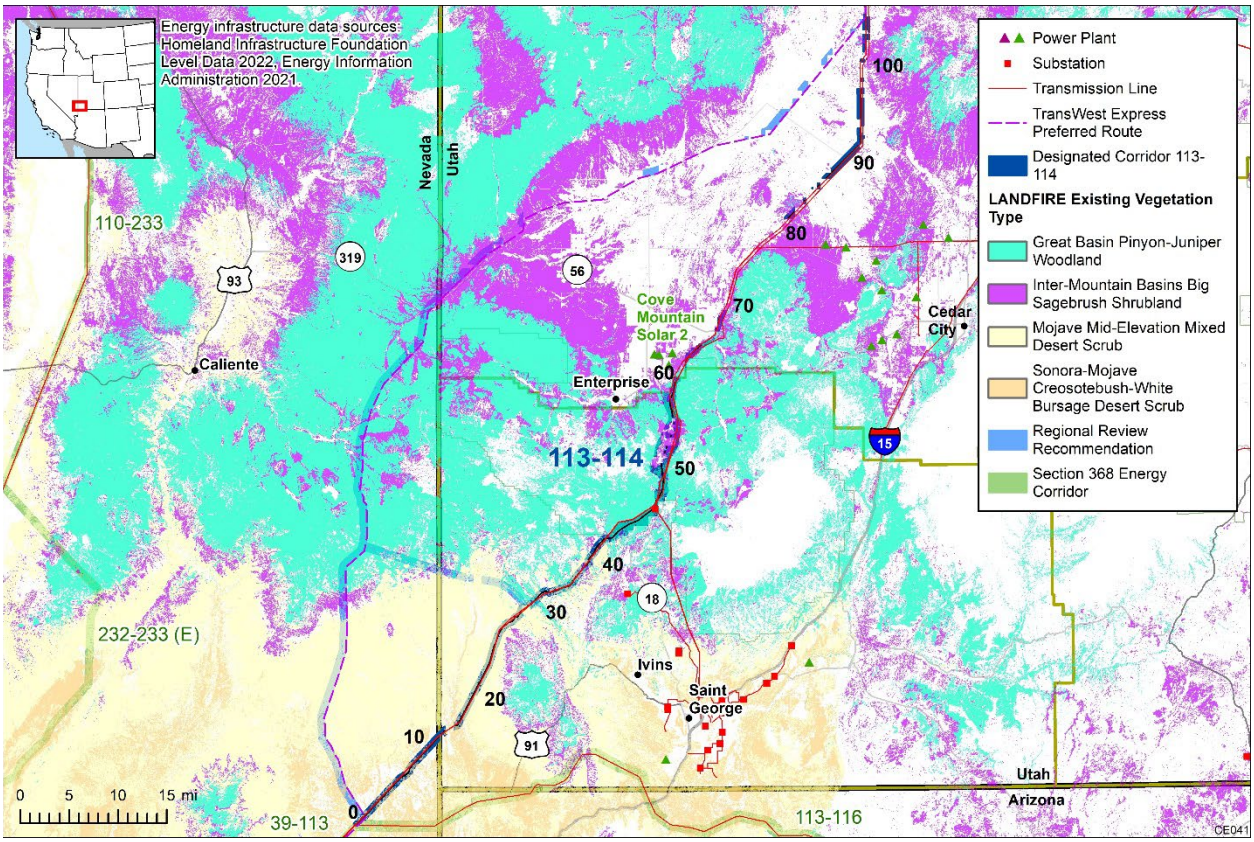

Figure 5.6-2. Vegetation Communities in the Vicinity of the Decision Area (2020 Landfire).

Significant changes in native vegetation communities has resulted from livestock grazing, surface disturbance and invasive plants. Livestock grazing alters vegetation composition through selective foraging and desert vegetation is very slow to recover if overgrazed (BLM 2013). Surface disturbances can result from multiple human activities like energy infrastructure and transportation construction, which can damage native plants (BLM 2013).

Invasive Species

Invasive species include Russian olive, Scotch thistle, tamarisk, cheatgrass, red brome, and a number of exotic noxious forbs (Comer et al. 2013a; BLM 2013).

Trends and Forecasts

Surface and groundwater use is projected to increase in the MBR ecoregion which could adversely impact riparian plants and species dependent on groundwater (Comer et al. 2013a; Comer et al. 2013b). Climate change modeling for the MBR and CBR through 2060 suggest modest increases in summer rains but little overall changes in precipitation in the vicinity of the corridor (Comer et al. 2013a; Comer et al. 2013b). Significant increases in maximum monthly temperatures are also forecasted (Comer et al. 2013a; Comer et al. 2013b). Given these anticipated changes, vegetation communities in the CBR and MBR are also predicted to change. Mixed salt desert scrub is expected to expand into sagebrush shrubland over the next 50 years. Unvegetated plains may also increase in the CBR. In the southern portions of the CBR there is a forecasted contraction of mixed salt desert scrub (Comer et al. 2013a).

Vegetation communities are also expected to change dramatically over the coming five decades. These projected changes include contraction in characteristic bioclimates for Joshua tree-Blackbrush communities, desert scrub, Sonora-Mojave creosote bush-white bursage desert scrub, and Great Basin pinyon-juniper woodland (Comer et al. 2013b). In addition, the lowest-elevation warm desert scrub communities could become unvegetated desert landscapes (Comer et al. 2013b).

Fire and Fuels

Historically, wildfire was a rare occurrence because Mojave Desert shrub lands are not fire-adapted and were too sparse for natural fires to spread across the landscape. Alterations to natural fire regimes, through active fire suppression and/or the establishment of exotic weed species, can significantly alter vegetation structure and composition, leading to habitat degradation and increased risk of uncontrollable wildfire events (Comer et al. 2013a). Invasive weeds can become a source of fine-fuels, resulting in a shift to predominant non-native, early-succession, vegetation (Comer et al. 2013a).

Today, the invasive grasses like annual brome have increased fire size, frequency, and intensity throughout the Mojave Desert by acting as fine fuel in the gaps between the desert shrubs, creating a continuous and highly flammable fine fuel source. Fire is highly damaging to native vegetation because of the long recovery times (BLM 2015a).

5.6.4.2 Terrestrial Wildlife

Current Conditions and Context

The decision area crosses the border of Nevada and Utah. One challenge to wildlife management is the conflicting management goals across jurisdictions. Utah ranks 10th among the 50 states in overall biological diversity and Nevada ranks 11th. The arid

climate and limited water resources present challenges for conservation in both states. The most critical problems facing terrestrial wildlife in Nevada and Utah are alteration of aquatic habitats due to extraction and consumption of water, invasive, exotic, and feral species, and the impacts of wildfire and fire suppression (Utah Wildlife Action Plan Joint Team 2015 and Wildlife Action Plan Team 2012).

The decision area is in the Mojave Basin and Range (MBR) and the Central Basin and Range (CBR) Ecoregions. The MBR is comprised primarily (70%) of desert scrub habitat (Comer et al. 2013a) while the CBR is comprised of shrub and steppe (36%), desert scrub (22%), and subalpine/montane forests and woodlands (19.5%) (Comer et al. 2013b). In the CBR and MBR, the current landscape condition tends to be moderate to high across most of the wildlife species distributions. There are concentrated areas of low landscape condition which reflects the effects of roads and other development. The impacts of roads and other development become most evident when wildlife species tend to occur at lower elevations in all or part of their habitat range (Comer et al. 2013b). Species concentrated at higher elevations are found in the highest landscape condition areas (Comer at al. 2013a).

The following section focuses on game species (big game species, upland game birds, and waterfowl) and migratory birds. Other species may inhabit the decision area but are not directly discussed. Any management direction which affects the recovery, maintenance, or improvement of the wildlife populations discussed in this section would also indirectly support other native species. Table 5.6-7 lists the managed big game species with habitat in the decision area.

Game Species

Big Game Species

Eight big game species are managed in the state of Utah (Bernales et al. 2020), but only the habitat of two species intersect the decision area: mule deer and pronghorn. There are nine big game species in Nevada (NDOW 2022), but only five species have occupied habitat within the decision area: desert bighorn sheep, mountain lion, mule deer, pronghorn, and Rocky Mountain elk. Population numbers for these big game species fluctuate annually and depend on conditions such as weather, hunting, forage quality, water availability, and cover (WAPA and BLM 2015). The decision area contains numerous big game habitats including migration corridors, migration stopover habitat, crucial winter habitat, summer habitat, and year-round habitat. Big game migration corridors and crucial winter ranges are typically considered the most important habitats for big game species, especially during harsh winters (WAPA and BLM 2015).

Table 5.6-7. Managed Big Game Species with Habitat in the Corridor 113-114 Decision Area*

Common Name *Scientific Name*	Habitat Association and Life History	State
Desert bighorn sheep (*Ovis canadensis nelson)*	The decision area intersects the winter range of desert bighorn sheep. This species of bighorn sheep prefers the rough and rocky habitat of mountains in southern Nevada. Steep rocks offer protection against predators, who are unable to navigate and climb up after the bighorn sheep. Although residents of deserts, they do require freestanding water to help them get through the hot summers (NDOW 2022).	Nevada
Mountain lion (*Puma concolor*)	Roughly 45 percent of the state of Nevada is suitable mountain lion habitat. In Nevada, mountain lions are most likely found in areas of pinion pine, juniper, mountain mahogany, ponderosa pine and mountain brush (MLF 2022). Suitable habitat may be found within the decision area. They mostly occur in remote and inaccessible areas. Their annual home range can be more than 560 square mi, while densities are usually not more than 10 adults per 100 square mi. The cougar is generally found where its prey species (especially mule deer) are located. In addition to deer, they prey upon most other mammals (which sometimes include domestic livestock) and some insects, birds, fishes, and berries. They are active year-round. Their peak periods of activity are within 2 hours of sunset and sunrise, although their activity peaks after sunset when they are near humans. They are hunted on a limited and closely monitored basis in some states (DOE and BLM 2008).	Nevada
Mule deer *(Odocoileus hemionus)*	The decision area intersects crucial winter habitat, migration corridors, and migration stopover habitat for the mule deer in Utah and movement corridors, year-round habitat, crucial winter habitat, and summer habitat in Nevada. Mule deer attain their highest densities in shrublands characterized by rough, broken terrain with abundant browse and cover. Some populations of mule deer are resident (particularly those that inhabit plains), but those in mountainous areas are generally migratory between their summer and winter ranges. They have a high fidelity to specific winter ranges where they congregate within a small area at a high density. Their winter range occurs at lower elevations within sagebrush and pinyon-juniper vegetation. Winter forage is primarily sagebrush, with true mountain mahogany, fourwing saltbush, and antelope bitterbrush also being important. Prolonged drought and other factors can limit mule deer populations. Mule deer are also susceptible to chronic wasting disease. When present, up to 3% of a herd's population can be affected by this disease (DOE and BLM 2008).	Nevada & Utah
Pronghorn antelope *(Antilocapra americana)*	Pronghorn are year-long residents of the decision area in Utah and have movement corridors and limited use habitat areas in the decision area in Nevada. Pronghorn inhabit non-forested areas such as desert, grassland, and sagebrush habitats. Herd size can commonly exceed 100 individuals, especially during winter. They consume a variety of forbs, shrubs, and grasses, with shrubs being of most importance. Fawning occurs throughout the species range. However, some seasonal movement within their range occurs in response to factors such as extreme winter conditions and water or forage availability Pronghorn populations have been adversely impacted in some areas by historic range degradation and habitat loss and by periodic drought conditions (DOE and BLM 2008).	Nevada & Utah

Common Name *Scientific Name*	Habitat Association and Life History	State
Rocky Mountain elk *(Cervus canadensis)*	Rocky Mountain elk summer range intersects the decision area. Their summer range occurs at higher elevations. Aspen and conifer woodlands provide security and thermal cover, while upland meadows, sagebrush/mixed grass, and mountain shrub habitats are used for forage. They are highly mobile within both summer and winter ranges in order to find the best forage conditions. Elk calving generally occurs in aspen-sagebrush parkland vegetation and habitat zones during late spring and early summer. Calving areas are mostly located where cover, forage, and water are in close proximity. They may migrate up to 60 mi annually. Elk are susceptible to chronic wasting disease (DOE and BLM 2008).	Nevada

*Intersections with decision area was determined using GIS data or habitat range maps from NDOW (NDOW 2022) and UDWR (UDWR 2022) when possible.

Upland game bird species that may occur in the decision area include chukar, Gambel's quail, mourning dove, ring-necked pheasant, white-winged dove, and wild turkey. Chukar, ring-necked pheasants, and wild turkeys are not native to Nevada and Utah but are found as year-round residents (DOE and BLM 2008). Chukars are found in dry, rocky terrain with abundant cheatgrass and can often be found near water sources in drainages that have sufficient escape cover (WAPA and BLM 2015). Ring-necked pheasants inhabit agricultural areas and are common in areas that provide sufficient cover (e.g., weedy fields, fence rows, ditches) (WAPA and BLM 2015). They have experienced long-term declines due to the degradation and loss of important sagebrush-steppe and grassland habitats (DOE and BLM 2008). Wild turkeys occur in Utah and Nevada. Suitable habitat includes trees for food, escape cover, and nighttime roosting and forbs and grass for food and foraging habitat (UDWR 2014). Their greatest threat is disease (NDOW 2022). Gambel's quail occur in Utah and Nevada. They occupy shrub habitats near riparian areas (WAPA and BLM 2015). Mourning doves occur in a wide range of habitats from deciduous forests to shrubland and grassland communities (WAPA and BLM 2015). White-winged doves occur in Nevada and Utah. They occupy a wide range of habitats including agricultural fields and residential areas but favor woodlands or desert habitats (NDOW 2022). Most of these upland game species exhibit annual population fluctuations depending on weather and habitat conditions (WAPA and BLM 2015).

Waterfowl

Waterfowl are also popular game birds in Utah and Nevada. Some common waterfowl in Utah and Nevada include American coot, American wigeon, Canada goose, green-winged teal, ross's goose, snow goose, canvasbacks, Wilson's (common) snipe, dowitcher, gadwall, greater white-fronted goose, mallard, pintail, redhead, ring-necked duck, shoveler, and scaup (UDWR 2018 and NDOW 2022). Species distributions are limited to the rivers, streams, lakes, reservoirs, ponds, and wetlands found within the decision area. Population numbers for these species vary annually depending on weather and habitat conditions (WAPA and BLM 2015).

Various conservation and management plans exist for waterfowl including the 2018 North American Waterfowl Management Plan (NAWMP), signed by the U.S. Canada, and Mexico. The NAWMP is a model for international conservation of wetlands and

waterfowl. It was first signed in 1986 and has been adapted through reviews and updates in response to changing science and conservation goals (NAWMP 2018). While waterfowl species are considered game birds, they also are protected under the MBTA.

Migratory Birds

Many of the bird species occurring in Utah and Nevada are seasonal residents and exhibit seasonal migrations. These birds include waterfowl, shorebirds, raptors, and neotropical songbirds. The Corridor 113-114 decision area is located within the Pacific Flyway, one of the four major North American migration flyways (DOE and BLM 2008).

The Pacific Flyway includes the Pacific Coast Route, which occurs between the eastern base of the Rocky Mountains and the Pacific coast of the United States. This flyway encompasses the states of California, Nevada, Oregon, and Washington, and portions of Montana, Idaho, Utah, Wyoming, and Arizona. Birds migrating from the Alaskan Peninsula follow the coastline to near the mouth of the Columbia River, then travel inland to the Willamette River Valley before continuing southward through interior California. Birds migrating south from Canada pass through portions of Montana and Idaho and then migrate either eastward to enter the Central Flyway or turn southwest along the Snake and Columbia River valleys and then continue south across central Oregon and the interior valleys of California. This route is not as heavily used as some of the other migratory routes in North America (DOE and BLM 2008).

Migratory birds encompass a variety of passerine and raptor species, most of which are protected under the MBTA of 1918 (16 USC 703-711) and Executive Order 13186. Some of the more common bird species that occur within the Ely RMP planning area and could be found within the decision area include a wide range of neotropical migrant species. Some examples of these species include the sage thrasher, lark sparrow, Brewer's sparrow, and chipping sparrow. These species are often viewed as environmental indicators based on their sensitivity to environmental changes (BLM 2007a). Other bird species that occur within wetland habitats include American bittern, killdeer, common snipe, long-billed curlew, American avocet, willet, and a variety of sandpiper species. Many raptor species may breed within the decision area including golden eagle, prairie falcon, American kestrel, peregrine falcon, sharp-shinned hawk, Cooper’s hawk, goshawk, ferruginous hawk, red-tailed hawk, Swainson's hawk, northern harrier, great-horned owl, burrowing owl, long-eared owl, and short-eared owl (BLM 2007a).

Trends and Forecasts

Climate forecasts indicate the potential for profound transformation in many ecosystems across the CBR during the next 2-5 decades. Climate change modeling for the MRB and CBR to 2060 suggest significant increases in maximum monthly temperatures forecasted for the Corridor 113-114 decision area. These forecasts appear to be most intense along the southern CBR and south-western MBR. Looking out to 2060, there is potential for considerable changes to the current distributions of many wildlife species. Lowest-elevation basins throughout the CBR and MBR could transition

from cool semi-desert into very warm and sparsely vegetated desert landscapes more typical of the Mojave Basin and Range (Comer et al. 2013a & 2013b).

Climate change has the potential to impact wildlife communities through changes in temperature and precipitation and therefore through changes in their seasonal habitats. Some examples of potential climate change related impacts include:

- Both winter-only and summer-only ranges (the elevational extremes) of ungulates such as mule deer, are forecasted to contract substantially within the MBR and CBR (Comer et al. 2013a & 2013b)
- Combined winter and summer ranges of desert bighorn sheep are predicted to remain fairly stable within the MBR, with contractions forecasted for lower-elevation transitions into the Sonoran Desert, and expansions expected along high-elevation margins of the ecoregion (Comer et al. 2013a)
- Higher than normal summer temperatures are forecasted across most grazing allotments (Comer et al. 2013a & 2013b)

5.6.4.3 Fish and Aquatic Species

Current Conditions and Context

The decision area is in the Mojave Basin and Range and the Central Basin and Range Ecoregions and the aquatic habitat and communities are typical of these ecoregions consisting primarily of springs and intermittent streams (Comer et al. 2013a; Comer et al. 2013b). Aquatic habitats in the ecoregion can be relatively high quality in undeveloped areas to poor quality in areas with heavy runoff from agriculture and urban development. Groundwater withdrawals can also reduce surface water flow and impair water quality. Existing studies indicate low atmospheric mercury inputs to aquatic systems in the ecoregion as well as low sediment loading and water quality impairment. (Comer et al. 2013a; Comer et al. 2013b).

There is very limited data on aquatic invasive species and their presence in the decision area. Non-native aquatic species documented to be present in the MBR and CBR include Asian clam (*Corbicula fluminea*), tilapia, common carp (*Cyprinus carpio*), guppies (*Poecilia spp*), quagga mussel (*Dreissena rostriformis*), red shiner (*Cyprinella lutrensis*), black bullhead (*Ameiurus melas*), channel catfish (*Ictalurus punctatus*), and largemouth bass (*Micropterus salmoides*) (Comer et al. 2013a; Comer et al. 2013b).

The Regional Review Recommendation along the authorized TransWest Express ROW runs through the Beaver Dam Wash and several other minor washes. The upper reaches of Beaver Dam Wash, north of Beaver Dam Wash NCA, flow perennially due to ground water discharge. Washes also carry high flows of short duration following summer monsoons and more extended flow periods during the winter storms. The desert sucker (*Catostomus clarki*) and Virgin spinedace (*Lepidomeda mollispinis*) are found in the Beaver Dam Wash (BLM 2015a).

Trends and Forecasts

Projected future increases in surface and groundwater use for drinking water is projected to increase in the MBR ecoregion could adversely impact aquatic communities and groundwater-dependent springs and perennial streams. However, there is significant variation in water withdrawal by individual watersheds with some experiencing minimal change and other experiencing large changes (Comer et al. 2013a; Comer et al. 2013b).

Climate change modeling for the MRB and CBR through 2060 suggest modest increases in summer rains but little overall changes in precipitation in the vicinity of the decision area (Comer et al. 2013a; Comer et al. 2013b). Modeling results did not suggest changes in winter precipitation so groundwater recharge necessary to support surface water may not change in the modeled horizon of 2060. However, significant increases in maximum monthly temperatures are forecasted (Comer et al. 2013a; Comer et al. 2013b). Therefore, aquatic communities in these ecoregions would be subject to increased heat stress and intense stormflows in the summer months. These changes in temperature and precipitation patterns will increase water temperatures and alter water chemistry, the magnitude and duration of water flows, and fluvial network connectivity.

5.6.4.4 Special Status Species

Current Conditions and Context

The decision area intersects habitat for two special status species: the Mojave Desert Tortoise (*Gopherus agassizii*) and GRSG (*Centrocercus urophasianus*). These species are discussed below, summarized in Table 5.6-8, and depicted in Figure 5.6-3. In addition, other special status species habitat that could intersect the decision area include monarch butterfly, burrowing owl, long-billed curlew, kit fox, dark kangaroo mouse, pygmy rabbit, and Utah prairie dog.

The Desert Tortoise inhabits regions of the Mojave and Colorado Deserts of California, Nevada, Arizona, and Utah. It is almost exclusively associated with creosote bush (*Larrea tridentata*) vegetation characteristic of the Upper Sonoran life zones of the Mohave and Colorado Deserts. Specific habitat associations vary geographically, as do substrate preferences. The Mojave Desert Tortoise occurs in the Mojave Desert north and west of the Colorado River in Utah, Nevada, California, and northwestern Arizona. It inhabits creosote scrub, creosote bursage (*Ambrosia dumosa*), shadscale (*Atriplex*) scrub, Joshua tree (*Yucca brevifolia*), and, more rarely (in the northern periphery of their range), in mixed blackbush scrub between 3,500-5,000 ft elevation. In general, Desert Tortoise habitats are associated with well drained sandy loam soils in plains, alluvial fans, and bajadas. Desert Tortoises spend most time inactive in subterranean burrows that they excavate.

Table 5.6-8. Special Status Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Species Status and Habitat Association	Habitat within the Decision Area
Desert Tortoise (Mojave Population) (*Gopherus agassizii)*	The Mojave Desert Tortoise is a federally threatened species with designated Critical Habitat. It occurs throughout the Mojave Desert region in areas associated with creosote bush (*Larrea tridentata*) vegetation.	Designated Critical Habitat intersects the designated corridor between MP 0 and MP 28 and intersects the Regional Review Recommendation along TransWest Express authorized ROW for approximately 1 mi.
Greater Sage-Grouse (*Centrocercus urophasianus*)	This population of Greater Sage-Grouse (*Centrocercus urophasianus*) occurs in sagebrush-dominated habitats in Nevada and Utah. Portions of Priority Habitat Management Area (PHMA) and General Habitat Management Area (GHMA) intersects the designated corridor.	PHMA intersects the designated corridor from MP 90 to MP 101. No PHMA or GHMA areas intersect the Regional Review Recommendation along TransWest Express approved ROW.

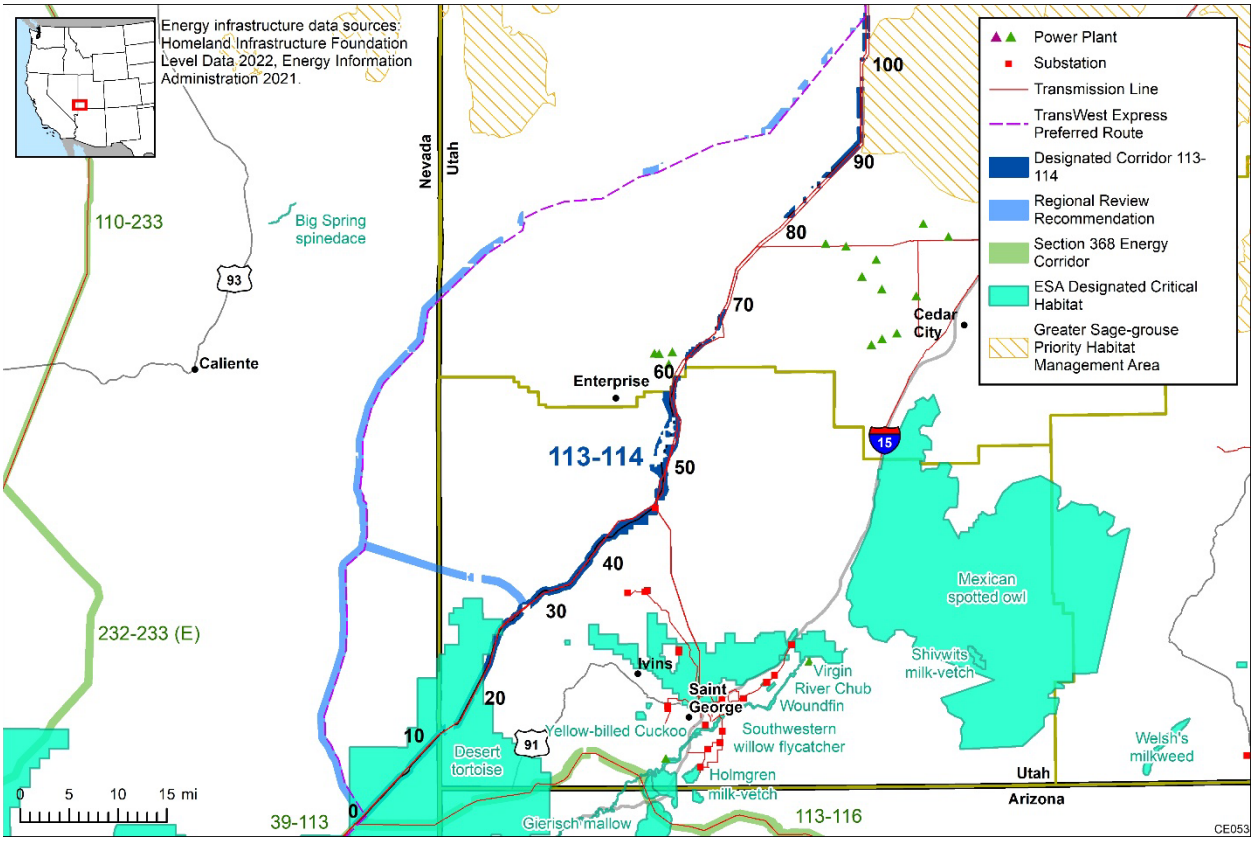

Figure 5.6-3. Special Status Species Habitat in the Vicinity of the Decision Area.

The Mojave Desert Tortoise was first listed as Threatened under the ESA beginning on August 20, 1980, beginning with the Beaver Dam Slope population in southern Utah. Critical Habitat for the species was also designated at that time. Later, the entire Mojave population was listed as Threatened under the ESA on April 2, 1990. Critical

Habitat for the Desert Tortoise was designated by the USFWS on over 6,000,000 ac in portions of the Mojave and Colorado Deserts. Portions of critical habitat in the Beaver Dam Wash NCA intersect the designated corridor between MP 0 and MP 26.

The GRSG is a state-managed bird species dependent on sagebrush steppe ecosystems. It is characterized as a large grouse with a chunky, round body, small head, and long tail. The PHMA represents areas identified as having the highest habitat value for maintaining sustainable sage-grouse populations and include breeding, late brooding-rearing, and winter concentration areas. The GHMA represents areas that are occupied seasonally or year-round by sage-grouse that are outside of PHMAs (WAPA and BLM 2015).

The corridor-specific ecoregional conditions and context is described in the terrestrial wildlife section (Section 5.6.4.3). Populations of the Mojave Desert Tortoise and GRSG in the decision area have fluctuated over recent years. In 2015, the BLM and Forest Service amended a total of 98 land use plans to support sage-grouse conservation. The 2015 sage-grouse plan was prepared separately for each Western state where sage-grouse populations occur. Amendments to some of the state-specific sage-grouse plans were developed in 2019 and 2020. Litigation is ongoing for the sage-grouse plans and new plans are being prepared as of the publication of this AMS. GRSG is currently managed under the 2015 plans where PHMA and GHMA are designated ROW avoidance areas.

Trends and Forecasts

The Mojave population of the Desert Tortoise has declined between 2004 and 2014. Range-wide, it is estimated that the Mojave population has declined by a total of 124,050 adult tortoises in that decade (USFWS 2022). Range-wide, GRSG populations have declined significantly over the past six decades, with an 80% decline since 1965 and 40% decline since 2002 (USGS 2020).

5.6.5 Environmental Justice

General information for environmental justice that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.5.

Current Conditions and Context

For environmental justice, a 2 mi buffer area was used to evaluate minority and low-income populations, 1 mi on either side of the decision area. The geographic distribution of minority and low-income groups within the buffer area was based on census block group data from the 2020 Census (U.S. Census Bureau 2022a,b, 2023).

Table 5.6-9 lists the minority and low-income composition within the 2 mi buffer in the four counties on the basis of 2020 census data. The total minority population (those not listed as White alone, not Hispanic or Latino) in the buffer in the four counties does not exceed 50% and is not meaningfully greater (10 percentage points or more) than countywide averages. The number of persons at or below twice the Federal poverty rate

in the buffer exceeds the countywide level in Beaver County but does not exceed 50% in the buffer in any of the counties (Table 5.6-9).

The 2 mi buffer had a population of 9,893 in 2020 (U.S. Census Bureau 2022b). Median household income ranged from $52,045 in 2020 in Iron County to $61,747 in Washington County, while the average unemployment rate in the four counties was 2.9% in 2021.

Table 5.6-9. Minority and Low-Income Population Within Corridor 113-114 Decision Area Buffer, 2020

Population Category	County and State			
	Lincoln, Nevada	Beaver, Utah	Iron, Utah	Washington, Utah
Racial Groups				
Number of persons:				
Hispanic or Latino	122	45	487	129
White alone, not Hispanic or Latino	1,736	514	3,393	2,904
Black or African American alone	39	0	9	4
American Indian and Alaska Native alone	16	0	61	74
Asian alone	6	0	22	21
Native Hawaiian and Other Pacific Islander alone	4	1	7	0
Two or more races	63	6	117	90
Minority percent	12.6	9.2	17.4	10.1
County Minority percent	14.7	19.2	16.9	18.2
Low-income Population				
Number of persons	491	203	1,063	578
Low-income percent	28.7	23.4	20.3	21.0
County Low-income percent	32.0	23.2	38.6	27.4

Sources: U.S. Census Bureau (2022a,b,2023).

Trends and Forecasts

Forecasts of the effects of changes in employment opportunities, cost of living, social and cultural values, and consumer preferences on population growth and migration are only undertaken at the regional or national level for the population as a whole, with detailed forecasted data on minority and low-income populations at the census block group level not available. Preparing demographic forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local employment, unemployment, income, population growth and migration, and the characteristics of minority and low-income populations, that are difficult to forecast, particularly at the census block group level.

5.6.6 Geology, Soils, and Mining and Mineral Resources

Current Conditions and Context

The Regional Review Recommendation (along the authorized TransWest Express ROW) has a northeastern component consisting of scattered parcels in the Quaternary alluvium of the Escalante Desert (Hintze et al. 2000). The southern portion is mainly continuous and is draped over Nevada's Clover Mountains, a rugged terrain of andesite, breccias, silicic ash flow tuffs, rhyolitic flows and other shallow intrusive rocks (Crafford 2007). The very southern end of the TransWest Express route is draped over Nevada's Tule Springs Hills, which are composed mainly of limestone and siltstone (Crafford 2007), before descending at its southern tip into the alluvium of the Toquop Wash of the Tule Desert. The Tule Springs Hills contain several mapped thrust faults (Crafford 2007).

The southern portion of the designated energy corridor trends from the Clover Mountains across some alluvium and colluvium and into the Chinle Formation and Shinarump Conglomerate Member that are part of Utah's Mormon Range, where several normal faults have been mapped (Hintze et al. 2000).

Soil is poorly developed in alluvial and colluvial materials in the low areas of the decision area, and it is generally absent in the upland areas of exposed bedrock.

Trends and Forecasts

The Corridor 113-114 decision area extends across an area that is essentially unpopulated with negligible change expected in the geologic, mineralogic, and soil conditions.

5.6.7 Human Health and Safety

General information for hazardous materials and human health that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.7.

Current Conditions and Context

Volcanic Hazards – About 16,000 ac of the decision area are located within the influence area of a volcanic field-type active volcano, the Santa Clara volcano (DOE and BLM 2008, Table 3.14-1). This volcano is at the northern edge of Snow Canyon State Park, about 13 mi (20 km) north of the city of St. George. The closest area of the corridor is at approximately MP 35, about 9 mi (15 km) to the west of the volcano.

Volcanoes are classified as active if they have erupted in the past 10,000 years (in the Pleistocene era). The Santa Clara eruption about 10,000 years ago resulted in a lava flow of 10 mi (16 km) down the south slope of Snow Canyon (SI 2013). While eruption of the Santa Clara is unlikely during the lifetime of a transmission or pipeline project, if the volcano were to erupt with this infrastructure present, impacts from lava and debris

flows and/or falling lava or rock fragments could damage the infrastructure, particularly aboveground power lines. Damaged transmission lines could start wildfires. Since volcanoes generally give warning signs prior to eruption, there would likely be time for emergency planning prior to an eruption that could damage corridor energy infrastructure.

Seismic Hazards – The area has a relatively low earthquake potential. The entire corridor has a 2% probability of horizontal shaking exceeding 8 - 16%g within 50 years (USGS 2022a). If an earthquake with a PGA in this strength range were to occur near a transmission line or pipeline in the corridor, significant damage to the infrastructure would be unlikely.

Fault Crossings – Faults in which a slip has occurred within the past 10,000 years (Holocene faults) are commonly considered active (USGS 2022b). Several fault lines older than 750,000 years cross Corridor 113-114 along its length in Utah (USGS 2021; see Figure 5.6-4). The age of these fault lines indicates a low potential for earthquakes along the corridor. While the corridor itself does not include active fault lines, several active faults exist in the southwest corner of Utah near the cities of St. George and Cedar City (Utah Geologic Survey 2020), so there is potential for earthquakes in the area.

Liquefaction Potential – The southwest corner of Utah where the designated corridor is located is seismically active, and soils have a risk of liquefaction during an earthquake (Utah Geological Survey 2022). The most susceptible soils are generally along rivers, streams, and lake shorelines, as well as in some ancient river and lake deposits.

Landslide Potential – The designated corridor borders an area classified as moderate susceptibility/low incidence for landslides (DOE and BLM 2008). Landslides are commonly triggered by heavy rains and/or rapid snowmelts, volcanic eruptions, earthquakes, and human activities on unstable slopes. Transmission line or pipeline construction activities such as vegetation clearing, changing drainage patterns, grading slopes inadequately, removing existing toe supports of steep slopes, or blasting during land development and road and facility construction could result in landslides.

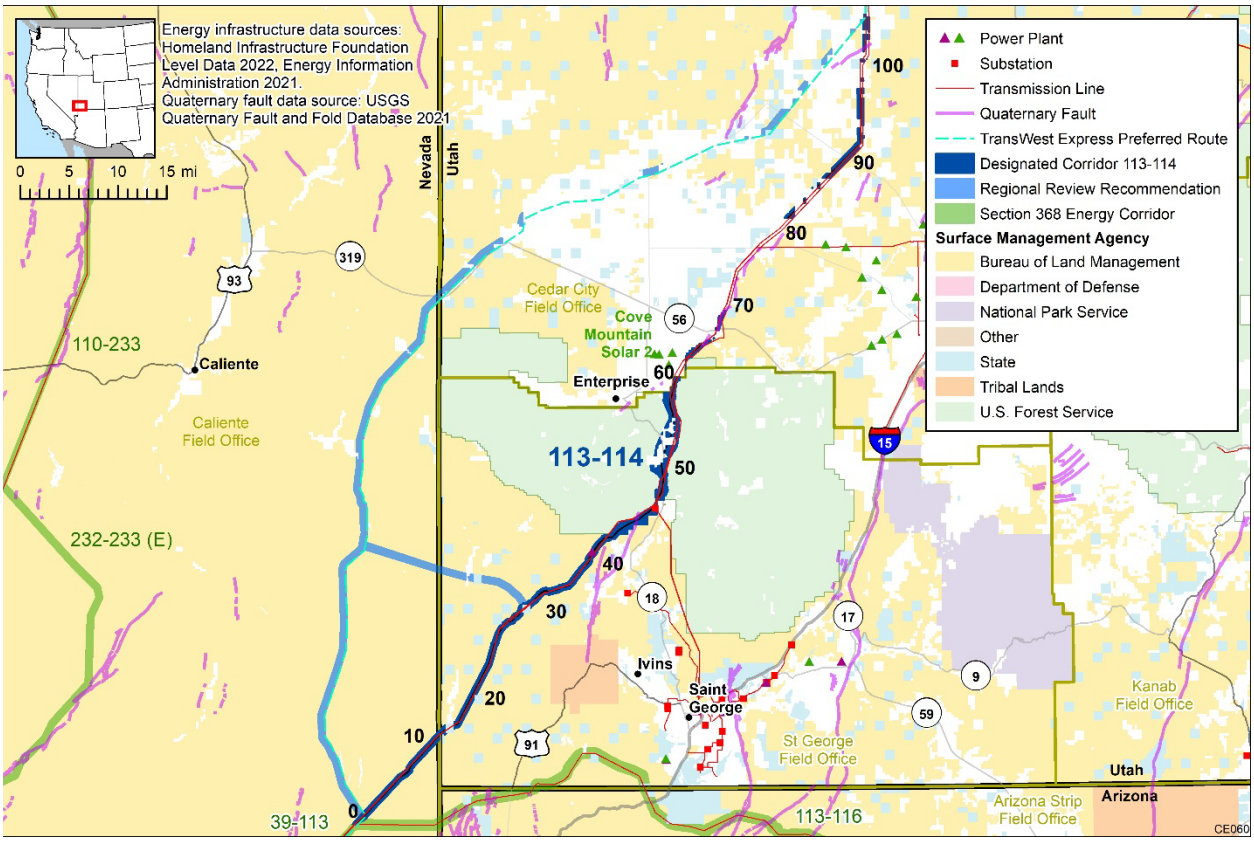

Figure 5.6-4. Fault Crossings in the Vicinity of the Decision Area

Trends and Forecasts

The decision area has a moderate probability of experiencing a relatively powerful earthquake and/or landslide within the next 50 years.

5.6.8 Hydrology

Current Conditions and Context

The decision area covers a mix of terrain consisting of rugged mountainous zones and broad, flat alluvial plains and washes. The alluvium consists of unconsolidated sand and gravel and is considered a basin-fill aquifer (USGS 2000). The bedrock areas do not generally serve as aquifers.

The designated corridor crosses numerous ephemeral stream channels in alluvial, colluvial, or bedrock regions. Most of these features are unnamed. Notably, in Nevada's Clover Mountains, the Regional Review Recommendation (along TransWest Express ROW) is adjacent to the Mathews Canyon Reservoir, which is fed by ephemeral streams and is itself an ephemeral feature. The TransWest Express route also passes over several springs in Nevada, including Shoemake Spring, on the south side of Jacks Mountain (USGS 2022c). The designated corridor crosses several named springs in Utah, Red Hollow Spring and Jackson Spring (USGS 2022c).

The designated corridor is not located on a sole source aquifer (EPA 2022c), and it does not cross any Wild and Scenic Rivers (USGS 2022c) or any perennial rivers.

Trends and Forecasts

The Corridor 113-114 decision area extends across an area that is essentially unpopulated. Changes in hydrologic conditions are expected to occur on short time scales in response to precipitation events.

5.6.9 Lands and Realty

General information for lands and realty that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.9.

Current Conditions and Context

Current lands and realty management is guided by decisions made in existing RMPs. For the Corridor 81-213 decision area, the planning area includes the BLM-administered lands managed under the Cedar Beaver Garfield Antimony RMP (BLM 1986), Ely District RMP (BLM 2008a), Pinyon MFP (BLM 1983), and St. George RMP (BLM 1999, as amended [BLM 2016]]). The lands and realty program consists generally of land use authorizations (e.g., ROWs) and land tenure (purchases and acquisitions, sales and exchanges, and withdrawals of public land).

Trends and Forecasts

In general, current management trends for land tenure indicates that the BLM will pursue a long-term program for repositioning public lands toward improved manageability and increased public benefits. Lands may be acquired to provide access or facilitate management, or to protect or enhance natural resources (BLM 2007bb). Future opportunities for land acquisitions would be contingent on willing sellers, the condition of proposed acquired lands, and the availability of funding (BLM 2023a).

In general, the BLM will continue to consider land exchanges if such exchanges enhance public resource values and improve land ownership patterns and management capabilities of both private and public lands by consolidating ownership and reducing the potential for conflicting land use. Small, isolated parcels of public lands, especially those surrounded by large blocks of individually owned private parcels, are most likely to be considered for disposal in the future. Generally, the BLM would also consider the disposal of some isolated parcels near communities if those parcels are deemed necessary for community expansion and economic development. The BLM anticipates an increase in requests from private individuals and communities to acquire public lands in the future (BLM 2019a).

The lands and realty program responds to requests for ROWs, permits, leases, withdrawals, and land tenure adjustments from other programs or outside entities. The frequency of such requests is anticipated to increase as neighboring communities grow, and as the demand for use of public lands increases. As a result, future

management of the lands and realty program may become more intense, complex, and costly (BLM 2019a).

The main land use topics addressed in this section focus on renewable energy; ROWs, particularly utility corridors; and military flight operations. While military flight operations are not an actual use of BLM-administered lands, they could have potential effects on energy corridors, particularly those involving above-ground transmission lines.

5.6.9.1 Renewable Energy

Current Conditions and Context

In 2005, the BLM signed a ROD implementing a wind energy development program. BLM-administered lands were categorized into areas having a low, medium, or high potential for development of wind energy production based on wind power classifications. Lands categorized as having low potential fall within wind power Classes 1 and 2, lands with a medium potential fall within wind power Class 3, and lands with a high potential fall within wind power Class 4 and higher. Wind resources in Class 4 and higher are generally considered to be economically developable with current technology. Class 3 wind resources are expected to become more economical as low-wind-speed turbines become increasingly available (BLM 2005).

Most of the decision area has low potential for wind energy production. There is medium potential between MP 18 to MP 24 and MP 38, while MP 26 to MP 27 and MP 34 to MP 36 have medium-to-high potential. The Regional Review Recommendation (along the authorized TransWest Express ROW) have low potential for wind energy production (BLM 2005).

In 2012, the BLM approved the Western Solar Plan PEIS, implementing RMP amendments for a solar energy development program in six southwestern states, including California and Nevada (BLM 2012a). The Solar PEIS ROD designated SEZs, areas that the BLM prioritizes for utility scale production of solar energy as well as variance areas (areas potentially available for utility-scale solar energy development located outside of SEZs). On December 8, 2022, the BLM published an NOI to prepare a PEIS and conduct scoping to evaluate the environmental effects of potential improvements and expansions to the BLM's utility-scale solar energy planning (BLM 2022a). The Escalante Valley SEZ is located between the designated corridor and the Regional Review Recommendation along the authorized TransWest Express ROW, about 5 mi west of MP 90 (of the designated corridor). The Milford Flats South SEZ is located about 7 mi northeast of MP 105 of the designated corridor (the northern point at which the designated corridor and the Regional Review Recommendation [TransWest Express ROW] meet) (DOE and BLM 2014). Small areas of solar variance areas occur at about MP 28 to MP 30, MP 43 to MP 45, MP 63 to MP 66, MP 67 to MP 69.5, MP 81.5 to MP 82, MP 84 to MP 91, and MP 102 to MP 105 of the designated corridor. Most of the Regional Review Recommendation (corridor connector at MP 30) has scattered solar

variance areas within Nevada and little to no variance areas within Utah. Most of the BLM-administered lands in Utah through which the Regional Review Recommendation (TransWest Express ROW) passes contain solar variance areas, while all but the southern 4 mi of the Regional Review Recommendation (TransWest Express ROW in Nevada) contain solar variance areas. No solar variance areas occur within the Nevada portion of the designated corridor (DOE and BLM 2014).

Trends and Forecasts

Renewable energy production on BLM public lands has increased in recent years. As of November 2021, permitted renewable energy projects on BLM-managed lands include 36 wind, 37 solar, and 48 geothermal projects with a total combined capacity of more than 12 gigawatts of power (BLM 2023b). Continued growth of responsible renewable energy has recently been supported by Executive Order 14008, the Energy Act of 2020, and Congressional direction to seek to permit at least 25 gigawatts of solar, wind and geothermal energy production on public lands no later than 2025 (BLM 2023c). In addition, laws enacted in most of the western states require energy companies and utilities to provide a portion of their energy from renewable energy sources. As a result, the BLM anticipates an increased interest in the use of public lands for renewable energy development.

The placement of renewable energy facilities depends on a number of factors that are not always addressed in BLM's land use plans such as economics, proximity to the electrical grid, project design, current technology, and potential resource impacts. However, BLM land use plans can be amended through the public process to accommodate such uses if necessary (BLM 2008b).

Under the Western Solar Plan, areas that are not included as part of the SEZs or variance areas are to be considered as potential exclusion areas for utility-scale solar energy development. Exclusion areas are identified based on the potential for resource conflicts (e.g., Greater Sage-grouse habitat) or because lands are not well suited for utility-scale solar energy development (BLM 2019a). The upcoming Solar PEIS may identify additional areas as suitable for utility-scale solar energy development, potentially increasing future solar energy development on BLM-administered land.

As the potential for wind resources are limited within the decision area, it is unlikely that utility-scale wind energy projects will be developed in the area. Given the presence of solar variance areas, particularly in the Nevada portion of the corridor addition, and the proximity to SEZs in the northern portion of the decision area, utility-scale solar energy projects are more likely to be developed within the area in the future.

5.6.9.2 Rights-of-Way

Current Conditions and Context

Section 503 of FLPMA provides for the designation of energy corridors and encourages use of ROW collocation to minimize environmental impacts and the proliferation of separate ROWs. For energy transport infrastructure,

Four transmission lines and two natural gas pipelines are located within the designated corridor (Figure 5.6-5). A railroad follows a portion of the Regional Review Recommendation (TransWest Express ROW) in Utah, and to some extent, where it enters Nevada (BLM, Forest Service, and DOE 2022).

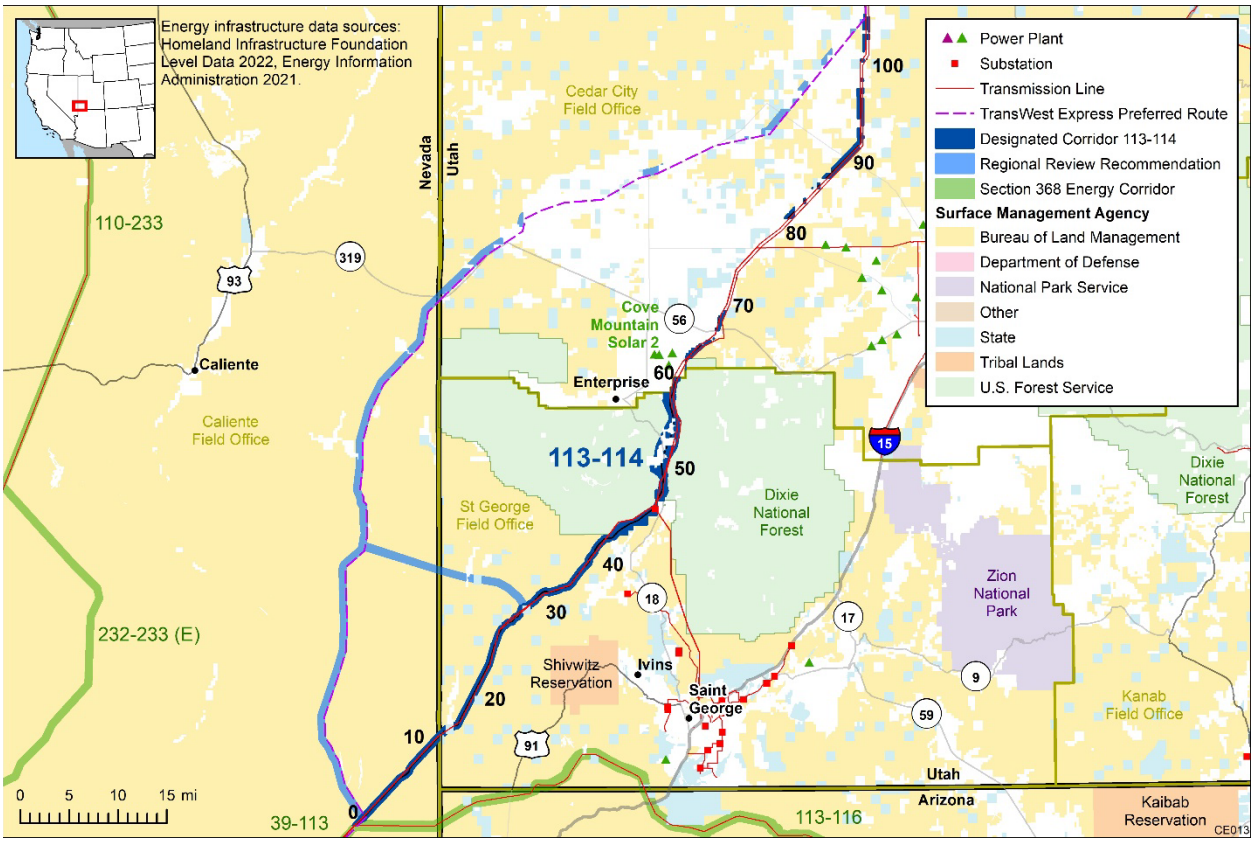

Figure 5.6-5. Transmission Lines in the Vicinity of the Decision Area

Trends and Forecasts

In general, the requests for ROWs will continue to increase due to increasing population growth and urban development, which in turn, will increase the demand for energy and the need for improved electric transmission grid reliability. ROW demand may increase within areas that have potential for wind, solar, and geothermal energy. Existing or designated corridors could provide grid connectivity to accommodate for the anticipated growth in renewable energy production. The BLM will continue to process and grant ROWs consistent with national, state, and local plans. The BLM will continue to encourage colocation of ROWs to minimize environmental impacts and proliferation of separate ROWs.

As with past and present development, designated energy corridors or colocation with existing infrastructure will continue to be preferred for future development of linear utility infrastructure projects (particularly large projects). Colocation of utility infrastructure could continue to concentrate development, and associated surface disturbance, to certain areas, including areas adjacent to highways and major county

roads, railroads, Section 368 Energy Corridors, and other existing or proposed energy corridors (BLM 2019a).

Activities generally excluded from ROW corridors such as mineral materials disposal, range and wildlife habitat improvements, and recreational and other facilities that would attract public use would continue to be unavailable if Corridor 113-114 remains designated. Such activities would also be excluded from any additional areas designated as Section 368 energy corridors (including the Regional Review Recommendation following TransWest Express authorized ROW).

The proximity of the Milford Flats SEZ and solar variance areas to the decision area provides the opportunity for the corridor to accommodate transmission tied to renewable energy development (BLM, Forest Service, and DOE 2022).

5.6.9.3 Military Training Flight Operations

Current Conditions and Context

While military training flight operations are not an actual use of BLM-administered lands, they could have a potential effect on energy corridors or renewable energy projects, particularly above-ground transmission lines and wind energy projects. The decision area is located within MTR-VR, MTR-IR, and SUA. In addition to the TransWest Express authorized ROW, there are other existing transmission lines that also occur within the training routes. Table 5.6-10 provides information on the MTR-VR, MTR-IR, and SUA and where they overlap the decision area.

Table 5.6-10. Military Training Routes Intersected by the Decision Area

Military Training Route Type	State	Planning Area	MPs
MTR-VR	Nevada and Utah	Caliente and St. George Field Offices	Designated corridor: MP 0 to MP 21
	Utah	Caliente Field Office	Regional Review Recommendation along TransWest Express approved ROW
MTR-IR	Nevada and Utah	Caliente and St. George Field Offices	Designated corridor: MP 0 to MP 32
	Nevada	Caliente Field Office	Regional Review Recommendation along TransWest Express authorized ROW: southern 7.5 mi
	Utah	St. George Field Office	East-west connector: most of Utah portion
SUA	Nevada and Utah	Caliente and Cedar City Field Offices	Regional Review Recommendation along TransWest Express authorized ROW: about 66 mi
	Nevada	Caliente Field Office	Regional Review Recommendation along east-west connector: about 4 westernmost mi

Trends and Forecasts

The trends and forecasts for military training flight operations are not under the purview of BLM. DoD would consult with BLM if any significant changes or increases in military training flights over BLM-administered lands were planned for the future.

5.6.10 Lands with Wilderness Characteristics

Current Conditions and Context

Lands with wilderness characteristics is not a special or administrative designation but rather a description of areas that have been inventoried and identified as possessing wilderness characteristics. Lands with wilderness characteristics are generally roadless BLM-administered public land areas greater than 5,000 ac (or less if they adjoin a designated Wilderness Area or a WSA) that have maintained their natural character and are primarily undeveloped or have the presence of wilderness character. Additionally, they may provide outstanding opportunities for solitude and for primitive and unconfined recreation (BLM 2019b).

Lands with wilderness characteristics are within, adjacent to, or are in close proximity to the designated corridor at MP 12 to MP 17, MP 19 to MP 28, MP 30 to MP 32, MP 34, MP 34.5, MP 38.5 to MP 41, MP 68 to MP 69.5, and MP 73. The Regional Review Recommendation (east-west connector along Highway 546 from Modena to just before the Utah-Nevada state line near SR 319) abuts lands with wilderness characteristics for over 5 mi. All of these lands with wilderness characteristics are located within the Utah portion of the decision area.

Trends and Forecasts

Many BLM field offices have maintained the wilderness inventories originally developed in their jurisdiction during the late 1970s or early 1980s. They also have retained their original inventory units as a basis for initiating updates to the original inventory. However, when no inventory units have been established or no land use plan decisions in approved RMPs have been made regarding lands with wilderness characteristics, BLM may need to update the inventory and identify any lands with wilderness characteristics to allow analysis of impacts in associated NEPA documents (BLM 2021).

Future commercial development, increased recreation (with the exception of compatible primitive recreational uses), and other uses associated with population growth, may reduce or eliminate naturalness, solitude, and primitive recreation values in lands with wilderness characteristics, if they are not managed specifically to preserve such values. The number of recreationists accessing the lands with wilderness characteristics can be expected to continue to increase in the future (; 2019a).

5.6.11 Livestock Grazing and Wild Horse and Burro

General information for livestock grazing and wild horse and burro that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.11.

5.6.11.1 Livestock Grazing

Current Conditions and Context

Management direction for livestock grazing comes primarily from the RMPs that provide management for livestock grazing and rangeland health. Most BLM-administered lands are or can be grazed by livestock except for lands considered unsuitable due to steep slopes (greater than 70%) or barren areas (less than 2% vegetation) (BLM 1993, 2008a; DOE and BLM 2008). The number of Animal Unit Months (AUMs) could be modified over time [e.g., based on whether or not the allotments meet the land health standards (BLM 2008c)]. An AUM is the amount of forage necessary to support 1 cow and calf, 5 sheep, 1 horse, or 1 indigenous animal for 1 month. There are 19 grazing allotments within the designated corridor and 26 grazing allotments within the Regional Review Recommendation (Table 5.6-11 and Figure 5.6-6). Within the designated corridor, 8 allotments overlap less than 5% of the total size of the allotment and 10 allotments overlap between 5% and 28% of the total size of the allotment. The designated corridor overlaps 48% of the Sevy East allotment. Within the Regional Review Recommendation, 15 allotments overlap less than 5% of the total size of the allotment and 11 grazing allotments overlap between 5% and 27% of the total size of the allotment.

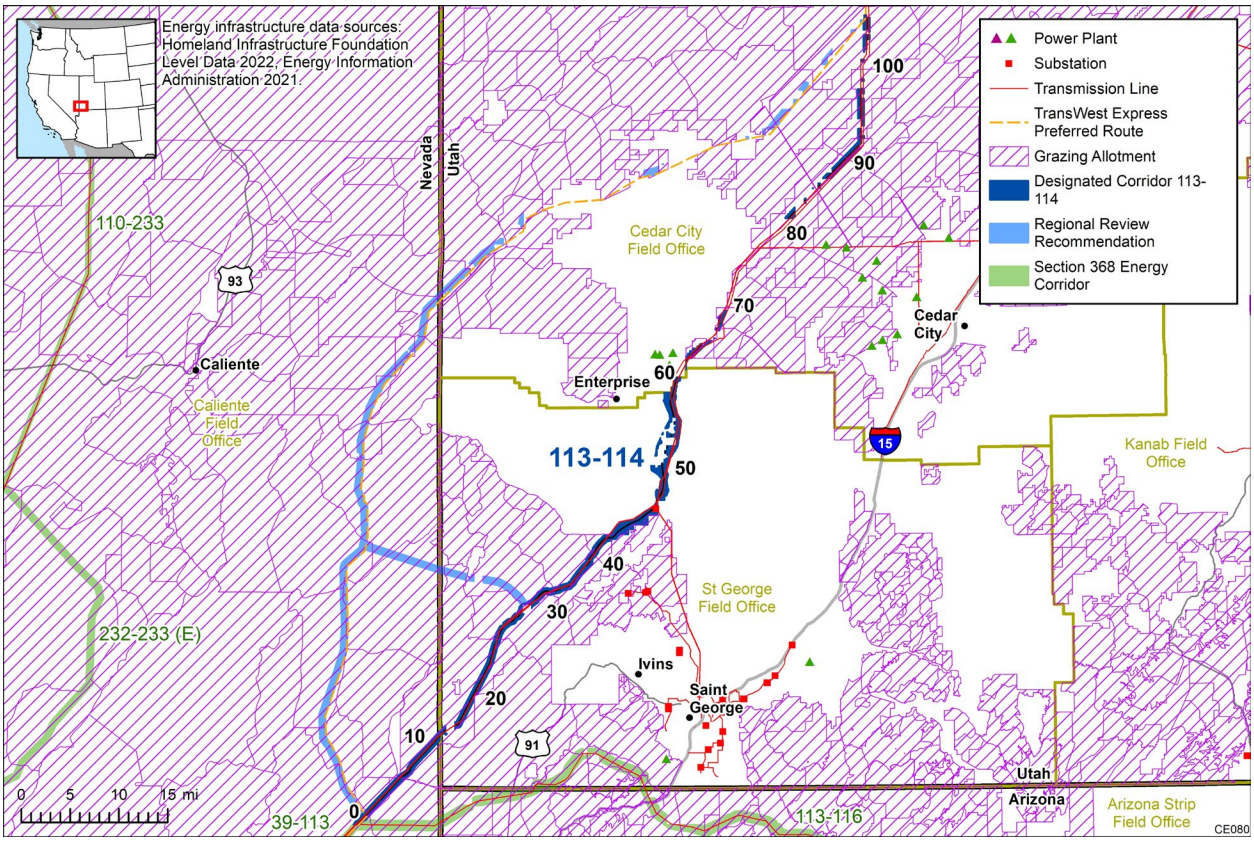

Figure 5.6-6. Grazing Allotments in the Vicinity of the Decision Area.

Table 5.6-11. Livestock Grazing Allotments within the Decision Area[a]

Allotment Name (Allotment Number)	Administrative State	Allotment Acreage	Percentage of the Allotment Within the Decision Area
Designated Corridor			
Snow Springs (01074)	Nevada	44,343	0.005
Sand Spring (15064)	Utah	6,703	0.1
Reservoir (15060)	Utah	4,950	0.4
Gourd Spring (01071)	Nevada	97,473	0.6
Sand Hollow (01064)	Nevada	34,533	2.1
Nada (15048)	Utah	42,280	2.4
Desert Inn (14018)	Utah	39,570	2.6
Dick Palmer Wash (15021)	Utah	16,655	2.7
Jackson Wash (14030)	Utah	33,368	6.0
Leigh Livestock (15039)	Utah	16,551	7.3
Twin Peaks (14054)	Utah	32,854	7.6
Silver Peak (15067)	Utah	4,959	8.6
Scarecrow Peak (14048)	Utah	78,696	8.9
Magotsu (14065)	Utah	3,049	14
Pinto Creek (15057)	Utah	2,617	19
Beacon (01076)	Nevada	6,491	21

Allotment Name (Allotment Number)	Administrative State	Allotment Acreage	Percentage of the Allotment Within the Decision Area
Perkins (15055)	Utah	3,865	23
Mineral Wash (14036)	Utah	3,780	28
Sevy East (15065)	Utah	554	48
Regional Review Recommendation			
Snow Springs (01074)	Nevada	44,343	0.002
Wood West (05152)	Utah	9,992	0.03
Jackson Wash (14030)	Utah	33,368	0.1
McGuffy (01043)	Nevada	22,163	0.3
Butte (15018)	Utah	32,248	0.5
Lund (05135)	Utah	48,317	0.6
Nada (15048)	Utah	42,280	1.1
Scarecrow Peak (14048)	Utah	78,696	1.2
Oak Wells (01051)	Nevada	30,074	1.7
Gourd Spring (01071)	Nevada	97,473	2.0
Enterprise (11031)	Nevada	21,137	3.1
Sheep Flat (01069)	Nevada	74,120	3.3
Gold Spring (05127)	Utah	38,663	3.6
Modena	Utah	7,374	3.8
Bulloch (15016)	Utah	27,127	4.3
Lime Mountain (21005)	Nevada	62,552	5.0
Barclay (11004)	Nevada	81,927	5.5
Desert Inn (14018)	Utah	39,570	5.6
Crossroads (21024)	Nevada	19,719	11
Summit Spring (01077)	Nevada	17,609	13
Delvecchio (05124)	Utah	4,976	13
Garden Spring (01065)	Nevada	39,184	14
Uvada (01079)	Nevada	11,236	17
Haypress (11033)	Nevada	8,054	19
Government Well (05128)	Utah	5,628	26
Crestline (11023)	Nevada	3,658	27

[a] Allotments are listed if they are on BLM-administered lands within the decision area.

Source: BLM 2023d.

Livestock grazing in the region has decreased substantially from its peak, which occurred in the early part of the last century. The decline in livestock grazing can be attributed in part to reductions in active use, or areas not in suspension and available for livestock grazing use under a permit or lease based on livestock carrying capacity and resource conditions in an allotment (as defined in 43 CFR Part 4100.0-5). Reductions in active use on BLM-administered public have been implemented to maintain livestock grazing at a level more consistent with the range's carrying capacity. This reduction in livestock use helped improve rangeland health (BLM 2019a).

Trends and Forecasts

Livestock grazing will continue to be managed through existing laws, regulations, and policies. Appropriate BMPs will be followed to protect rangeland resources and, where necessary, to mitigate any conflicts with other uses and values. The BLM will continue to assure compliance with existing permit/lease requirements, modify permits and leases, monitor and supervise grazing use, and to remedy unauthorized grazing use. Management direction for livestock grazing comes primarily from the RMPs that provide current management for livestock grazing and rangeland health. Review of existing AUMs would be conducted on individual allotments through assessment of existing activity plans (i.e., allotment management plans, livestock grazing decisions, habitat management plans, watershed management plans, biological opinions, and multiple-use decisions). BLM enhances range conditions by controlling animal numbers, regulating season of use, regulating duration of use, and periodically resting rangelands as part of livestock management systems and following catastrophic events, such as fire (BLM 2008a).

The occurrence of weather extremes or shifts in climatic variables, such as the increase in frost-free days, change in the timing or amount of precipitation, and warmer summers, is often cited as a growing trend that may be the result of climate change (see Section 5.1.2). Increases in temperatures and shifts in precipitation patterns may reduce livestock forage production and alter the livestock carrying capacity on BLM-administered lands. Season or timing of grazing use and livestock numbers, distribution, intensity, and type of livestock may need to be adjusted on a temporary or long-term basis in response to climatic factors.

5.6.11.2 Wild Horse and Burro

Current Conditions and Context

The Corridor 113-114 decision area intersects or is near the Chloride Canyon, Eagle, and North Hill wild horse herd management areas (HMAs) (Figure 5.6-7). The maximum appropriate management level (AML) for the three HMAs is 276 wild horses; however, the HMAs contain 1,062 wild horses (BLM 2023e).

The designated corridor is within the Chloride Canyon HMA on BLM-administered lands from MP 67 to MP 69. The Regional Review Recommendation (along TransWest Express ROW) is adjacent to or is near the Eagle and North Hills HMAs from Modena to the Nevada/Utah state line along Utah State Route 56 (Figure 5.6-7).

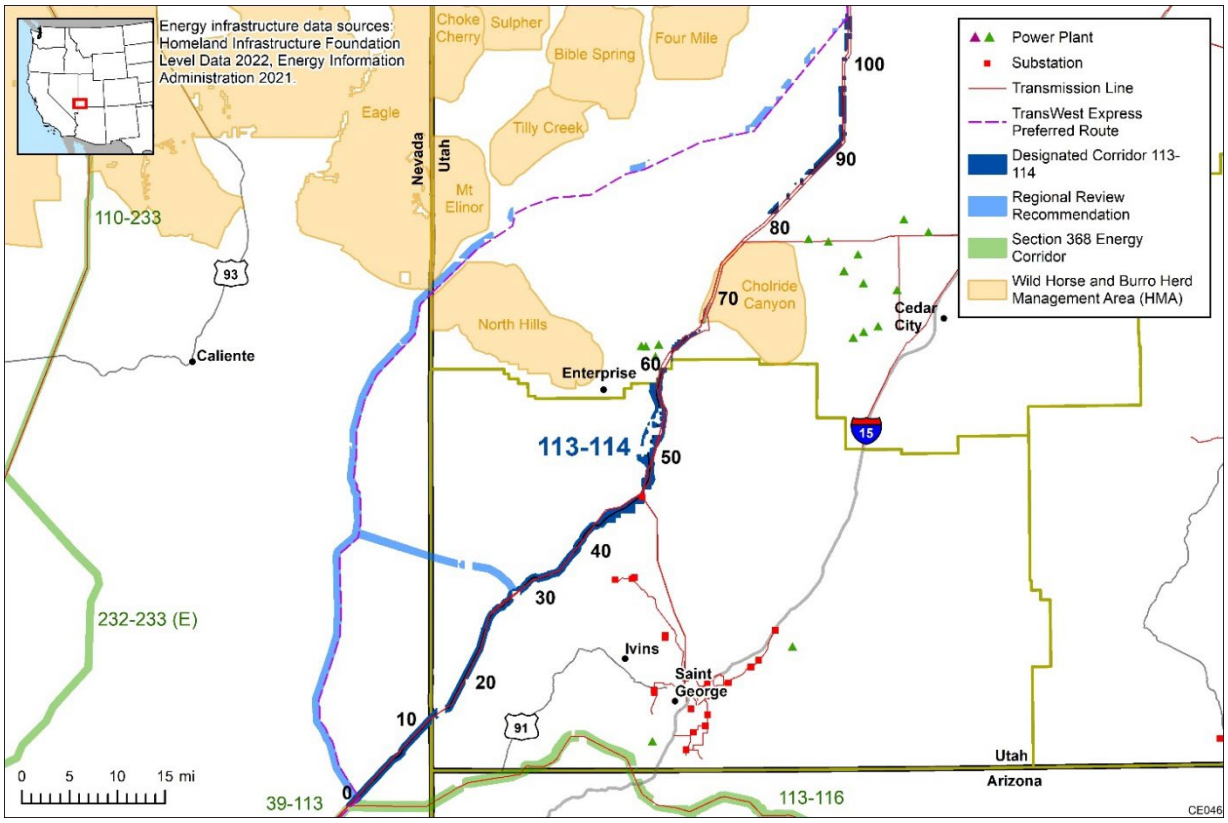

Figure 5.6-7. HMAs in the Vicinity of the Decision Area

Pertinent information on these HMAs is listed below (BLM 2023e).

Chloride Canyon HMA (Utah)

HA size: 65,408 ac (44,282 ac on BLM-administered land)

HMA size: 63,684 ac (42,557 ac on BLM-administered land)

AML: 15-30, 2023 population estimate 33 (most recent population inventory June 2020)

Most recent year at AML: 2013

Last gather: Jan 2023

Eagle HMA (Nevada)

HA size: 0 (HAs created from other HAs do not have acres in the HA columns)

HMA size: 660,610 ac (659,188 ac on BLM-administered land)

AML:100-210, 2023 population estimate 921 (most recent population inventory Feb 2022)

Most recent year at AML: 2011

Last gather: Feb 2021

North Hills HMA (Utah)

HA size: 60,646 ac (50,099 ac on BLM-administered land)

HMA size: 60,580 ac (50,099 ac on BLM-administered land)

AML: 24-36, 2023 population estimate 108 (most recent population inventory Feb 2022)

Most Recent year at AML: 2012

Last gather: Dec 2019

Trends and Forecasts

Challenges to wild horse and burro management include controlling populations within HMAs to maintain herd and rangeland health. Wild horse and burro herds that are above their established AML are at increased risk for food and water scarcity and habitat degradation, especially as extreme drought conditions continue to threaten animal and land health across the West.

BLM-wide population estimates from March 2022 indicate a two-year decline in wild horse and burro population; the population decreased by 3,805 animals between March 2021 and March 2022. As of March 2022, the estimated total wild horse and burro population was 82,384 animals, three times the BLM's goal of approximately 27,000 animals (BLM 2022b). Climate change effects, including change in prescription patterns and temperature, could further reduce water and forage availability and habitat for wild horses and burros.

5.6.12 Noise

General information for noise resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.12.

Current Conditions and Context

At a state level, both Nevada and Utah do not have regulatory standards limiting noise levels from sources associated with activities along the energy corridor (NPC 2022). Lincoln County in Nevada and Washington and Iron Counties in Utah have no applicable quantitative noise-level regulations applicable to energy corridor activities.

Noise sources in the decision area include road traffic, railroad traffic, aircraft flyover by military and civilian aviation, agricultural activities (e.g., cattle grazing and concentrated animal feeding operations [CAFOs]), animal noise from nearby wildernesses, industrial activities, and infrequent community activities and events. In addition, crackling or hissing corona noise from transmission lines and humming noise from substation transformers are additional noise sources along the corridor. The decision area is mostly undeveloped, sparsely populated, and remote, the overall character of which is considered mostly pristine to rural.

Airports: The nearest airport is Sun Valley Estates in Lund, Iron County, Utah, about 0.8 mi (1.3 km) near the Regional Review Recommendation (along the TransWest

Express authorized ROW). The next closest one is Beryl Junction Airport in Beryl, Iron County, about 6 mi (10 km) of the original corridor. Many public and private airports along with heliports in these counties are clustered along the Interstate 15 at St. George and Cedar City, Utah.

Roads and Railroads: Utah State Route 56, which starts from Cedar City in Iron County, crosses the designated Corridor 113-114, runs parallel next to the Regional Review Recommendation along the TransWest Express authorized ROW, and this route continued as Nevada State Route 319. Utah State Route 18 from St. George in Washington County crosses the designated corridor in the Dixie National Forest and ends near Beryl Junction in Iron County, where the route meets the Regional Review Recommendation. In addition, many county roads and local roads are located around the corridor. Los Angeles and Salt Lake Railroad runs parallel in close proximity to the Regional Review Recommendation in Utah but intersects three times as soon as it crosses the Utah-Nevada state line.

To date, no environmental noise survey has been conducted in the decision area. On the basis of the population density, the day-night average sound level (L_{dn} or DNL) is estimated to be 18 dBA for Lincoln County in Nevada, 41 dBA for Washington County in Utah, and 34 dBA for Iron County in Utah, which correspond to wilderness, rural residential, and wilderness areas, respectively (Cavanaugh and Tocci 1998, Miller 2002).

Trends and Forecasts

Primary noise sources include roads, airports, railroads, and stationary sources. In general, doubling the number of noise sources of the same intensity increase the sound level only by 3 dB, which is a just noticeable difference. For example, if the number of passenger cars increases from 1,000 to 2,000 vehicles per hour on any road, the noise level increases only by 3 dB. This level of drastic change in activities is not anticipated in the remote and unpopulated decision area. As a result, even with population and industrial growth in the region, noise level is forecasted to increase slightly and unnoticeably in the near future unless new and noisy sources, to which the receivers have never been exposed before, come into the region.

5.6.13 Paleontology

General information for paleontological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.13.

Current Conditions and Context

Figure 5.6-8 depicts the PFYC Classes within the decision area. The PFYC Classes represent an estimate based on the available regional geologic data; they are not meant to replace project-specific evaluations of potential paleontological resources. The PFYC Classes within the decision area along the designated corridor range from Class 1 (very low) to Class 4 (high). In PFYC Class 1 areas, the probability of impacting significant paleontological resources would be very low and further assessment of paleontological resources is likely unnecessary. In PFYC Class 2 (low) areas, the probability of

impacting significant paleontological resources would be low and further assessment of paleontological resources is would likely not be unnecessary, unless paleontological resources are known or found to exist. In PFYC Class 3 areas, there is a moderate or infrequent occurrence of paleontological resources and surface-disturbing activities may require assessment by a qualified paleontologist. PFYC Class 4 areas indicate a moderate to high probability for impacting paleontological resources. Detailed field assessment is typically required prior to land disturbing activities in PFYC Class 4 areas. Within the Regional Review Recommendation (along TransWest Express authorized ROW), the area is mostly PFYC Class 2 in Utah. Most of the area in Nevada is unclassified, but there is a small portion of PFYC Class 3 at the southern end. The Regional Review Recommendation (along the east-west connector) contains unclassified and Class 3 PFYC areas.

In Nevada, within the Ely planning area, several areas have been identified as paleontologically sensitive: Ruin Wash and Klondyke Gap, Andie's Mine Trilobites, Snake Creek Indian Burial Cave, and the Elderberry Canyon Local Fauna. None of these areas are within the decision area (BLM 2007a).

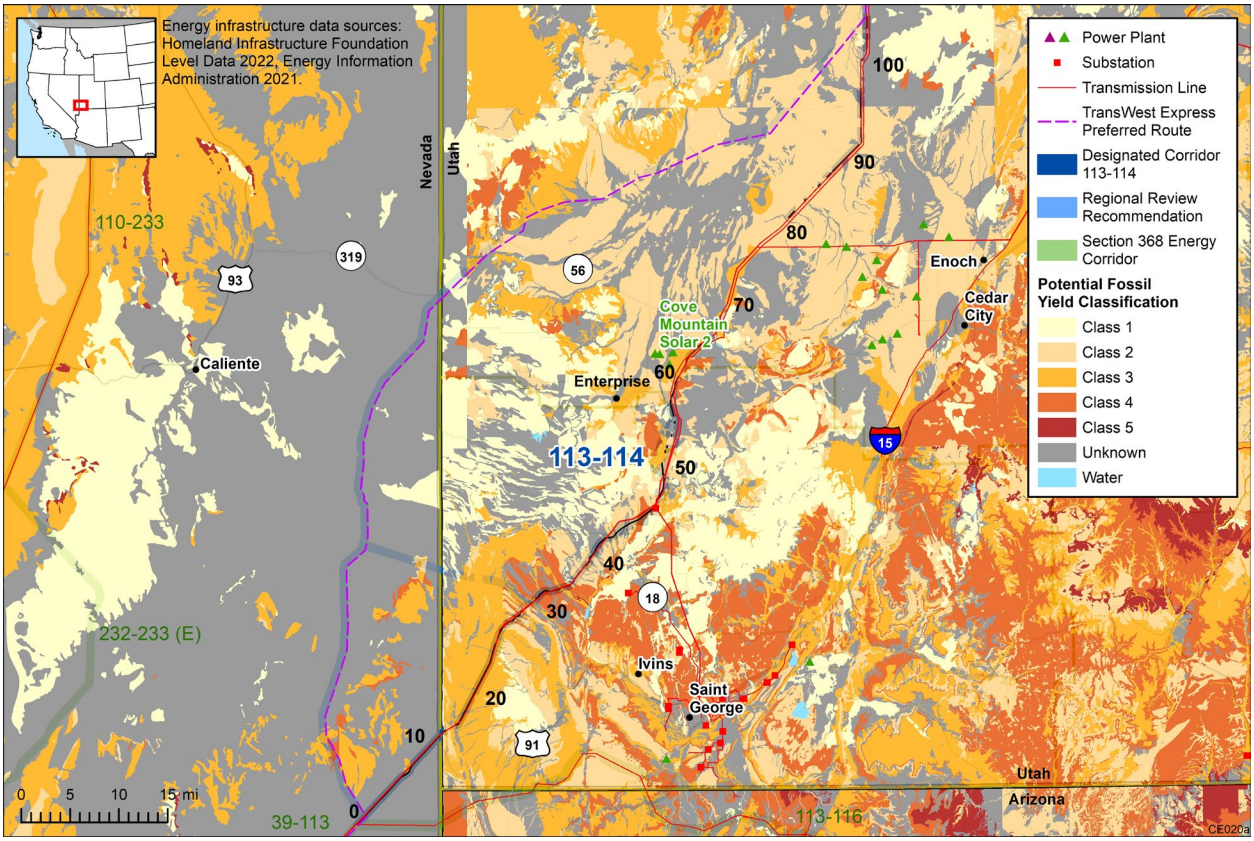

Figure 5.6-8. Potential Fossil Yield Classification in the Vicinity of the Decision Area

Trends and Forecasts

BLM permits are required for the collection of vertebrate fossils by trained researchers on BLM-administered lands. Fossils collected under BLM permits remain the property of citizens of the United States are placed in museums or other public institutions.

Common invertebrate fossils do not require BLM permits and are allowed to be collected for personal use. The demand for both vertebrate and invertebrate fossils has increased in recent years. Increased demand may contribute to the loss of paleontological resources in the future (BLM 2007a). Paleontological resources can also be impacted through excavation or surface disturbance, particularly OHV use, minerals development, land disposal, and special designations. (BLM 2007a).

5.6.14 Recreation

General information for recreation that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.14.

Current Conditions and Context

A broad range of outdoor recreation opportunities will continue to be provided on all segments of BLM-administered lands, subject to the demand for such opportunities and the need to protect other resources. The Beaver Dam Wash NCA, Clover Mountains Wilderness Area and areas of lands with wilderness characteristics, Beaver Dam Slope ACEC, and Old Spanish NHT on BLM-administered lands within the decision area provide numerous recreational opportunities throughout the area. There are no Special Recreation Management Areas (SRMAs) within the decision area.

The Regional Review Recommendation (following TransWest Express authorized ROW in Nevada) limits OHV use to designated roads and trails. No closed areas to OHV use occur within its immediate vicinity (BLM 2008a). There are OHV open areas throughout most of the designated corridor in Utah as well as the Utah portion of the Regional Review Recommendation (east-west connector).

Trends and Forecasts

As population pressures increase, and with them the demand for quality outdoor recreation, the BLM field offices will retain and develop resources under its authority to provide a wide variety of recreational opportunities. In part, this demand would be met by restoration and regular maintenance of existing recreation sites, creation of new recreational facilities, and more intensive management. However, the unspoiled character of natural landscapes must be preserved and vulnerable areas would be excluded from all development (recreational and otherwise to preserve their pristine, natural condition) (BLM 1983; 1986; 2008a; 2016a; WAPA and BLM 2015).

The use of developed recreation sites is on an upward trend, following growth trends in adventure tourism and heritage tourism, and increased populations in communities.

It is reasonable to expect that there will be a continuing need to construct recreation facilities in response to community and tourism industry growth. With visitation to BLM-administered public lands continuing to increase (and with present visitation already creating the need for additional facilities), facilities to provide for these visitors must keep pace so as to protect the land and to provide for human sanitation. Current use

levels continue to degrade resources, and additional facilities are needed to accommodate visitation and stabilize resource values (BLM 2019a).

OHV use has become a substantial issue because of the number of users who participate in this recreation opportunity and because of concerns related to the potential resource degradation that can result from high levels of unmanaged use in sensitive areas. OHV use has become one of the fastest growing recreation activities. Visitors are drawn to these areas to experience the numerous roads and trails available for OHV use, the diverse backcountry opportunities, the spectacular scenery, and the challenging OHV opportunities the landscape and terrain provide. This trend is expected to continue (BLM 2019a). Increasing OHV traffic on public lands has caused the uncontrolled proliferation of user-created, undesignated trails arising from repeated cross-country travel. Unauthorized motorized use causes natural resource damage (e.g., to soils and habitat) and increased public safety concerns (WAPA and BLM 2015). The development of field–office wide OHV plans will help to control the social and environmental impacts related to this activity (BLM 2007b)

5.6.15 Socioeconomics

Socioeconomic data are presented for an ROI around the decision area, composed of the counties in which the corridor would be located. The ROI for the decision area includes Lincoln County, Nevada and Iron and Washington counties in Utah.

Current Conditions and Context

Population

The decision area is located in a relatively low population area. The nearest towns are Mesquite Nevada located about 11 mi (18 km) southeast of MP 0 (2020 population of about 19,000), and Milford Utah located about 3 mi (5 km) southeast of MP 128 (2020 population of about 1,800). Two larger cities in Utah (St. George [2021 population of about 100,000] and Cedar City [2021 population of about 37,000]) are located about 25 mi (40 km) east of MP 20 and MP 70, respectively.

In 2020, the population of the three-county ROI was 242,067 people (Table 5.6-12). During the period 2010 to 2020, population increased at low annual average rates in Iron County and Washington County, and declined in Lincoln County, also at a low annual average rate. Population in the ROI, as a whole, increased at an average annual rate of 0.03% during this time and is projected to reach 427,055 by 2040.

Employment and Income

Table 5.6-13 presents the average civilian labor force statistics for the ROI in 2021. Almost 109,000 people were employed in the ROI, as a whole, and 3,245 were unemployed. Unemployment rates ranged from 2.8% for Iron County to 3.4% for Lincoln County (Table 5.6-13). Wage and salary employment (not including self-employed persons) by industry for 2020 is provided in Table 5.6-14. More than 50,000 people in

the ROI were employed in services (51.3% of the total), with 15,187 (15.6%) persons employed in wholesale and retail.

Table 5.6-12. ROI Population

County	Population			Average Annual Growth Rate, 2010-2020
	2010	2020	2040	
Lincoln, Nevada	5,345	4,499	4,481	-0.01
Iron, Utah	46,163	57,289	85,248	0.02
Washington, Utah	138,115	180,279	337,326	0.03
ROI Total	189,623	242,067	427,055	0.03

Sources: Nevada Department of Taxation 2021; U.S. Census Bureau 2022c, 2022d; University of Utah 2022;

Table 5.6-13. ROI Civilian Labor Force Statistics, 2021

County	Employed, 2021	Unemployed, 2021	Unemployment Rate, 2021
Lincoln, Nevada	2,078	73	3.4
Iron, Utah	25,519	746	2.8
Washington, Utah	81,174	2,426	2.9
Total	108,771	3,245	2.9

Sources: U.S. Department of Labor 2022.

Table 5.6-14. ROI Wage and Salary Employment by Industry, 2020

Sector	County			ROI Total	Share of ROI Total (%)
	Lincoln, Nevada	Iron, Utah	Washington, Utah		
Agriculture, forestry, fishing and hunting	104	504	592	1,200	1.2
Mining, quarrying, and oil and gas extraction	46	120	249	415	0.4
Utilities	92	270	409	771	0.8
Construction	187	2,407	7,167	9,761	10.0
Manufacturing	0	1,876	4,552	6,428	6.6
Wholesale and retail trade	230	3,351	11,606	15,187	15.6
Transportation and warehousing	36	791	3,613	4,440	4.6
Finance, insurance, and real estate services (FIRE)	98	938	4,031	5,067	5.2
Services, not incl. FIRE	715	11,990	37,345	50,050	51.3
Public Administration	237	1,395	2,624	4,256	4.4
Total	1,745	23,642	72,188	97,575	

Source: U.S. Census Bureau 2022e.

Table 5.6-15 details income in the ROI for 2020. Total personal income stood at $10.4 billion, generated primarily in Washington County ($8.1 billion), while median annual income ranged from $52,045 for Iron County to $61,747 for Washington County.

Table 5.6-15. ROI Personal Income, 2020

County	Total Personal Income ($ billions)	Median Income ($)
Lincoln, Nevada	0.2	56,537
Iron, Utah	2.1	52,045
Washington, Utah	8.1	61,747
ROI Total	10.4	

Source: U.S. Census Bureau 2022f; U.S. Department of Commerce 2022.

Housing

Table 5.6-16 details housing characteristics in the ROI in 2020. There were 1,389 vacant rental housing units in the ROI, as a whole, with rental vacancy rates ranging from 0.6% in Lincoln County to 3.4% in Iron County.

Table 5.6-16. ROI Housing Characteristics, 2020

County	Housing Units		Vacancy Rate (%)
	Total	Vacant Rental	
Lincoln, Nevada	2,733	16	0.6
Iron, Utah	21,742	740	3.4
Washington, Utah	71,482	633	0.9
ROI Total	95,957	1,389	1.4

Source: U.S. Census Bureau 2022g, 2022h.

Trends and Forecast

In 2020, the population of the three-county ROI was 242,067 people, with the majority of people, 42,272, living in Washington County (Table 5.6-12). Population is projected to decline slightly in Lincoln County, at an annual rate of -0.01%, and increase at a similar rate in Iron County and Washington County, between 2020 and 2040. Population is projected to reach 427,055 by 2040.

Given the lack of appropriate geographic-specific forecasts for changes in employment opportunities, business costs, cost of living, and consumer preferences, the effects of which may be more easily to predict at the regional or national level, forecasts of their effects on employment, employment by industry, unemployment, income, and housing at the county-level are not available. Preparing forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local economic activity that are difficult to forecast.

5.6.16 Special Designations

General information for special designations that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.16.

Special designations are addressed in this section only if they are intersected by or located within close proximity to the Corridor 113-114 decision area. These include:

- Beaver Dam Wash National Conservation Area;
- Clover Mountains Wilderness Area;
- Beaver Dam Slope ACEC; and
- Old Spanish National Historic Trail.

Special designation areas in close proximity to the decision area are depicted in Figure 5.6-9.

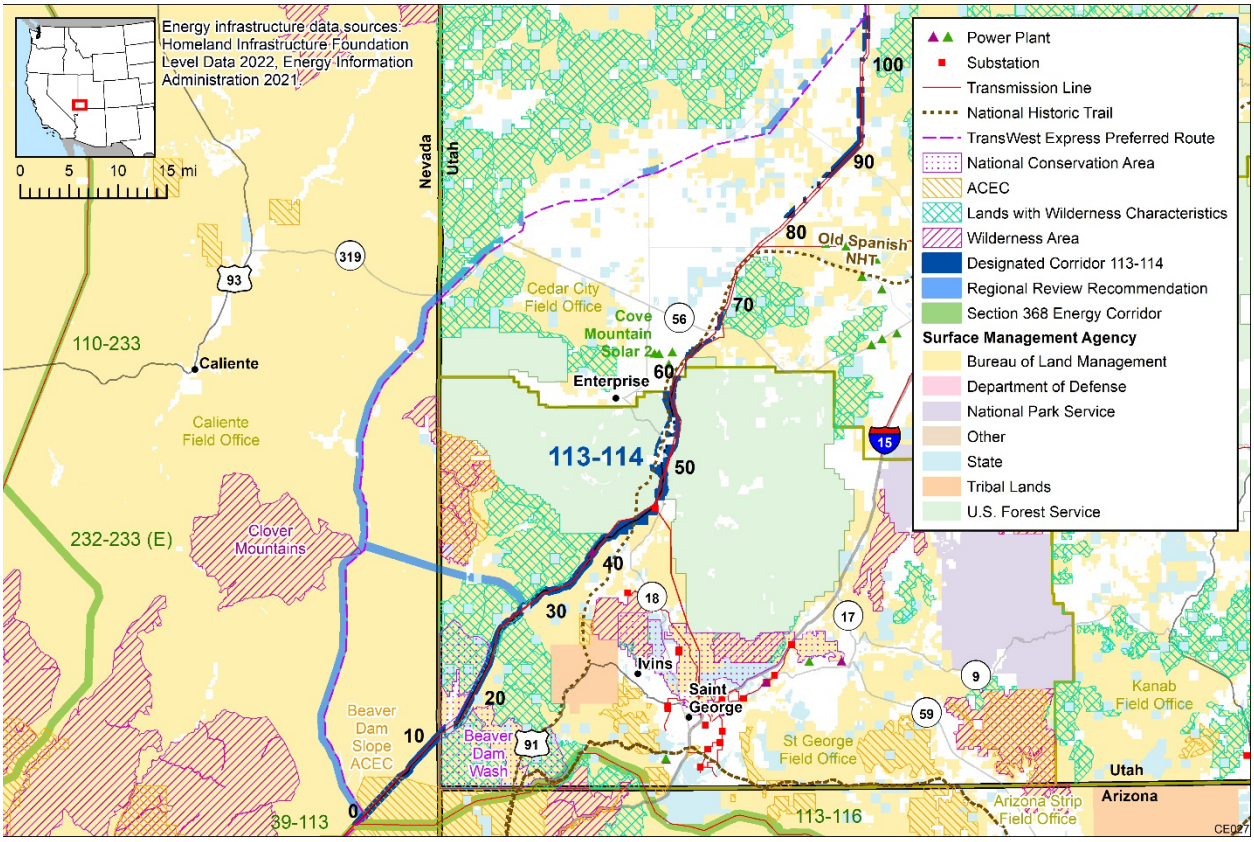

Figure 5.6-9. Special Designations in the Vicinity of the Decision Area

5.6.16.1 National Conservation Area

Current Conditions and Context

Beaver Dam Wash NCA

The designated corridor is bordered on both sides by the 63,478-ac Beaver Dam Wash NCA in Utah from about MP 13 to MP 17 and bordered on its west side from MP 17 to about MP 23.5. The Regional Review Recommendation (east/west connector) is more than 4 mi north of the Beaver Dam Wash NCA. The Regional Review Recommendation (following TransWest Express route) does not intersect the Beaver Dam Wash NCA. The

NCA is managed to protect important biological, ecological, historical, and scenic resources as well as diverse recreational opportunities. The NCA also provides critical habitat for the Mojave Desert tortoise, a federally threatened species. The public lands of the NCA remain relatively remote and isolated, as Old Highway 91 is the only paved roadway through the Beaver Dam Wash NCA (BLM 2016).

As Congress did not specifically define the resource values that give significance to the Beaver Dam Wash NCA, BLM resource professionals identified a number of the natural and cultural resources within NCA that are unique and scientifically important, including: ecological diversity created by the convergence of the Mojave Desert and Great Basin ecoregions; geologic resources, such as the 1.7 billion year-old Precambrian strata of the Beaver Dam Mountains, the oldest exposed rocks in southwest Utah; caves and karsts with unique geological, biological, cultural or recreational values; Joshua Tree National Natural Landmark, exemplifying this iconic Mojave Desert vegetation community, at the northern extreme of its range; habitats critical for at-risk-native species, including the Mojave desert tortoise, Gila monster , Southwestern Willow Flycatcher, and many other species (e.g., bats, reptiles, raptors, and migratory birds); archaeological sites that preserve evidence of Archaic, Ancestral Puebloan, and Southern Paiute occupations and land uses; and historic period Euro-American heritage resources, including 19th century wagon roads and telegraph lines, the early 20th century Arrowhead Trails Highway, and features constructed by the Civilian Conservation Corps during the Great Depression of the 1930s (BLM 2016).

Trends and Forecasts

The Beaver Dam Wash NCA will continue to be significant from a regional and national perspective because it affords opportunities for scientific study geologic processes and paleo-environments of the earliest periods of Earth's history, through the exposed geologic units of the Beaver Dam Mountains; opportunities for solitude, natural quiet, dark night skies, and primitive, unconfined recreation within a large area of remote and substantially undisturbed public lands; opportunities for the public use, interpretation, and high quality vicarious visitor experiences along the Northern and potential Armijo Routes of the Old Spanish NHT; opportunities for conservation, protection, restoration, scientific study, public use, and interpretation of an array of prehistoric and historic period archaeological sites that document the broad span of human history in southwestern Utah; opportunities for sustainable outdoor recreation and resource interpretation on public lands that enhance the quality of life for local residents and visitors and help to sustain the economic health of the local communities; and opportunities for broad-based scientific, academic, and community partnerships, volunteer programs, youth and veteran training, and employment initiatives, developed to enhance public appreciation and citizen stewardship of the NCA resources and values (BLM 2016).

5.6.16.2 Wilderness Areas

Current Conditions and Context

Clover Mountains Wilderness Area

The Clover Mountains Wilderness Area, nearly 86,000 ac in size, borders the Regional Review Recommendation (TransWest Express authorized ROW in Nevada near the area east-west connector). This area was a major volcanic center, spewing lava flows over the landscape. Now this ancient caldera provides exceptional opportunities to experience solitude and adventure throughout its rolling hills, rugged peaks, and jagged rock outcrops of rhyolite in natural hues of pink, yellow, red, orange and brown as well as twisting canyons and perennial waters. The volcanic peaks of the Clover Mountains Wilderness rise from about 2,900 ft to 7,600 ft above sea level. Narrow twisting canyons, cliffs, rock outcrops, peaks, ridges and saddles create exceptional scenic landscapes. High in the mountains live old-growth stands of ponderosa pine and quaking aspen – both of which are uncommon in this part of Nevada. Ash, cottonwood, quaking aspen, and other riparian vegetation thrive along Cottonwood Creek, one of the longest pristine year-round streams in Southern Nevada. The Thule Desert encompasses the lowest elevations in the southern portion of the Wilderness Area with vegetation of sagebrush, Joshua trees, and yucca. Mule deer, desert bighorn sheep, mountain lion, bobcat, badger, peregrine falcon, prairie falcon and golden eagle have been seen in the area. The lower regions of the area provide important habitat for kit fox and numerous species of reptiles. Sensitive species likely to be found in the wilderness area include the Pallid bat, California myotis, and banded Gila monster. (Wilderness Connect 2023). The Clover Mountains Wilderness Area is not in close proximity to the designated corridor.

Trends and Forecasts

There will be an ongoing long-term protection and preservation of Wilderness Areas under the principle of non-degradation. The naturalness and untrammeled condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational, scenic, or historic value will be managed so that they remain unimpaired (BLM 2007c; 2010; 2012b).

5.6.16.3 ACEC

Current Conditions and Context

Beaver Dam Slope ACEC

The Beaver Dam Slope ACEC overlaps the designated corridor from MP 1 to MP 6.5 (in Nevada) and MP 13 to MP 18 (in Utah). This ACEC contains critical habitat for the Mojave Desert tortoise and habitat for a diversity of desert plant and animal species, many of which are listed by state or federal agencies as special status species. Values within the ACEC are at risk from increasing levels of human encroachment, off-road

travel, and various forms of outdoor recreation. The area is designated as a ROW avoidance area except in designated utility and transportation corridors (WAPA and BLM 2015). The Beaver Dam Slope ACEC is not in close proximity to the Regional Review Recommendation along TransWest Express authorized ROW.

Trends and Forecasts

Public lands in ACECs will be retained in federal ownership; while non-federal lands within or adjacent to an ACEC may be acquired for the purposes of conservation of relevance and importance values, through purchase, exchange, or donation. Acquired lands will be incorporated into the ACEC and managed in accordance with the prescriptions applied to the remainder of the ACEC (BLM 2016).

Desired future conditions common for all ACECs are to provide protection for relevant and important resource values within designated ACECs, including special status species, wildlife, scenic, riparian, and significant cultural resources. Vegetation diversity within ACECs will be maintained in accordance with ecological site description guidelines. OHV access within designated ACECs will be managed in a manner which does not damage important cultural resources and wildlife habitat. The viewsheds and landscape character of ACECs is maintained to the extent practicable through the BLM's VRM system (BLM 2010). The Beaver Dam Slope ACEC will primarily be managed for the recovery of the desert tortoise (BLM 2008a).

5.6.16.4 National Historic Trails

Current Conditions and Context

Old Spanish NHT

The Old Spanish NHT crosses the designated corridor in Utah between MP 44 and MP 45 and is close to the corridor from MP 63 to MP 76. The Old Spanish NHT route was established along a network of Native American footpaths that crossed the expanse of the Colorado Plateau and the Mojave Desert. The Old Spanish NHT is primarily a historic resource trail, not a recreational trail (WAPA and BLM 2015).

In 2002, Congress designated the Old Spanish NHT. The trail is an approximately 2,700 mi-long trail extending from Santa Fe, New Mexico, to Los Angeles, California. Variations of the Trail cross parts of New Mexico, Colorado, Utah, Nevada, Arizona, and California. It served as a major trade route between 1829 and 1848. The Old Spanish NHT is characterized by the presence of extensive cultural landscapes that retain a great deal of integrity from the period of designation (BLM 2019a). The Old Spanish NHT is not in close proximity to the Regional Review Recommendation along TransWest Express authorized ROW.

Trends and Forecasts

The BLM and NPS, the Old Spanish NHT administering agencies, prepared the Old Spanish National Historic Trail Comprehensive Administrative Strategy (BLM and NPS 2017). As part of the planning process, the agencies have identified issues related

to possible conflicts between OHV use, energy development, and trail site and segment preservation, protection, and appropriate use, and conflicts between existing uses, future uses, and the preservation of trail viewsheds through visual resource management as issues for consideration during planning (BLM and NPS 2017). Issues concerning route-proliferation from OHV use and management for existing transmission line ROWs, which are generally within the Old Spanish NHT viewshed, are particular challenges to protecting the Trail (BLM 2019a). The BLM will continue to preserve, protect, and maintain the historic and scenic values, and cultural landscapes and viewsheds of NHTs (BLM 2012b). Prior to designating new Section 368 energy corridors or corridor segments, the BLM would need to identify and mitigate any potential impacts on NHTs.

5.6.17 Tribal Interests

General information for tribal interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.17.

Current Conditions and Context

The BLM has identified 10 Federally recognized Tribes with cultural affiliation and an interest in the decision area (Table 5.6-17). The Paiute Indian Tribe Reservation is the only reservation and area with lands held in Trust near the decision area (BLM 2022c; HUD 2022; BIA 2022; Azevedo 1986). The reservation is made up of six tracts of land in Utah counties of Millard, Iron, Sevier, and Washington on or near the decision area; these land tracts include: Kanosh, Cedar Indian Peaks, Paiute, Shivwits, and Koosharem. Outside the decision area in Mojave and Coconino County, Arizona is the Kaibab Indian Reservation. Due to a history of removal and displacement since the early 1800s, it is difficult to identify all Tribes with affiliation to the project area. Any additional Tribes not mentioned in this document should be identified through ongoing formal outreach and consultation.

Table 5.6-17. Federal Indian Reservations in the Decision Area of Corridor 113-114

Reservation, Tribe	Federally recognized Tribes	County, State
Paiute Indian Tribe Reservation (Kanosh, Cedar Indian Peaks, Paiute, Shivwits, Koosharem)	Paiute Indian Tribe of Utah (Kanosh Band of Paiutes, Cedar Band of Paiutes, Indian Peaks Band of Paiutes, Shivwits Band of Paiutes, and Koosharem Band of Paiutes)	Millard County, Iron County, Sevier County, Washington County, Utah
Kaibab Indian Reservation	Kaibab Band of Paiute Indians	Mojave County, Arizona, Coconino County, Arizona

The following Tribes have been identified as having cultural affiliation with the lands near the designated corridor:

- Duckwater Shoshone Tribe
- Ely Shoshone Tribe of Nevada
- Kaibab Band of Paiute Indians
- Las Vegas Tribe of Paiute Indians

- Moapa Band of Paiute Indians
- Paiute Indian Tribe of Utah
- Te-Moak Tribe of Western Shoshone Indians
- Walker River Paiute Tribe
- Washoe Tribe of Nevada & California
- Yomba Shoshone Tribe

In the area surrounding the designated corridor, there is a wide variety of archaeological site types and areas that may be of significant cultural importance to Tribes affiliated with the designated corridor (see Section 5.6.3).

Certain regions discussed in the Ely District ROD and approved resources management plan aligns with the decision area. The Ely District ROD identified several cultural resource places of concern for the Western Shoshone, Goshute Shoshone, and Southern Paiute; these areas encompass several site functions such as habitation, resource procurement, festival gathering, ceremonial, ritual, burial, rock art, teaching stories, oral histories, places of significant events or battles, and agricultural areas. The following areas are within the Corridor 113-114 decision area: Cave Valley, Diamond Valley, Spring Valley, Eagle Valley, Pioche Area, Panaca Area Caliente Area, and Crystal Springs Area (BLM 2008a). The Escalante Valley is near the designated corridor between MP 81 and MP 90 and the Milford Flats, between MP 108 and MP 118, and may be of significance to Tribes (BLM 2022d).

Viewsheds obstructed by any future proposed project within a Section 368 energy corridor may impact areas of traditional cultural importance (BLM 2022d). Native American Tribes may desire access to other BLM administered lands to practice traditional cultural ceremonies.

The Ute Trail was first established by the Ute Tribes as a prominent trade route, also used by other Tribes for trade between New Mexico and California. It was later used by Spanish explorers and became known as the Old Spanish Trail (Southern Ute Indian Tribe 2022; NPS 2020). The designated corridor passes through several sections of the Old Spanish NHT (BLM 2022c). Cultural and visual resources may be impacted in this area. More information on potential areas of viewshed concerns can be found in Section 5.6.18 on Visual Resources.

Tribes have previously been interested in working with BLM to collect flat rock – volcanic decorative rock occurring in relatively thin (often less than an inch) layers in northeast California – that has commonly been used by some southeastern Tribes in sacred ceremonies and practices (BLM 2007d). There have also been previous Tribal interests in preservation of pinyon, juniper, and sage-grouse habitats that are present within the decision area (see Section 5.6.4.4) (BLM 2007d; BLM 2015b; BLM 2020). Pinyon pine nuts are a traditional food source for several Native American groups and is considered an important resource in traditional ceremonies and festivals (BLM 2008a).

Not all Tribal cultural practices involving natural and cultural resources of religious and cultural importance are known. Tribes have a deep understanding and history with the land that has been passed down through generations that cannot be properly identified by archaeological fieldwork alone. Therefore, formal government-to-government consultation concerning future projects and resource management remains the best means for identifying and addressing Tribal land use concerns and interests.

Trends and Forecasts

Tribes have previously expressed interest in implementing a new IOP for Tribal concerns that includes a component to conduct ethnographic studies that would increase understanding of significant resources of concern to Tribes. The existing IOP from the 2009 WWEC PEIS ROD focused only on identifying sacred sites, sacred landscapes, gathering grounds, and burial areas, along with avoiding, minimizing, or mitigating impacts on these places through project proponents, consultation with Tribes, and relevant parties (BLM 2022d).

5.6.18 Visual Resources

General information for visual resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.18.

Current Conditions and Context

The Regional Review Recommendation includes a corridor braid along the recently authorized TransWest Transmission Project authorized ROW in eastern Nevada and an east-west connector, connecting the designated corridor and the TransWest Express authorized ROW near MP 30. The area is characteristic of the mid- to high-elevation areas of the western U.S., with rolling hills and broad valleys. The vegetation has a contrasting pattern of pinyon-juniper forests intermixed with sagebrush and grasses. This type of landscape allows for long viewing distances (BLM 2008a). In Utah, the Beaver Dam Wash is a dominant topographic feature of the landscape, and wide panoramic views can be seen from most hilltops (BLM 2015a). Table 5.6-18 lists the key features for visual resources and Figure 5.6-10 depicts VRM classes in the vicinity of the decision area.

Table 5.6-18. Key Features in the Vicinity of the Decision Area

Key Feature	State	Agency	Physical Attributes (Land Form, Water, Vegetation, Structures	Viewer Groups and Experiences	BLM VRM Class Designation
Mormon Mountains Wilderness	Nevada	BLM	Mountain ranges and canyons	Sensitive cultural resources for Native Americans	Class I
Clover Mountains Wilderness	Nevada	BLM	Volcanic peaks with canyons, cliffs and rock outcrops	Recreation enthusiasts enjoy hiking, horseback riding, camping, climbing and rock scrambling	Class I
Area next to Doc's Pass in Nevada and south of Tunnel Spring	Nevada	BLM	Mountainous area adjacent to Tunnel Spring Wilderness. Black Mountain and Pine Mountain reach elevations of 6,500 ft.	Backcountry visitors for scenic vistas and rugged wilderness and opportunities for solitude.	Class II
Tunnel Spring Wilderness	Nevada	BLM	Steep mountains with canyons and long ridges. Volcanic rocks with pinyon juniper and sagebrush.	Rugged wilderness for hiking and opportunities for solitude.	Class I
Beaver Dam Wash Wild and Scenic Study River	Utah	BLM	Perennial stream	Stream channel is important for migratory birds and wildlife	Class III
Doc's Pass Wilderness	Utah	BLM	Rugged terrain with steep sided canyons and mountain peaks	Backcountry visitors for scenic vistas and opportunities for backpacking, horseback riding, and primitive camping	Class III
Red Mountain Wilderness	Utah	BLM	Sandstone outcrops	Hikers and backpackers enjoy scenic vistas	Class II
Old Spanish Historic Trail	Utah (and other states)	NPS			NA
Beaver Dam Wash NCA	Utah	BLM	Transition zone between Mojave Desert and the Great Basin	Undeveloped recreation and motor vehicles are restricted	Class III

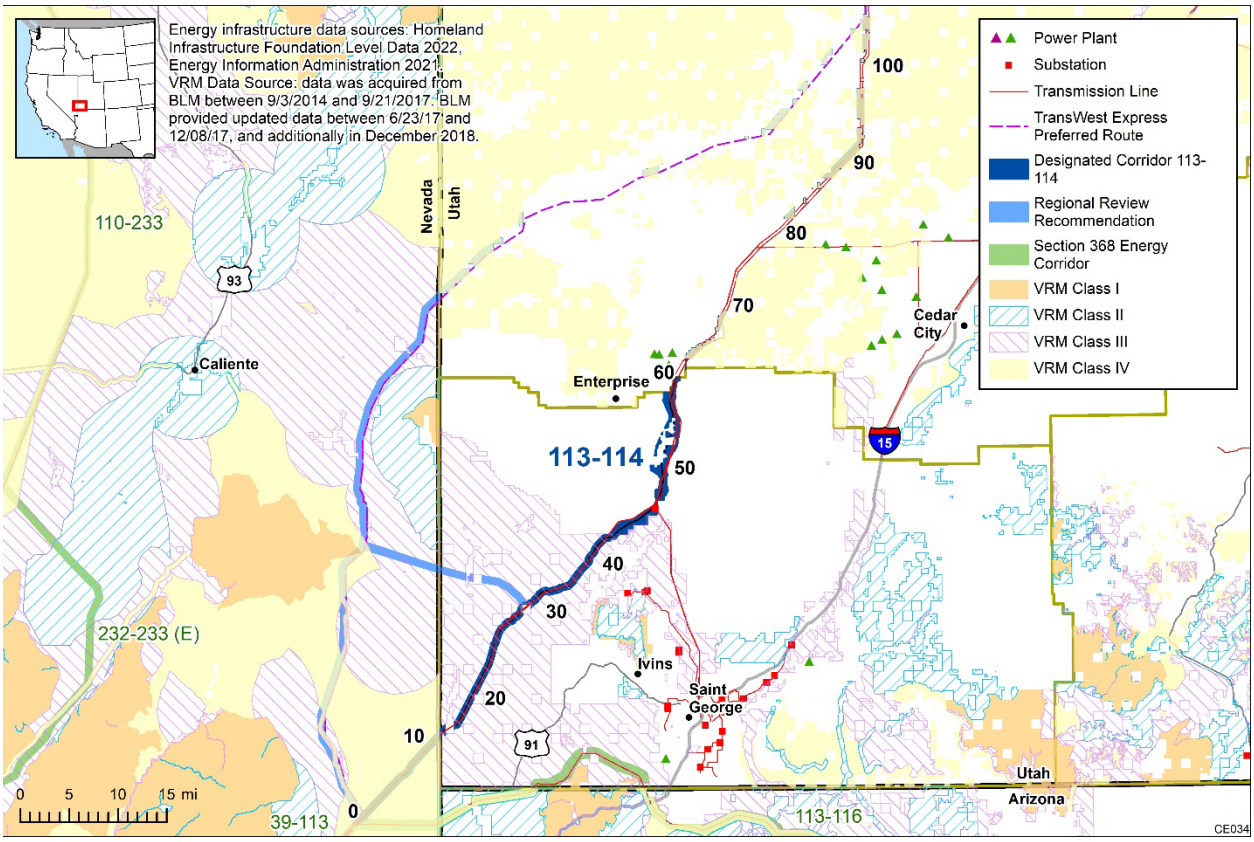

Figure 5.6-10. VRM Classes in the Vicinity of the Decision Area

The Regional Review Recommendation (TransWest Express Transmission Project authorized ROW) is located approximately 4 mi away from the Mormon Mountains Wilderness Area at its south end. This region contains mountain ranges topped with old growth ponderosa pine and canyons (Friends of Nevada Wilderness, n.d.a).

As it runs north, the Regional Review Recommendation is adjacent to a small portion of Clover Mountains Wilderness, and the corridor braid will connect very close to this area. An area of VRM Class II is directly north, and north of it is Tunnel Spring (VRM Class I). Tunnel Spring is approximately 12 mi away from the east-west corridor connector, but less than 4 mi away from the TransWest Transmission Project authorized ROW. This is the head of the Beaver Dam Wash and contains steep mountains with canyons and long ridges. Volcanic rocks with pinyon-juniper and sagebrush dominate the landscape. Tunnel Spring Wilderness is also on the flight path for military aircraft from Nellis Air Force Base, and subsonic flights occur as low as 100 ft above ground level several times per week. It is a rugged area for hiking and solitude (Friends of Nevada Wilderness. n.d. b).

Sawmill Mountain is located in the eastern portion of Clover Mountain Wilderness and has an elevation of 7,621 ft (Wilderness Connect n.d.) The area is described as very scenic, with volcanic peaks, canyons, cliffs, and rock outcrops. It is very attractive for hiking, horseback riding, camping, climbing and rock scrambling (Friends of Nevada Wilderness n.d. c).

Tunnel Spring connects to Doc's Pass Wilderness in Utah, where the Beaver Dam Wash is a perennial stream in its upper reaches and is a Wild and Scenic Study River. It runs approximately north-south within Doc's Pass Wilderness and will intersect with the Regional Review Recommendation along TransWest Express authorized ROW. This river is important for migratory birds and wildlife (BLM n.d. a). The area where the river will intersect the corridor has no designation and is part of the off-highway vehicle open area. Doc's Pass Wilderness contains rugged terrain with steep-sided canyons and mountain peaks and provides backcountry visitors with scenic vistas and opportunities for backpacking, horseback riding, and primitive camping (BLM, n.d. b).

In Utah, the area around the corridor braid is an off-highway vehicle open area.

Red Mountain Wilderness has dramatic sandstone outcrops and hikers and backpackers enjoy panoramic vistas of the spires and mesas of Zion National Park to the east, the Virgin River Gorge to the south, and the high peaks of the Beaver Dam Mountains on the west (BLM. n.d. c).

The Old Spanish National Historic Trail is located approximately 6 mi east of MP 30 of the designated corridor, where the east-west corridor connector is located.

The Beaver Wash NCA is an ecological transition zone between the Mojave Desert and the Great Basin. Joshua trees cover the slopes of the Beaver Dam Mountains. At present, there are no developed recreation facilities in the NCA, and Congress has restricted all motorized vehicle travel (BLM n.d. a).

Trends and Forecasts

An increase in population growth within and adjacent to the decision area, particularly in Nevada, has led to concerns over preserving the viewsheds around the communities. A desire to preserve viewsheds along historic trails also has been expressed. Additionally, scenery is a draw to tourism and backcountry recreation, which has led to increased concerns over preserving visual resources (BLM 2008a).

This is an area under pressure for development. Developers are proposing building a city in the Coyote Springs Valley in Nevada, southwest of the decision area. It could bring 150,000 residents, putting additional visitor pressure on the wilderness areas of the Mormon Mountains region (Friends of Nevada Wilderness, n.d.a).

5.6.18.1 Night Sky

The Beaver Wash NCA is near the designated corridor. Starry night skies and natural darkness are important components of National Conservation Lands. The Beaver Dam Mountains provide an effective screen for the light pollution produced by the greater St. George metropolitan area, giving this area spectacular night skies. While some ambient light filters in from Mesquite, Nevada, just over 20 mi away, the night skies are particularly stunning in mid-winter when dust and haze are minimal (BLM 2015a).

Night sky can be impacted by required utility lighting. The FAA Advisory Circular 70/7460-1K (2007) requires that all airspace obstructions higher than 200 ft or close to

an airfield have appropriate lighting. Some transmission towers will require obstruction warning lighting, and lights may be placed at higher elevations if blocked by trees or terrain. For very tall towers, this includes daytime strobe lighting as well as nighttime lighting (FAA 2007).

5.7 Corridor 138-143/Wamsutter-Powder Rim Addition

Corridor 138-143/ Wamsutter-Powder Rim

Designated Corridor:
Section 368 Energy Corridor 138-143 as designated in the 2009 ARMPA/ROD for Designation of Energy Corridors on BLM-administered Lands in the 11 Western States (BLM 2009)

Regional Review Recommendation:
Remove the corridor designation for Corridor 138-143 and designate a new Section 368 energy corridor.

Decision Area:
- The BLM-administered lands within the entire length of the designated energy corridor
- The TransWest Express route where it connects to Corridor 73-138 (MP 15) to where it meets Corridor 126-133 (MP 45)

Planning Area:
The BLM-administered lands managed under the Little Snake RMP and the Rawlins RMP, and lands under other administration within the vicinity of the decision area

Corridor 138-143 is located within the BLM Colorado Little Snake Field Office and the BLM Wyoming Rawlins Field Office (Table 5.7-1). The designated corridor is a 68 mi corridor that provides a north-south pathway for energy transport from Wyoming into Colorado. The corridor connects to other Section 368 energy corridors, creating a continuous corridor network across BLM- and Forest Service-administered lands. The designated corridor contains existing infrastructure (pipelines and Highway 789), has a 3,500 ft width and is designated multi-modal to accommodate both transmission lines and pipeline infrastructure.

The regional review recommended removing the corridor designation for Corridor 138-143 and designating a new Section 368 energy corridor (BLM, Forest Service, and DOE 2022). The Wamsutter-Powder Rim Corridor Addition would follow a locally designated corridor (designated in the TransWest Express Transmission Line Project ROD) along the authorized TransWest Express Transmission Project authorized ROW and would be designated as electric-only. The recommended new corridor would begin at Corridor 73-138 (MP 15) and run south along the approved TransWest Express Transmission Project authorized ROW. The regional review concluded that the recently authorized TransWest Express Transmission Project ROW route is a preferable pathway for future potential energy development, rather than Corridor 138-143, since it would be collocated with planned energy infrastructure.

The decision area (that is, the actual parcels under BLM management that could be affected by the change in corridor designation) for Corridor 138-143/Wamsutter-Powder Rim Corridor Addition is depicted in Figure 5.7-1 and includes:

- the BLM-administered lands within the entire length of the designated energy corridor; and
- the BLM-administered lands that follow the TransWest Express route from where it connects to Corridor 73-138 (MP 15) to where it meets Corridor 126-133 (MP 45).

The planning area (that is, the wider area that could be impacted by a change in the corridor designation, including both BLM-managed lands and lands under other administration) includes the BLM-administered lands managed under the Little Snake RMP and Rawlins RMP (Figure 5.7-1).

Table 5.7-1. BLM Administration Boundaries for Corridor 138-143 Decision Area

State	District/Field Office	Milepost (MP)
Wyoming	BLM Wyoming, Rawlins Field Office	MP 0 to MP 49
Colorado	BLM Colorado, Little Snake Field Office	MP 50 to MP 68

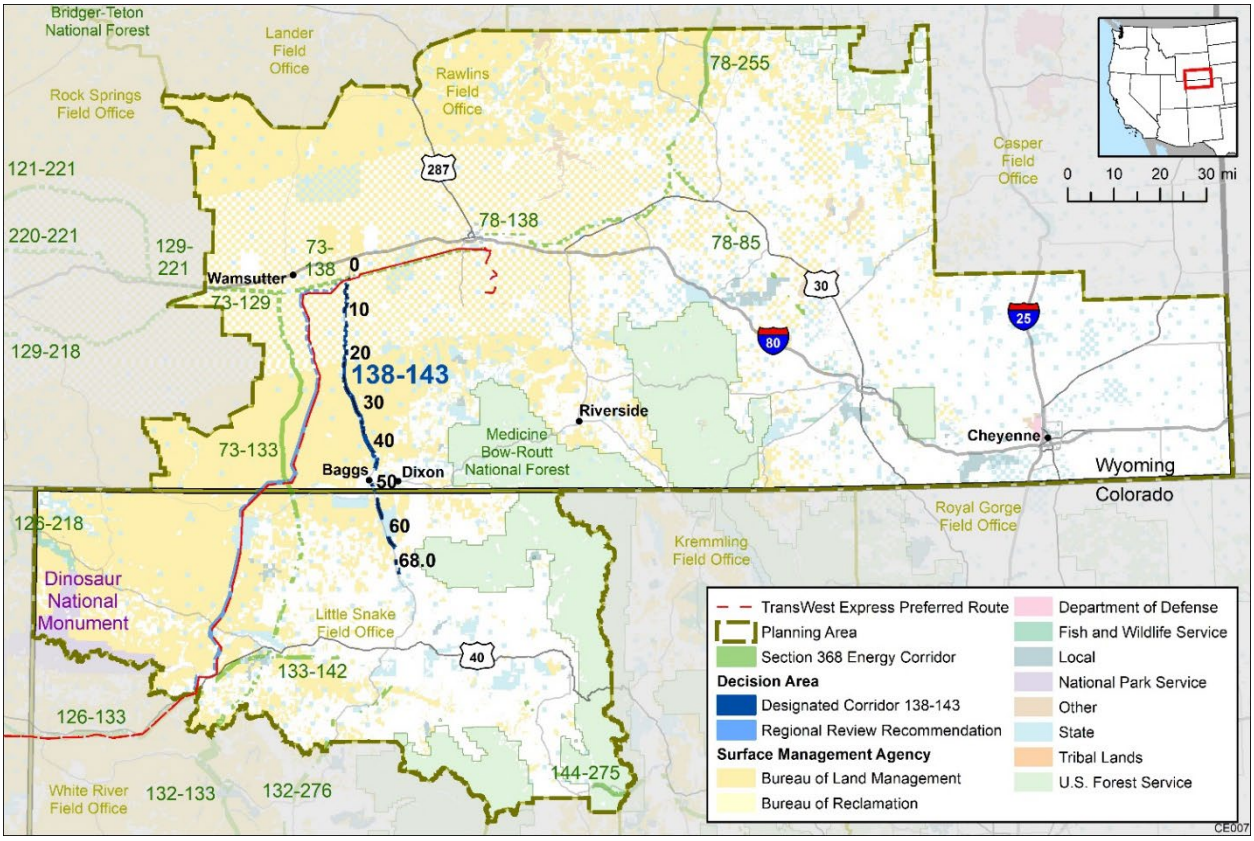

Figure 5.7-1. Corridor 138-143/Wamsutter-Powder Rim Addition Planning Area

Key Findings

Table 5.7-2 highlights the potentially affected resources that warrant analysis and summarizes the most important conclusions drawn from each of the Area Profile resource sections within the Corridor 138-143/Wamsutter-Powder Rim Addition decision area. In general, these resources could be impacted by removing the designation of Corridor 138-143 and replacing it with the proposed Wamsutter-Powder Rim corridor resulting from this planning effort.

Table 5.7-2. Key Findings for Corridor 138-143/Wamsutter-Powder Rim Addition Decision Area

Resource	Key Finding
Air Quality	Federal Class I areas within a range of 100 km (62 mi)[28] of corridor 138-143/Wamsutter-Powder Rim Addition include, in order of distance from the corridor, Mount Zirkel Wilderness and Flat Tops Wilderness. There are no Tribal Class I areas within 100 km (62 mi) of the decision area. The decision area is in classified unclassified/attainment areas for all criteria pollutants. In general, ambient air quality around the corridor is good. Based on 2019–2021 data, NO_2 $PM_{10,}$ $PM_{2.5}$, and SO_2 concentrations were well below the standards. O_3 concentrations have approached just below the standard in Wyoming, and three exceedances were recorded in Colorado in 2020. Monitoring data show a decreasing trend in AQRVs at Mount Zirkel Wilderness Area and at Flat Tops Wilderness Area, except for a slightly increasing trend for visibility at Flat Tops Wilderness Area, over the period from 2012 to 2020.
Climate	Wide variations in elevation and topographic features within the decision area have an impact on wind patterns, temperatures, precipitations, and other meteorological parameters. Except for one location, both precipitation and snowfall tend to decrease with increasing elevation. Temperatures in Colorado have remained consistently higher than the long-term (1895–2020) average since 1998, while those in Wyoming have been above the long-term average nearly every year of this century.
Cultural Resources	The Overland Trail and Cherokee Trail intersect the designated corridor and Wamsutter-Powder Rim Corridor Addition. Cultural resources spanning from 12,000 BP to AD 1906 have been identified within the proximity of the decision area.
Ecology	
Vegetation	The decision area is within the Wyoming Basin Ecoregion and the Colorado River watershed. Vegetation communities are primarily sagebrush steppe.
Invasive Species	Invasive tamarisk is spreading in the vicinity of the corridor, and invasive cheatgrass threatens sagebrush steppe. Invasive invertebrates like New Zealand mudsnail and Asian clam, and plants like curly pondweed, are present in aquatic habitats.
Fire and Fuels	Lightning is the primary natural cause of wildland fire in the Rawlins and Little Snake RMP Planning Areas, although fires started by humans also occur.
Terrestrial Wildlife	Black bear, Mule deer, pronghorn antelope, Rocky Mountain elk, and mountain lion ranges are within the decision area, as well as upland game birds and waterfowl. The decision area is within the Pacific Flyway, one of the four major North American migration flyways.
Fish and Aquatic Species	Aquatic habitat in the region includes lakes, rivers, reservoirs, streams, creeks, and springs. These permanent (as well as intermittent) surface water features provide year-round habitat for aquatic communities; some are native and some were introduced for sportfishing. Regional aquatic surveys indicated that perennial aquatic habitat was healthy, but there was lower-quality riparian habitat as indicated by stream bank erosion and poor vegetation cover due to livestock destabilizing stream banks.
Special Status Species	The decision area intersects PHMAs and GHMAs for the Greater Sage-Grouse.
Environmental Justice	The minority population in the 2 mi buffer does not exceed 50% and is not meaningfully greater than the countywide averages. The number of persons at or below the Federal poverty rate within the buffer exceeds countywide levels in Carbon County and Sweetwater County, but does not exceed 50% in any of the counties.

[28] EPA has noted that a 100 km (62 mi) range is generally acceptable for AQRVs impact modeling, but impacts from large sources located at greater distances need to be considered when such impacts reasonably could affect the outcome of a Class I analysis (EPA 2013). Given the magnitude and schedule of the project along the corridor, these emissions are relatively small, and their release heights are at ground- or near-ground level, so potential impacts likely would be limited locally.

Resource	Key Finding
Geology, Soils, and Minerals	The decision area is located in rugged, mountainous terrain of mixed lithologies and several alluvial plains. Oil and gas drilling operations are prevalent along both corridors, especially in their northern areas.
Human Health and Safety	The largest hazard identified for the decision area is the risk of landslides.
Hydrology	Water resources in the region are limited. There are numerous ephemeral washes and several perennial streams, several springs, an unnamed playa, and an ephemeral lake. There are Colorado Plateau sandstone aquifers and alluvial basin-fill aquifers within the decision area, and an area of irrigated agriculture is nearby.
Lands and Realty	Currently, the 138-143 designated corridor follows highways and is partially collocated with or intersected by pipelines. The Regional Review Recommendation (Wamsutter-Powder Rim Corridor Addition) would be collocated with a pipeline and would be intersected by several pipelines. It would be collocated with the TransWest Express transmission line. The potential for wind and solar resources is somewhat limited within the decision area; however, the corridor could provide a pathway for electrical transmission for renewable energy projects developed elsewhere in Colorado and Wyoming. No MTRs are located within the decision area.
Lands with Wilderness Characteristics	There are no lands with wilderness characteristics designations within the decision area, but lands with wilderness character have been identified in the vicinity.
Livestock Grazing and Wild Horse and Burro	
Livestock Grazing	There are 30 grazing allotments within the designated corridor and 23 grazing allotments within the Wamsutter-Powder Rim Addition. The decision area overlaps between 0.12% and 45% of the allotment.
Wild Horse and Burro	The Adobe Town HMA intersects the decision area. The maximum AML for the HMA is 800 wild horses, and the 2023 population estimate is 1,693 wild horses.
Noise	Based on the population density, the day-night average sound level (Ldn or DNL) is estimated to be 25 dBA for Carbon County in Wyoming, 28 dBA for Sweetwater County in Wyoming, and 26 dBA for Moffat County in Colorado, all which correspond to wilderness-area sound level.
Paleontology	The PFYC Classes within the decision area along both the designated corridor and the Wamsutter-Powder Rim corridor addition have been identified almost entirely as PFYC Class 5 (very high).
Recreation	Dispersed recreation within the decision area includes hiking, biking, horseback riding, climbing, big game hunting, and camping, particularly within the Four Trails Feasibility Study Trail. The decision area is designated as limited or open OHV access.
Socioeconomics	In 2020, the population of the three-county ROI (Moffat County, Colorado, and Carbon and Sweetwater Counties in Wyoming) was 70,101 people and median income ranged from $54,583 for Moffat County to $73,384 for Sweetwater County. The unemployment rate ranged from 3.9% for Carbon County to 5.6% for Sweetwater County, with the largest share of workers (in all three counties) employed in service industries (41.7%).
Special Designations	The decision area is intersected by two portions of the Four Trails Feasibility Study (National Study Trails).
Tribal Interests	BLM has identified 18 Federally recognized Tribes with cultural affiliation and an interest in the Corridor 138-143/Wamsutter-Powder Rim decision area. The Cedar Ridge Complex has been documented as an important Traditional Cultural Property and continues to be a sacred place for Tribes. The mountain that carried water to the Medicine Bow River, known as the Medicine Bow Mountain, is a place of cultural significance to Tribes.
Visual Resources	The decision area intersects or is in close proximity to the following VRM Class I area: Cross Mountain WSA.

5.7.1 Air Quality

General information for air quality resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.1.

Current Conditions and Context

National parks and wilderness areas designated as mandatory Federal Class I areas under the CAA, as well as other areas re-designated as Class I at the request of a state or Indian Tribe, have special air quality protections under federal law. Federal Class I areas within a range of 100 km (62 mi) of the Corridor 138-143 decision area include, in order of distance from the corridor: Mount Zirkel Wilderness Area and Flat Tops Wilderness Area. There are no Tribal Class I areas in the 100 km (62 mi) range.

Each state can have its own SAAQS. The Wyoming Department of Environmental Quality (WDEQ) has established Wyoming Ambient Air Quality Standards (WAAQS) (WDEQ 2022). The WAAQS include the same six criteria pollutants as in the NAAQS, but differs in two respects from the NAAQS: the WAAQS still maintain an annual PM_{10} standard of 50 µg/m^3, which the EPA revoked in 2006, and does not have a 3-hr (secondary) SO_2 standard of 0.5 ppm. The Colorado Department of Public Health and Environment (CDPHE) has more stringent SAAQS than the NAAQS for 3-hr SO_2 (CDPHE 2021).

The WDEQ and CDPHE are responsible for monitoring ambient air quality and for ensuring that ambient air quality levels are maintained in accordance with federal and state standards. Unlike the EPA, whose designations are based on the NAAQS, the WDEQ and CDPHE do not designate areas as attainment or nonattainment based on the SAAQS. Ambient air quality monitoring refers to collecting and measuring samples of ambient air to evaluate the status of air pollutants in the atmosphere as compared to clean air standards and historical information.

The Corridor 138-143/Wamsutter-Powder Rim decision area is located in Carbon and Sweetwater Counties in Wyoming and in Moffat County in Colorado, which are unclassified/attainment areas for all criteria pollutants, except for a part of Sweetwater County in nonattainment for 8-hr O_3 (EPA 2022a). The nonattainment area is limited to the Upper Green River Basin Area, where wintertime high ozone phenomena were first identified, and is located about 70 mi (113 km) northwest of the designated corridor. In addition, all counties encompassing Mount Zirkel Wilderness Area and Flat Tops Wilderness Area are designated as unclassified/attainment areas for all criteria pollutants (EPA 2022a).

In Wyoming, air monitoring stations are located in Carbon County for NO_2, and in Sweetwater County for NO_2, O_3, PM_{10}, $PM_{2.5}$, and SO_2. The nearest air monitoring station to the designated corridor is Wamsutter in Sweetwater County, where NO_2, O_3, and PM_{10} have been collected. In general, ambient air quality around the corridor is good. Based on 2019-2021 data, both NO_2 and PM_{10} concentrations were well below the standards, while O_3 concentrations have approached just below the standard. In addition, $PM_{2.5}$ concentrations are far lower than the standards at Rock Springs in Sweetwater County, which is about 60 mi (97 km) west of Wamsutter. Concentrations of SO_2 are also well

below the standards at Sinclair in Carbon County, Wyoming, which is about 45 mi (72 km) east of Wamsutter. Although there are no air monitoring stations in Moffat County, Colorado (EPA 2022b), the White River Field Office has two BLM-sponsored air quality monitors located at Rangely (Moffat County) and at Meeker (Rio Blanco County) that monitor for ozone, $PM_{2.5}$, and NO_2 (BLM 2022a). Monitored concentrations for both $PM_{2.5}$ and NO_2 are well below their respective standards, while ozone concentrations averaged over the three years approached the standard, but there were three exceedances recorded in 2020.

AQRVs data, such as visibility and acid depositions (both dry and wet), have been monitored at Mount Zirkel Wilderness Area and Flat Tops Wilderness Area, or at nearby stations (EPA 2023). In general, monitoring data show a decreasing trend in AQRVs, except for a slightly increasing trend for visibility at Flat Tops Wilderness Area over the period from 2012 to 2020.

Trends and Forecasts

This section uses available air monitoring data between 2012 and 2021 and "design values"[29] for NO_2, O_3, and PM_{10} at Wamsutter, Sweetwater County, $PM_{2.5}$ at Rock Springs, Sweetwater County, and SO_2 at Sinclair, Carbon County (EPA 2022b). For all pollutants, design values vary from year to year but tend to decrease over time in most cases. During the ten-year period, the 1-hr NO_2 concentrations have never exceeded the standard, while daily PM_{10} and $PM_{2.5}$ concentrations have recorded one and two exceedances of the standard, respectively. For 8-hr ozone, four exceedances were observed between 2019 and 2022. For 1-hr SO_2, 19 exceedances have been recorded, 16 of which occurred between 2012 and 2014. These exceedances result mostly from operations of a refinery in Sinclair, which is located downwind of the designated corridor and thus does not represent the area around the corridor.

The decision area extends across an area that is largely undeveloped, sparsely populated, and remote. New activities in the area that could trigger air pollution issues are not yet identified. Even if they occur in the near future, their emissions would be controlled under the permits designed to ensure that those emissions are consistent with applicable regulations, along with mitigation measures.

Air quality in the decision area would be degraded by wildland fires (including prescribed burning) and/or by windblown dust that mostly occurs in upwind areas.

5.7.2 Climate

General information for climate that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.2.

[29] "Design values" are the statistic used to compare ambient air monitoring data against the NAAQS to determine designations for each NAAQS.

Current Conditions and Context

Wide variations in elevation and topographic features within the decision area have an impact on wind patterns, temperatures, precipitations, and other meteorological parameters. The local climate is strongly influenced by microclimatic features such as slope, aspect, and elevation. The prevailing wind direction aloft over the region is from the west (the westerlies), as it is in most of the U.S.; however, complex terrains in the area are responsible for deflecting these winds. Accordingly, wind patterns are sometimes dissimilar even over short distances.

The decision area is on a high plain, over 6,000 ft (1,829 m) in elevation. Since the mountain ranges to the west lie in a north-south direction, they are perpendicular to the prevailing westerlies; therefore, the mountain ranges provide effective barriers that force air currents moving in from the Pacific Ocean to rise and then to drop much of their moisture along the western slopes. The decision area is considered semi-arid east of the mountain ranges (WRCC 2022a).

Per Köppen climate classification, the northern portion of the decision area has a cold semi-arid climate with warm summers, cold, snowy winters, low precipitation, and low humidity. In contrast, the southern portion has a humid continental climate, which is characterized by warm to hot summers, cold winters, light precipitation, and low humidity.

There are several meteorological stations in the immediate vicinity of the designated corridor; therefore, meteorological data at stations closely representing the decision area in terms of proximity and topography are presented here.

Wind: Average wind speeds ranged from about 5.3 mph (2.4 m/s) at Craig-Moffat Airport to 12.3 mph (5.5 m/s) at Rawlins Municipal Airport (NCEI 2022a). Because the area is on a wide-open plain and far from mountain ranges to the west, westerly winds (including winds from southwest to northwest) predominate in the area, except at the Dixon Airport, where winds are strongly affected by nearby valleys. Wind speeds categorized as calm (less than 1 mph [0.5 m/s]) occurred more frequently, ranging from about 11% to 39% of the time, because of the stable conditions caused by strong radiative cooling in the semi-arid environment.

Temperature: Historical annual average temperatures in the decision area range from 41.6°F (5.3°C) to 43.0°F (6.1°C), as shown in Table 5.7-3 (WRCC 2022b). Monthly average temperature extremes range from a low of 1.8°F (-16.8°C) to a high of 87.1°F (30.6°C). January was the coldest month, and July was the warmest month. Each year, about 9 to 19 days had a maximum temperature of ≥90°F (32.2°C), while about 200 to 225 days had minimum temperatures at or below freezing (32°F [0°C]), with about 23 to 41 days below 0°F (-17.8°C).

Precipitation: The interior, continental location, ringed by mountains on all sides, results in quite low precipitation in all seasons. Historical annual precipitation ranged from 7.09 in (18.0 cm) to 16.12 in (40.9 cm), as shown in Table 5.7-3 (WRCC 2022b). At meteorological stations in Wyoming, precipitation is most frequent either in summer

(33%) at Wamsutter or in fall (31%) at Baggs, and least frequent in winter (ranging 12–14%). At stations in Colorado, precipitation is relatively uniformly distributed by season, although it is possible to identify the highest and lowest precipitation seasons. Annual average snowfall ranged from about 27.3 in (69.3 cm) to about 74.3 in (188.7 cm), with the snowiest month in either January, February, or December. In the area, the snowy period of the year lasts for about eight months, from October to May. Note that Craig has more than twice as much rainfall and snowfall than Wamsutter at the higher elevation. It is interesting to note that both precipitation and snowfall tend to decrease with increasing elevation, making Craig an exception.

Table 5.7-3. Temperature and Precipitation Summaries at Selected Stations in the Vicinity of the Decision Area [a]

Station	Temperature						Annual Precipitation	
	Monthly Averages[b]			Number of Days with:				
	Min.	Max.	Mean	Max. ≥90°F	Min. ≤32°F	Min. ≤0°F	Water Equivalent	Snowfall
Wamsutter, Wyoming	7.2°F (−13.8°C)	84.6°F (29.2°C)	41.6°F (5.3°C)	9.4	212.8	25.9	7.09 in. (18.0 cm)	27.3 in. (69.3 cm)
Baggs, Wyoming	5.3°F (−14.8°C)	86.2°F (30.1°C)	42.8°F (6.0°C)	16.9	212.0	30.7	9.95 in. (25.3 cm)	38.9 in. (98.8 cm)
Craig, Colorado	6.5°F (−14.2°C)	85.0°F (29.4°C)	43.0°F (6.1°C)	12.8	200.4	23.1	16.12 in. (40.9 cm)	74.3 in. (188.7 cm)
Maybell, Colorado	1.8°F (−16.8°C)	87.1°F (30.6°C)	42.3°F (5.7°C)	19.2	225.3	40.5	12.31 in. (31.3 cm)	61.2 in. (155.4 cm)

[a] Summary data presented in the table are based on the period of record from 1897 to 2012 (Wamsutter); from 1979 to 2012 (Baggs); from 1977 to 2012 (Craig); and from 1958 to 2012 (Maybell).

[b] "Minimum Monthly Averages" denote the lowest monthly average of daily minimum during the period of record, which normally occurs in January. "Maximum Monthly Averages" denote the highest monthly average of daily maximum during the period of record, which normally occurs in July.

Source: WRCC 2022b.

Trends and Forecasts

In the last century, Colorado has warmed about 1–2°F (0.6-1.1°C), while Wyoming has warmed about 1–3°F (0.6-1.7–C). Annual average temperature has increased about 1.5–2.5°F (0.8–1.4°C) in the area, which encompasses the Corridor 138--143/Wamsutter-Powder Rim Addition (EPA 2016a, 2016b). Temperatures in both Colorado and Wyoming have risen about 2.5°F (1.4°C) since the beginning of the 20th century. Temperatures in Colorado have remained consistently higher than the long-term (1895–2020) average since 1998, while those in Wyoming have been above the long-term average nearly every year of this century. Six of the eight warmest years on record for Colorado have occurred since 2012, while the highest number of very hot days in Wyoming occurred during the 2000s and early 2010s, and 2012 was the hottest year on record (NCEI 2022b).

Evaporation increases as the atmosphere warms, resulting in greater humidity, average rainfall, and frequency of heavy rainstorms in many places—but contributing to drought in others. The changing climate likely will increase the need for water but will reduce the supply. Rising temperatures increase the rate at which water evaporates into the air

from soils and surface waters, along with transpiration from plants. But less water is likely to be available, because precipitation is unlikely to increase as much as evaporation. Soils are likely to be drier, and periods without rain are likely to become longer, making droughts more severe (EPA 2016a, 2016b). Precipitation is highly variable from location to location and from year to year. Unlike many areas of the U.S., Colorado and other southwestern states have not experienced an upward trend in the frequency of 1 in heavy precipitation events. The driest consecutive 5-year interval was 1952–1956, and the wettest was 1995–1999. In Wyoming, the frequency of 1 in heavy precipitation events has been increasing since the 2005–2009 period. The driest consecutive 5-year interval was 1931–1935, and the wettest was 1995–1999 (NCEI 2022b).

As the climate warms, less precipitation falls as snow, and more snow melts during the winter. That decreases snowpack—the amount of snow that accumulates over the winter. This snowpack melts during spring and summer, which provides water supply for cities and farms. Since the 1950s, the snowpack has declined in most of the West. In 2013, Colorado experienced the most destructive wildfire (the Black Forest Fire) and the second-largest wildfire (the West Fork Fire Complex) in the state's recorded history. On average, about 1.4% of the land in Wyoming has burned per decade since 1984. Higher temperature and drought due to global warming are likely to increase the severity, frequency, and extent of wildfires, which reduce air quality and harm human health and ecosystems (EPA 2016a, 2016b).

Over the next few decades, annual average temperature over the contiguous U.S. is projected to increase by about 2.2°F (1.2°C) relative to the period from 1986 to 2015, regardless of future scenario (USGCRP 2018). As a result, recent record-setting hot years are projected to become common in the near future. Much larger increases in Colorado and Wyoming are projected by the late twenty-first century, e.g., 4–5°F (2.2–2.8°C) under a lower scenario (RCP4.5) and ≥8°F (≥4.4°C) under a higher scenario (RCP8.5) relative to 1986–2015.[30]

In the late twenty-first century, the greatest precipitation changes are projected to occur in winter and spring, with similar geographic patterns to observed changes: increases across the Northern Great Plains, the Midwest, and the Northeast (USGCRP 2018). In Colorado and Wyoming, precipitation projections decrease in summer to fall, decrease in Colorado and increase in Wyoming in spring, but increase in winter. Note that changes in average precipitation are much more difficult for climate models to predict than temperature. Surface soil moisture over most of the U.S. is likely to decrease, accompanied by large declines in snowpack in the western U.S., and shifts

[30] For climate projections, the international scientific community developed four RCPs, i.e., RCP2.6, RCP4.5, RCP6.0, and RCP8.5, in which radiative forcing is stabilized at 2.6, 4.5, 6.0, and 8.5 W/m^2 in the year 2100, respectively. RCP4.5, called as a lower scenario, is generally associated with lower population growth, more technological innovation, and lower carbon intensity of the global energy mix, while the reverse is true for RCP8.5, called as a higher scenario.

to more winter precipitation falling as rain rather than snow, which is conducive to more wildfires.

Factors associated with ongoing global warming—namely, large wildfire frequency, fire duration, and fire season length—have increased substantially in the western U.S. in recent decades and are projected to increase, especially in the Southwest (USGCRP 2018). This is due primarily to earlier spring snowmelt and warmer temperatures that increase evaporation rates, thus reducing the moisture availability and drying out vegetation that provides fuel for fires. In addition, Colorado and Wyoming snowpack plays a critical role in water supply and flood risk. Projected earlier melting of the snowpack due to rising temperatures could have substantial negative impacts on water-dependent sectors and ecosystems (NCEI 2022b).

5.7.3 Cultural Resources

General information for cultural resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.3.

Current Conditions and Context

The TransWest Express EIS provides a detailed cultural resource impact assessment for the TransWest Express Transmission Project (WAPA and BLM 2015). Region I of the TransWest Express analysis area contains the entire decision area (the designated corridor and the Wamsutter-Powder Rim Corridor Addition).

The TransWest Express Alternative I-C route aligns with the designated corridor between MP 0 and MP 41 and again from MP 61 to MP 68. The TransWest Express Alternative I-C route coincides with portions of Highway 13 in Colorado and Highway 789 in Wyoming. The designated corridor follows both of these highways for its entire length. The TransWest Express preferred route I-B coincides with the Wamsutter-Powder Rim Corridor Addition. Only resources relating to Region I of the TransWest Express EIS are summarized here.

The analysis area for the TransWest Express affected environment encompasses a 2 mi wide area within which all available, previously conducted surveys and recorded sites were compiled for the baseline study. For the environmental consequences discussion (discussed below in Trends and Forecasts), the analysis was restricted to a 500 ft wide area of potential affects (APE) centered on each route.

Prehistoric sites within the analysis area are mainly surficial remains relating to hunter-gatherer campsites, often repeatedly used over several millennia. Other buried and stratified sites are present in the region and demonstrate a wide range of activities, such as lithic production, animal butchering, plant processing, and cooking. Other less-common sites within TransWest Express alternative corridors include rock shelters, wooden structures, rock art, burials, stone circles, cairns, and house pits.

Within the Wyoming portion of the TransWest Express analysis area, prehistoric sites span six periods of human occupation, from ca. 12,0000–300 BP, with a Protohistoric

period ca. 300–150 BP. The analysis area contains mainly Archaic and Late Prehistoric period sites, consisting of lithic scatters, open camps, stone circles, cairns, and other sites of traditional significance. Two Protohistoric sites are present, one with fur trade objects, including gun parts, horse tack, jewelry, glass beads, and metal projectile points.

The Northern Colorado River Basin is characterized by human presence from Clovis hunter-gatherers to European occupation spanning 13,500–130 BP. Of the previously recorded sites within the analysis area, five have produced diagnostic artifacts, bone beds, and projectile points dating to before 7500 BP. Archaic period sites include open camps and lithic processing sites that form the majority of Formative-era representation. Also present are architectural remains, rock art, and artifact scatters. Four Protohistoric sites are present within the analysis area and include open camps, sheltered camps, rock art, a burial, and lithic scatters.

Historic resources within the Wyoming portion of the TransWest Express analysis area include railroad construction camps, roads, trails, homesteads, mining sites, and trash dumps. Two historic trails cross the designated corridor at MP 15 and MP 32: The Overland Trail and the Cherokee Trail, respectively. These two trails also cross the Wamsutter-Powder Rim Corridor Addition; the Cherokee Trail crosses just west of the Sweetwater and Carbon Counties border, and the Overland Trail crosses approximately 40 mi north, within Carbon County. Both of these trails were under review for inclusion in the NHT system at the time of the TransWest Express EIS (2015). The Rawlins-Baggs Stage Road, which is eligible for listing on the National Register, crosses the designated corridor at approximately the same location as the Cherokee Trail.

Historic site types common to the Colorado portion of the TransWest Express analysis area include railroad construction camps and alignments, roads, trails, trash dumps, and transmission lines. GLO maps indicate numerous other roads, ranches, houses, railroads, trails, irrigation ditches, telephone lines, mining operations, pipelines, and fences. Most of these are near the towns of Craig and Hayden, outside the decision area. A number of significant historic roads, constructed between 1877 and 1906 and facilitating transportation between Colorado and Wyoming, are present in the analysis area (WAPA and BLM 2015).

Tables 5.7-4 and 5.7-5 below summarize known sites and their National Register evaluation status, within the TransWest Express analysis area and the APE respectively. For the purpose of this planning effort, only Region I (Wyoming-Colorado) is relevant. A Class III report for the Ten West Transmission line includes newly recorded sites that increase the number of known historic properties compared to the data provided in the Class I survey. As construction of the TransWest Express transmission line continues, it is expected that additional historic properties will be discovered and recorded.

Table 5.7-4. Site Types and National Register Status by Region and State within the TransWest Express Analysis Area

State	Summary of Site Types					Summary of National Register Status			
	Prehistoric Sites	Historic Sites	Multi-component Sites	Potential TCPs	No Information	Listed	Eligible for Listing	Not Eligible	Unevaluated
Region 1									
Wyoming	1,455	122	145	14	91	2	447	858	506
Colorado	408	44	26	7	5	0	59	321	103
Region II									
Colorado	693	213	41	49	27	2	73	693	206
Utah	1,399	695	103	144	53	2	773	1,059	416
Region III									
Utah	530	27	18	27	22	1	284	235	78
Nevada	763	103	20	188	122	0	150	563	295
Region IV									
Nevada	231	118	17	117	11	7	88	205	77

Source: WAPA and BLM 2015

Table 5.7-5. Site Types and National Register Status by Region and State within the APE

State	Summary of Site Types					Summary of National Register Status			
	Prehistoric Sites	Historic Sites	Multi-component Sites	Potential TCPs	No Information	Listed	Eligible for Listing	Not Eligible	Unevaluated
Region 1									
Wyoming	119	38	26	4	20	0	86	70	47
Colorado	66	6	12	3	0	0	14	52	18
Region II									
Colorado	146	70	10	8	4	2	36	146	46
Utah	185	146	19	15	17	0	149	164	54
Region III									
Utah	153	12	6	0	7	0	130	39	9
Nevada	145	30	4	32	25	0	39	116	49
Region IV									
Nevada	50	63	4	35	1	3	45	45	25

Source: WAPA and BLM 2015

Trends and Forecasts

Impacts affecting the physical or visual integrity of cultural resources in the TransWest Express APE are described in detail by terminals and design options in the TransWest Express EIS but are limited here to impacts common to all alternative routes and associated components. These are directly relevant to the decision area, as development under the TransWest Express ROD has been analyzed regardless of the outcome for energy corridor designation in this area.

Ground-disturbing activities have the potential to physically impact the integrity of known and unknown sites, as well as TCPs and other traditional places and materials.

Increased OHV usage, e.g., as a result of access road construction, has the potential to increase sediment destabilization where sites exist, as well as the potential for increased looting, vandalism, and artifact collecting.

Visual impacts on resources where visual setting is significant may occur where transmission line elements are introduced to the area where such resources exist. National Register guidelines define site integrity to include the ability of the resource to convey significance within its environment. The types of sites most sensitive to visual impacts include National Historic Monuments, Districts, Landmarks, Trails, and TCPs. Within Region I of the TransWest Express project, the Overland Trail, Cherokee Trail, and Rawlins-Baggs Stage Road are of primary concern for this type of impact.

Potential displacement or destruction of unanticipated cultural resources during construction is possible within the APE. Partial or complete loss of cultural materials would limit research potential and data extraction for that resource.

Increased access to sensitive areas resulting from access road presence has the potential to increase inadvertent damage to sites, artifact collecting, and vandalism.

Table 5.7-6 summarizes impacts for cultural resources in Region I. Alternatives I-B and I-C are pertinent to the designated corridor, although as noted above, Alternative I-C only partially aligns with the designated corridor. Preferred Alternative I-B coincides with the Wamsutter-Powder Rim Corridor Addition for its entire length.

Table 5.7-6. Summary of Region I Alternative Route Impacts for Cultural Resources

Parameter		Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Site Type	Prehistoric	38	40	54	53
	Historic	9	9	15	11
	Multi-component	6	7	13	12
	Potential TCPs	2	2	1	2
	No Information	5	5	7	3
Site Totals		60	63	90	81
Historic Trails/Roads Crossed and Visibility	Cherokee Trail	1 non-contributing segment crossed; visibility of the alternative-24 mi	1 non-contributing segment crossed; visibility of the alternative-27 mi	1 contributing segment crossed; visibility of the alternative-10 mi	3 non-contributing segments crossed; visibility of the alternative-29 mi
	Overland Trail	1 non-contributing segment crossed; visibility of the alternative-9 mi	1 non-contributing segment crossed; visibility of the alternative-9 mi	1 contributing segment crossed; visibility of the alternative-8 mi	1 contributing segment crossed; visibility of the alternative-8 mi
	Lincoln Highway	No segments crossed; visibility of the alternative-65 mi	No segments crossed; visibility of the alternative-65 mi	No segments crossed; visibility of the alternative-64 mi	No segments crossed; visibility of the alternative-65 mi
	Rawlins to Baggs Road	1 segment crossed	1 segment crossed	3 segments crossed	1 segment crossed

Parameter		Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
		(unknown if contributing); visibility of the alternative-5 mi	(unknown if contributing); visibility of the alternative-5 mi	(1 contributing; 2 unknown if contributing); visibility of the alternative-29 mi	(unknown if contributing); visibility of the alternative-9 mi
Approximate APE Percent Inventory Coverage		14%	14%	9%	14%
Average Site Density		4 sites per 100 ac inventoried	5 sites per 100 ac inventoried	9 sites per 100 ac inventoried	6 sites per 100 ac inventoried
Initial Disturbance		2,072 ac	2,101 ac	2,484 ac	2,212 ac
Miles of Transmission Line and Access Roads		156 mi; 201 mi	158 mi; 204 mi	186 mi; 237 mi	168 mi; 213 mi
National Register Status	Listed	0	0	0	0
	Eligible for Listing	19	20	34	27
	Not Eligible	26	28	32	36
	Unevaluated	13	13	23	16

Source: WAPA and BLM 2015

5.7.4 Ecology

General information for ecological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.4.

5.7.4.1 Vegetation and Fire

Current Conditions and Context

The Corridor 138-143/Wamsutter-Powder Rim decision area is located in the Wyoming Basin Ecoregion in the Colorado River watershed (Carr et al. 2017). Dominant vegetation communities in the jurisdiction of the Rawlins Field Office and the Little Snake Field Office include desert grasslands, sagebrush, saltbush, and pinyon-juniper forest (Figure 5.7-2) (BLM 2008a; Carr et al. 2017). Greasewood-dominated shrublands occur on the fringes of playas, desert lakes, ponds, and desert streams (BLM 2008a).

Sagebrush steppe is the dominant community in the Wyoming Basin. Development has occurred widely across sagebrush steppe, resulting in significant habitat fragmentation and a reduction in habitat connectivity (Carr et al. 2017). Such development and fragmentation not only reduces vegetation productivity but also reduces habitat value for wildlife. Sagebrush steppe also faces threats from conversion to invasive cheatgrass.

Regional surveys indicated lower-quality riparian habitat, as indicated by stream bank erosion and poor vegetation cover due to livestock destabilizing stream banks (BLM 2007a; BLM 2008a; Carr et al. 2017). Invasive tamarisk also is spreading in the vicinity of the decision area.

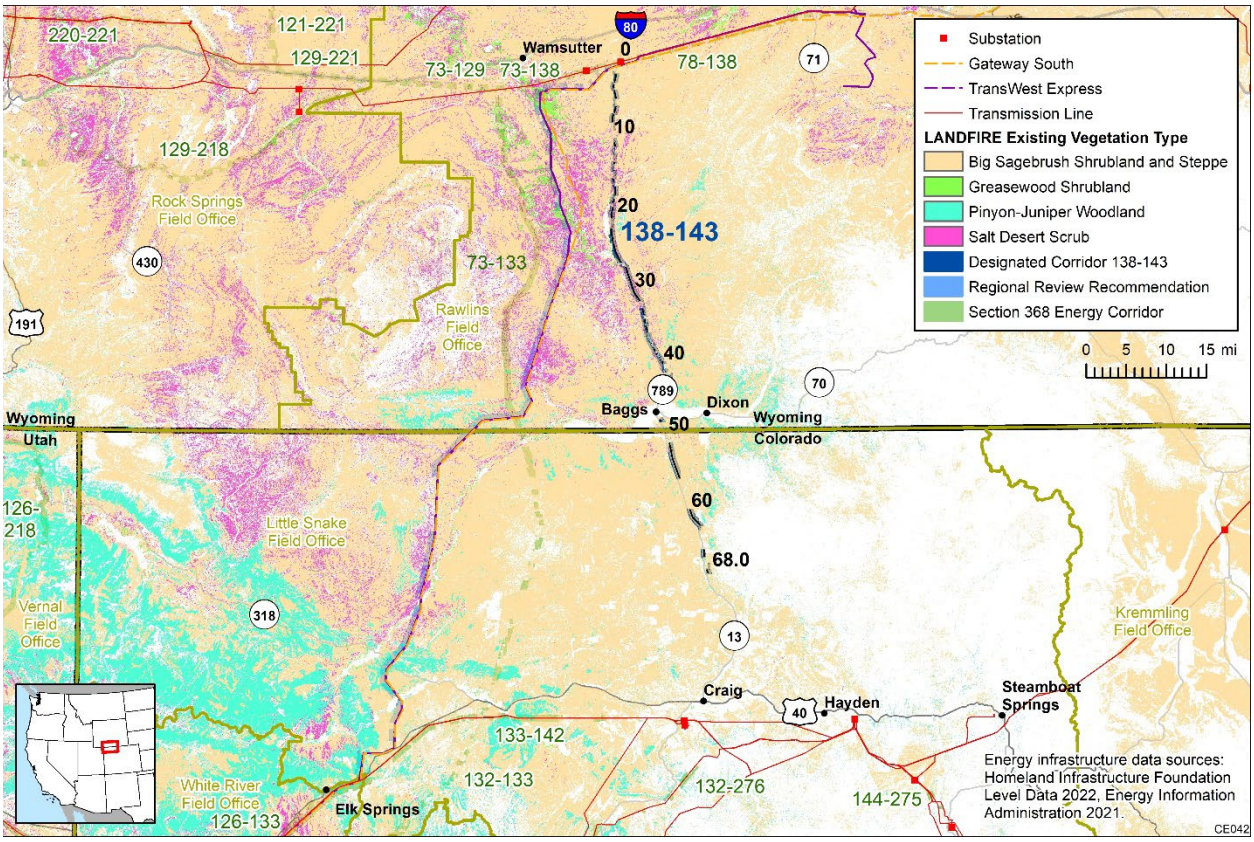

Figure 5.7-2. Vegetation Communities in the Vicinity of the Decision Area (2020 Landfire).

Trends and Forecasts

Based on historic records, air and water temperatures have been increasing across the western United States, and these trends are projected to become more pronounced in the coming decades. Through 2060, average annual, summer, and winter temperatures are projected to increase relative to baseline (Carr et al. 2017). Climate models also project a decrease in summer precipitation and an increase in winter precipitation, compared to current conditions. Spring snowmelt runoff is also projected to decrease in much of the Western United States, depending on elevation (Carr et al. 2017). Together, these climate projections suggest the potential for changes in shrub-scrub, grassland, and pinyon juniper communities similar to those described for other corridors.

Fire and Fuels

In modern times, fire frequency and severity varies by plant community, and natural fire regimes have been modified by fire suppression and by the introduction of non-native species. In the Wyoming Basin, fire frequency was greatest for montane/subalpine, and lowest for sagebrush-steppe, based on data from 1980 to 2012 (BLM 2008a). Fire suppression also has been frequently employed in the region, allowing the accumulation of fine fuels that can lead to more intense sustained fires when natural ignition of vegetation occurs (BLM 2007a). Prescribed burns are still used as a management tool in areas dominated by invasive species like cheatgrass (BLM 2008a). Lightning is the primary natural cause of wildland fire in the Rawlins and Little Snake

Resource Management Plan planning area, although fires started by humans occur as well, especially along major transportation corridors (BLM 2008a). Projected drier conditions in the future may increase fire intensity by reducing fuel moisture content.

5.7.4.2 Terrestrial Wildlife

Current Conditions and Context

The Corridor 138-143/Wamsutter-Powder Rim decision area crosses the border of Wyoming and Colorado. Conflicting management goals across jurisdictions can complicate wildlife management. The most significant challenges facing Wyoming's wildlife are rural subdivision and development, energy development, invasive species, climate change, and disruption of historic disturbance regimes (WGFD 2017). Some important threats to wildlife in Colorado include residential/commercial development, habitat conversion/degradation due to agricultural activities, natural systems modifications, climate change, and invasive species (CPW 2015).

Most of the decision area is located in the Wyoming Basin (WYB) Ecoregion. A small portion of the decision area is also located in the Colorado Plateau (COP) ecoregion. The majority (50.5%) of the WYB is comprised of sagebrush steppe habitat, followed by foothill shrublands and woodlands (16%), and by montane and subalpine forests and alpine zone (13.4%) (Carr et al. 2017). Over a quarter (28.6%) of the WYB is undeveloped, with the largest patches of relatively undeveloped areas occurring at high elevations in montane and subalpine forests and in foothill shrublands and woodlands (Carr et al. 2017). The COP is predominantly Colorado Plateau pinyon-juniper woodland (20.4%), Colorado Plateau mixed bedrock canyon and tableland (10.6%), and inter-mountain basins big sagebrush shrubland (9.1%) (Bryce et al. 2012). The largest category of terrestrial landscape intactness in the COP covers 30% of the ecoregion, but the intactness is split almost in half, with 48% characterized as very low, low, and moderately low, and 52% as very high, high, and moderately high (Bryce et al. 2012).

The following section focuses on game species (big game species, upland game birds, and waterfowl) and migratory birds. Other species might inhabit the decision area but are not directly discussed. Any management direction that affects the recovery, maintenance, or improvement of the wildlife populations discussed in this section would also indirectly support other native species. Table 5.7-7 lists the managed big game species with habitat in the decision area.

Game species

Big Game Species

Nine big game species are managed in the state of Colorado (CPW 2022a), but only five species have overall ranges intersecting the decision area: black bear, mountain lion, mule deer, pronghorn, and Rocky Mountain Elk (Table 5.7-7). There are eight big game species in Wyoming (WGFD 2022a), but only three species have habitat within the decision area: mule deer, pronghorn, and Rocky Mountain elk. Population numbers for these big game species fluctuate annually and depend on conditions such as weather,

hunting, forage quality, water availability, and cover (WAPA and BLM 2015). The decision area contains numerous big game habitats including migration corridors, migration stopover habitat, crucial winter habitat, and year-round habitat. Big game migration corridors and crucial winter ranges are typically considered the most important habitats for big game species, especially during harsh winters (WAPA and BLM 2015).

Table 5.7-7. Managed Big Game Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Habitat Association and Life History	State
Black bear *(Ursus americanus)*	The decision area intersects black bear overall range in Colorado. Forested areas provide cover, and rivers and streams provide a source of food. Conflict with humans is the greatest threat to black bears (NDOW 2022).	Colorado
Mountain lion *(Puma concolor)*	The decision area intersects the overall range of the mountain lion (also known as cougar) in Colorado. These animals mostly occupy remote and inaccessible areas. Their annual home range can be more than 560 square mi, while densities are usually not more than 10 adults per 100 square mi. Cougars are generally found where their prey species (especially mule deer) are located. In addition to deer, they prey upon most other mammals (which sometimes include domestic livestock) and some insects, birds, fishes, and berries. They are active year-round. Their peak periods of activity are within two hours of sunset and sunrise, although their activity peaks after sunset when they are near humans. They are hunted on a limited and closely monitored basis in some states (BLM and DOE 2008).	Colorado
Mule deer *(Odocoileus hemionus)*	The decision area intersects the overall range of mule deer in Colorado and crucial winter habitat, yearlong habitat, migration corridors, and migration stopover habitat for the mule deer in Wyoming. Mule deer attain their highest densities in shrublands characterized by rough, broken terrain with abundant browse and cover. Some populations of mule deer are resident (particularly those that inhabit plains), but those in mountainous areas are generally migratory between their summer and winter ranges. They have a high fidelity to specific winter ranges where they congregate within a small area at a high density. Their winter range occurs at lower elevations within sagebrush and pinyon-juniper vegetation. Winter forage is primarily sagebrush, and true mountain mahogany, fourwing saltbush, and antelope bitterbrush also are important. Prolonged drought and other factors can limit mule deer populations. Mule deer are also susceptible to chronic wasting disease. When present, up to 3% of a herd's population can be affected by this disease (BLM and DOE 2008).	Colorado & Wyoming
Pronghorn antelope *(Antilocapra americana)*	Pronghorn overall range intersects the decision area in Colorado, and yearlong and crucial winter habitat occur in the decision area in Wyoming. Pronghorn inhabit non-forested areas such as desert, grassland, and sagebrush habitats. Herd size can commonly exceed 100 individuals, especially during winter. They consume a variety of forbs, shrubs, and grasses, with shrubs of greatest importance. Fawning occurs throughout the species range. However, some seasonal movement within their range occurs in response to factors such as extreme winter conditions and water or forage availability. Pronghorn populations have been adversely impacted in some areas by historic range degradation and habitat loss and by periodic drought conditions (BLM and DOE 2008).	Colorado & Wyoming

Rocky Mountain elk *(Cervus canadensis)*	The decision area intersects the Rocky Mountain elk winter crucial range and yearlong range in Wyoming, and overall range and migration corridors in Colorado. Elk summer range occurs at higher elevations. Aspen and conifer woodlands provide security and thermal cover, while upland meadows, sagebrush/mixed grass, and mountain shrub habitats are used for forage. Elk are highly mobile within both summer and winter ranges in order to find the best forage conditions. Elk calving generally occurs in aspen-sagebrush parkland vegetation and habitat zones during late spring and early summer. Calving areas are mostly located where cover, forage, and water are in close proximity. They may migrate up to 60 mi annually. Elk are susceptible to chronic wasting disease (BLM and DOE 2008).	Colorado & Wyoming

*Intersections with decision area were determined using GIS data from CPW (CPW 2019) and WGFD (WGFD 2022b), when possible.

Upland Game Birds

Upland game bird species that may occur in the decision area include band-tailed pigeon, chukar, Columbian sharp-tailed grouse, dusky grouse, Eurasian collared dove, and mourning dove. Band-tailed pigeons occur in Colorado and nest in mountainous terrain with ponderosa pine and oak (CPW 2016). Chukars are found in dry, rocky terrain with abundant cheatgrass and can often be found near water sources in drainages that have sufficient escape cover (WAPA and BLM 2015). Columbian sharp-tailed grouse are found in high-elevation shrub-grassland communities and edges (CPW 2022b). Dusky grouse are considered forest grouse. They winter in stands of Douglas fir and lodgepole pine and breed along aspen sagebrush interface (CPW 2022c). Eurasian-collared doves can be found in various habitats, including neighborhoods, grasslands, agricultural fields, woodland edges, and roadsides (NDOW 2022). Mourning doves occur in a wide range of habitats, from deciduous forests to shrubland and grassland communities (WAPA and BLM 2015). Most of these upland game species exhibit annual population fluctuations depending on weather and habitat conditions (WAPA and BLM 2015).

Waterfowl

Waterfowl are also popular game birds in Colorado and Wyoming. Some common waterfowl in Colorado and Wyoming include American coot, American wigeon, Barrow's goldeneye, blue-winged teal, bufflehead, Canada goose, canvasback, common merganser, gadwall, goldeneye, green-winged teal, hooded merganser, Wilson's (common) snipe, gadwall, lesser scaup, mallard, Northern shoveler, pintail, redhead, snow goose, Trumpeter swan, and wood duck (CPW 2022d; WGFD 2022c). Species distributions are limited to the rivers, streams, lakes, reservoirs, ponds, and wetlands found within the decision area. Population numbers for these species vary annually depending on weather and habitat conditions (WAPA and BLM 2015).

Various conservation and management plans exist for waterfowl, including the 2018 NAWMP, signed by the U.S., Canada, and Mexico. The NAWMP is a model for international conservation of wetlands and waterfowl. It was first signed in 1986 and has been adapted through reviews and updates in response to changing science and conservation goals (NAWMP 2018). While waterfowl species are considered game birds, they also are protected under the MBTA.

Migratory Birds

Many of the bird species occurring in Colorado and Wyoming are seasonal residents and exhibit seasonal migrations. These birds include waterfowl, shorebirds, raptors, and neotropical songbirds. The decision area is located within the Pacific Flyway, one of the four major North American migration flyways (BLM and DOE 2008).

The Pacific Flyway includes the Pacific Coast Route, which occurs between the eastern base of the Rocky Mountains and the Pacific coast of the U.S.. This flyway encompasses the states of California, Nevada, Oregon, and Washington, and portions of Montana, Idaho, Utah, Colorado, Wyoming, and Arizona. Birds migrating from the Alaskan Peninsula follow the coastline to near the mouth of the Columbia River, then travel inland to the Willamette River Valley before continuing southward through interior California. Birds migrating south from Canada pass through portions of Montana and Idaho and then migrate either eastward to enter the Central Flyway, or turn southwest along the Snake and Columbia River valleys and then continue south across central Oregon and the interior valleys of California. This route is not as heavily used as some of the other migratory routes in North America (BLM and DOE 2008).

Migratory birds encompass a variety of passerine and raptor species, most of which are protected under the MBTA of 1918 (16 USC 703-711) and Executive Order 13186.

A variety of migratory bird species inhabit the vegetation communities present throughout the Regional Review Recommendation (Wamsutter-Powder Rim Addition along TransWest Express route). A wide variety of passerine species occurs within the decision area throughout the year; however, they are most abundant during migration and the breeding season. Raptor species that could occur as residents or migrants within the analysis area include eagles, hawks, falcons, accipiters, owls, and kites. Migratory bird species observed in the counties that intersect the decision area include:

- Carbon County, Wyoming: 251 total species; 15 diurnal raptor species; 8 owl species
- Moffat County, Colorado: 253 total species; 16 diurnal raptor species; 8 owl species
- Sweetwater County, Wyoming: 254 total species; 15 diurnal raptor species; 5 owl species

The decision area intersects the Muddy Creek Wetlands and Powder Rim State-level Important Bird Area (IBA). The Muddy Creek Wetlands IBA supports a highly diverse group of bird species because of its diverse habitat and geographic isolation from similar habitats (National Audubon Society 2022a). The Powder Rim IBA contains juniper woodlands habitat, which is very limited in Wyoming, and supports greater bird species diversity than the surrounding habitats (National Audubon Society 2022b).

Trends and Forecasts

Climate change modeling for the WYB suggests average temperature increases of 2.5°F by 2030 and 4.9°F by 2060. Projections indicate an increase in the minimum temperatures of the coldest days, and an increase in the frequency and temperature of the hottest days. However, projections do not show a significant change in annual average precipitation. Climate change predictions indicate a potential loss of sagebrush steppe, montane and subalpine forests, and alpine zones within the WYB (Carr et al. 2017).

Climate change has the potential to impact wildlife communities by changes in temperature and therefore by changes in their seasonal habitats. Some examples of potential climate change–related impacts include:

- Climate change projections indicate that low-elevation aspen woodlands could be at increased risk for sudden aspen decline, impacting the availability of important cover and forage for mule deer during parturition (Carr et al. 2017);
- Climate change could alter the distribution and incidence of mule deer diseases (Carr et al. 2017); and
- Increased CO_2 concentrations could potentially affect the nutritional quality and quantity of mule deer forage (Carr et al. 2017).

5.7.4.3 Fish and Aquatic Species

Current Conditions and Context

The decision area is located in the Wyoming Basin Ecoregion in the Colorado River watershed. Regional water resources in the region include aquatic habitats like lakes, rivers, reservoirs, streams, creeks, and springs (Carr et al. 2017). These permanent surface water features provide year-round habitat for aquatic communities, some of which are native, and some introduced for sportfishing. Brook trout, northern pike, rainbow trout, Colorado cutthroat trout, and plains killifish are common species found in perennial habitat (BLM 2007a; BLM 2008a).

Overall, perennial surface waters are uncommon, and, with the exception of the Little Snake River, the Regional Review Recommendation (Wamsutter-Powder Rim Addition along TransWest Express route) would be primarily in the vicinity of intermittent streams and washes. These intermittent streams exhibit substantial seasonal and interannual changes in water flow and therefore do not provide continuous habitat for aquatic species. Fluctuations in flow are a reflection of the spring snowmelt, monsoonal rains, while spring-fed streams often have more continuous flow.

Amphibians use perennial and intermittent waters to complete their life cycles. At least 10 species of amphibians occur in or near aquatic and riparian habitats within the vicinity of the corridor (BLM 2007a). These species need water for reproduction but otherwise can occupy terrestrial habitat like burrows and moist soils. Examples include the tiger salamander, plains spadefoot, Great Basin spadefoot, boreal toad, Wyoming

toad, Woodhouse's toad, bullfrog, northern leopard frog, wood frog, and boreal chorus frog (BLM 2007a; BLM 2008a).

Regional aquatic surveys indicated that perennial aquatic habitat was healthy, but there was lower-quality riparian habitat, as indicated by stream-bank erosion and by poor vegetation cover due to livestock destabilizing stream banks (BLM 2007a; BLM 2008a). Riparian habitat quality is important for maintaining aquatic communities by moderating temperatures, reducing sediment inputs, providing instream habitat for fish, and providing organic material for aquatic macroinvertebrates.

Many species of nonnative sportfish have been introduced into aquatic habitat in the Wyoming Basin, as well as invasive invertebrates like New Zealand mudsnail and Asian clam, and plants like curly pondweed (Carr et al. 2017).

Trends and Forecasts

The primary threat to perennial streams in the study area is from development activities like roads and agriculture, and the intermittent nature of most streams makes them vulnerable to reductions in flow from human withdrawal and climate change (Carr and Melcher 2017).

The climate projections described in Section 5.7.4.1 suggest the potential for higher summer stream temperatures, increased winter flood intensity, and reduced summer flows, all of which could adversely affect aquatic communities by reducing habitat and water quality.

5.7.4.4 Special Status Species

Current Conditions and Context

The Corridor 138-143/Wamsutter-Powder Rim decision area intersects GRSG habitat (Figure 5.7-3). This species is discussed below and is summarized in Table 5.7-8.

The GRSG is a state-managed bird species dependent on sagebrush steppe ecosystems. It is characterized as a large grouse with a chunky, round body, small head, and long tail. The PHMA represents areas identified as having the highest habitat value for maintaining sustainable sage-grouse populations and includes breeding, late brooding-rearing, and winter concentration areas. The GHMA represents areas occupied seasonally or year-round by sage-grouse that are outside of PHMAs (BLM 2018).

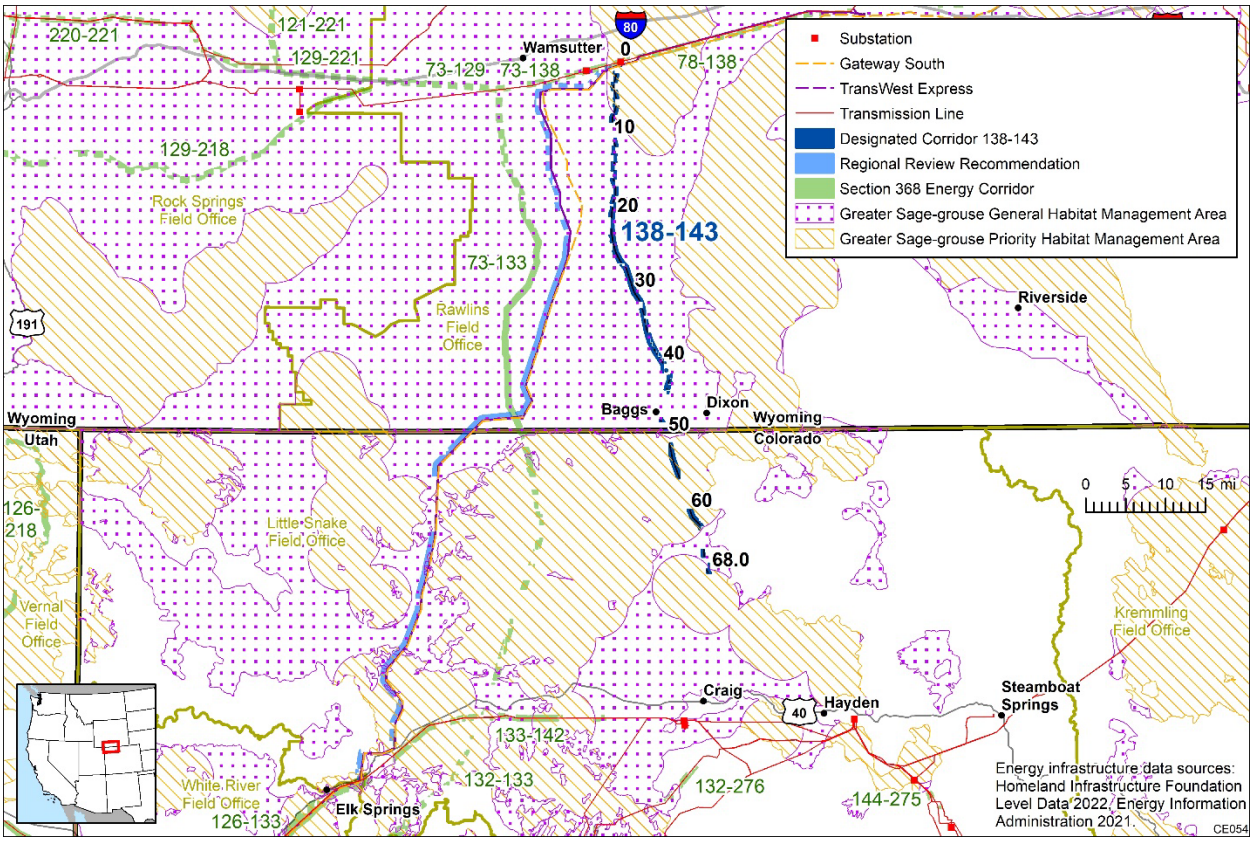

Figure 5.7-3. Special Status Species Habitat in the Vicinity of the Decision Area.

Table 5.7-8. Special Status Species with Habitat in the Decision Area*

Common Name *Scientific Name*	Species Status and Habitat Association	Habitat within the Decision Area
Greater Sage-Grouse (*Centrocercus urophasianus*)	This population of GRSG (*Centrocercus urophasianus*) occurs in sagebrush-dominated habitats. Portions of PHMA and GHMA intersect the decision area.	PHMA: MP 1 to 7 and MP 51 to 60 GHMA: MP 7 to 50 and MP 63 to 67 PHMA: most of the Regional Review Recommendation (Wamsutter-Powder Rim Addition along TransWest Express route) is located within PHMA

The corridor-specific ecoregional conditions and context are described in the terrestrial wildlife section (Section 5.7.4.2). Populations of the GRSG in the decision area have fluctuated over recent years. In 2015, the BLM and Forest Service amended a total of 98 land use plans to support sage-grouse conservation. The 2015 sage-grouse plan was prepared separately for each Western state where sage-grouse populations occur. Amendments to some of the state-specific sage-grouse plans were developed in 2019 and 2020. Litigation is ongoing for the sage-grouse plans, and new plans are being prepared as of the publication of this AMS. GRSG is currently managed under the 2015 plans, where PHMA and GHMA are designated ROW avoidance areas.

Trends and Forecasts

Range-wide, GRSG populations have declined significantly over the past six decades, with an 80% decline since 1965 and 40% decline since 2002 (USGS 2020).

5.7.5 Environmental Justice

General information for environmental justice that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.5.

Current Conditions and Context

For environmental justice, a 2 mi buffer area was used to evaluate minority and low-income populations—1 mi on either side of the decision area. The geographic distribution of minority and low-income groups within the buffer area was based on census block group data from the 2020 Census (U.S. Census Bureau 2022a, 2022b, 2023).

Table 5.7-9 lists the minority and low-income composition within the 2 mi buffer in the three counties, based on 2020 Census data. The total minority population (those not listed as White alone, not Hispanic or Latino) in the buffer in the three counties does not exceed 50%, and is not meaningfully greater (10 percentage points or more) than countywide averages. The number of persons at or below twice the federal poverty rate in the buffer exceeds countywide levels in Carbon County and Sweetwater County, but does not exceed 50% in any of the counties (Table 5.7-9).

Table 5.7-9. Minority and Low-Income Population within the Corridor 138-143/Wamsutter-Powder Rim Decision Area Buffer, 2020

Population Category	County and State		
	Moffat, Colorado	Carbon, Wyoming	Sweetwater, Wyoming
Racial Groups			
Number of persons:			
Hispanic or Latino	49	222	57
White alone, not Hispanic or Latino	581	1,142	367
Black or African American alone	2	39	2
American Indian and Alaska Native alone	4	50	4
Asian alone	0	2	0
Native Hawaiian and Other Pacific Islander alone	0	1	0
Two or more races	35	47	30
Minority percent	13.5	24.2	20.2
County Minority percent	22.4	24.3	23.4
Low-income Population			
Number of persons	139	479	163
Low-income percent	30.5	45.0	33.1
County Low-income percent	35.2	33.5	22.4

Sources: U.S. Census Bureau 2022a, 2022b, 2023.

The 2 mi buffer had a population of 2,638 in 2020 (U.S. Census Bureau 2022b). Median household income ranged from $54,583 in 2020 in Moffat County to $73,384 in Sweetwater County, while the average unemployment rate in the four counties was 5.0% in 2021.

Trends and Forecasts

Forecasts of the effects of changes in employment opportunities, cost of living, social and cultural values, and consumer preferences on population growth and migration are undertaken only at the regional or national level for the population as a whole, with detailed forecasted data on minority and low-income populations at the census block group level not available. Preparing demographic forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local employment, unemployment, income, population growth and migration, and the characteristics of minority and low-income populations that are difficult to forecast, particularly at the census block group level.

5.7.6 Geology, Soils, and Mining and Mineral Resources

Current Conditions and Context

The north end of the designated corridor is located on a series of sedimentary rock formations, including the sandstone and shale of the Tertiary-age Fort Union Formation, and claystone and siltstone of the Tertiary-age Wasatch Formation, and on Quaternary age alluvium and colluvium associated with Antelope Creek and Muddy Creek in Wyoming (Green and Drouillard 1994). In the bedrock areas, the designated corridor crosses a series of mapped normal faults (Green and Drouillard 1994). The southern segments of the designated corridor are on the Wasatch Formation, on Quaternary alluvium along Colorado's Timberlake Creek, and on Quaternary eolian deposits (Green 1992). The southernmost parcels are on or within about 1 km of mapped felsic dikes (Green 1992). The southernmost parcel is mostly on an area of Quaternary landslide deposits in the Elkhead Mountains (Green 1992).

The northernmost parcels of the Regional Review Recommendation (Wamsutter-Powder Rim Addition) are located on the Wasatch Formation and on Quaternary alluvium and colluvium near Echo Springs Draw (Green and Drouillard 1994). Where the corridor addition has an inflection and bends to the south, parcels are located on a Quaternary playa deposit. Continuing south, the corridor is on several members of the Tertiary-age Green River Formation, an oil shale with sandstone and marlstone, as well as other Wasatch Formation outcrops. Further south, the corridor is located on a broad area of the Cathedral Bluffs Tongue member of the Wasatch Formation, a claystone and conglomerate, along with an area of Quaternary dune sand and loess. Continuing south, the Wamsutter-Powder Rim Addition extends over a broad area of the Laney Member of the Green River Formation, an oil shale and marlstone, interrupted by a small area of the

Tertiary-age Washakie Formation, a sandstone and claystone, and a thin strip of Quaternary alluvium along Sand Creek. Four mapped normal faults are present in this portion of the Laney Member. Just north of the Wyoming-Colorado state line, the corridor bends to the southwest in an area of Cathedral Bluffs Tongue and a network of mapped normal faults (Green and Drouillard 1994, Green 1992). Further south in Colorado, the corridor addition passes through areas of the Laney Member and Cathedral Bluffs Tongue member, along with a small area of the Bridger Formation, a Tertiary age claystone, and alluvium along the Little Snake River (Green 1992). The southern end of the corridor addition crosses an area of the Browns Park Formation, comprising Tertiary-age sandstone and siltstone containing a series of west–east trending regional normal faults.

Soil is poorly developed in alluvial and colluvial materials in the low areas of the decision area, and it is generally absent in the upland areas of exposed bedrock. The vicinity of Baggs, Wyoming, is a relatively lush valley with irrigation. The designated corridor, however, generally avoids the green areas.

Trends and Forecasts

The Corridor 138-143/Wamsutter-Powder Rim decision area extends across an area that is generally unpopulated and that has been affected by drilling operations of the oil and gas industry, especially in the northern area. The corridor crosses several areas in Colorado with poorly developed soils that are also steep enough to greatly increase the risk of erosion, especially in the presence of human activity using mechanized equipment.

5.7.7 Human Health and Safety

General information for hazardous materials and human health that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.7

Current Conditions and Context

Volcanic Hazards: The decision area is not located within the area of influence of an active volcano (BLM and DOE 2008:Table 3.14-1). The volcanic hazard is low for this area.

Seismic Hazards: The decision area has a low earthquake potential. The entire area has a 2% probability of horizontal shaking exceeding 8–16%g within 50 years (USGS 2022a). If an earthquake with a PGA in this strength range were to strike near a transmission line or pipeline in the corridor, significant damage to the infrastructure would be unlikely.

Fault Crossings: Faults in which a slip has occurred within the past 10,000 years (Holocene faults) are commonly considered active (USGS 2022b). The decision area is not near any known fault lines (USGS 2021).

Liquefaction Potential: The decision area is not in an area rated for low, medium, or high liquefaction potential (BLM and DOE 2008). This indicates that the risk of liquefaction is low.

Landslide Potential: The decision area is in an area classified as high susceptibility/moderate incidence for landslides (BLM and DOE 2008). Landslides are commonly triggered by heavy rains and/or rapid snowmelts, volcanic eruptions, earthquakes, and human activities on unstable slopes. Transmission line or pipeline construction activities such as vegetation clearing, changing drainage patterns, grading slopes inadequately, removing existing toe supports of steep slopes, or blasting during land development and road and facility construction could result in landslides. Impacts of landslides on the environment include changes in local topography, land surface drainage, and forest destruction (Schuster and Highland 2001) and could result in accidents such as downed power lines and fires or spills of petroleum products. The potential for landslides should be given special consideration during project planning for any energy infrastructure project in this area.

Trends and Forecasts

The largest hazard identified for the area encompassed by the Corridor 138-143/Wamsutter-Powder Rim decision area is the risk of landslides. Because the earthquake risk in this area is low, any landslides would likely be the result of human activities, including construction and/or decommissioning of energy infrastructure. The risk of landslides is the same for both the designated corridor and the Regional Review Recommendation (Wamsutter-Powder Rim Addition along TransWest Express authorized ROW).

5.7.8 Hydrology

Current Conditions and Context

The Corridor 138-143/Wamsutter-Powder Rim decision area covers a semi-arid region of terrain consisting of rugged mountainous zones and alluvial valleys. The alluvium consists of unconsolidated sand and gravel and may be considered an aquifer (USGS 2000). The decision area extends over a region of sandstone aquifers of the Colorado Plateau aquifer system.

The designated corridor crosses numerous named and unnamed ephemeral drainages. It also crosses or straddles perennial stream Muddy Creek in Wyoming. Near Baggs, Wyoming, the perennial Little Snake River provides moisture to a green valley through ditch irrigation and several center-pivot irrigation wells. The designated corridor parcels, however, avoid essentially all of the green areas. The second parcel from its southern end in Colorado includes two unnamed springs, and three other unnamed springs are within 200 m of the parcel's border (USGS 2022c).

The Regional Review Recommendation (Wamsutter-Powder Rim Addition) extends over parts of an unnamed playa at its northwestern bend in Wyoming. Another Wyoming parcel covers much of an ephemeral lake, Coal Bank Lake. In Colorado, the corridor

addition crosses the perennial Little Snake River, and the crossing is included in the corridor footprint. Near its southern end, the Wamsutter-Powder Rim Addition crosses the perennial Yampa River. Corridor parcels are within 50 m of the river and also within 50 m of a center-pivot irrigation field.

The decision area is not located on a sole source aquifer (USEPA 2022c), and does not cross any Wild and Scenic Rivers (USGS 2022c).

Trends and Forecasts

The decision area extends across an area that is generally unpopulated. Changes in hydrologic conditions are expected to occur on short time scales in response to precipitation events. Groundwater levels may be affected by oil and gas industry operations in the region.

5.7.9 Lands and Realty

General information for lands and realty that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.9.

Current Conditions and Context

Current lands and realty management is guided by decisions made in existing RMPs. For the Corridor 138-143/Wamsutter-Powder Rim addition decision area, the planning area includes the BLM-administered lands managed under the Little Snake RMP (BLM 2011a) and Rawlins RMP (BLM 2008b). The lands and realty program consists generally of land use authorizations (e.g., ROWs) and land tenure (purchases and acquisitions, sales and exchanges, and withdrawals of public land).

Trends and Forecasts

In general, current management trends for land tenure indicates that the BLM will pursue a long-term program for repositioning public lands toward improved manageability and increased public benefits. Lands may be acquired to provide access or facilitate management, or to protect natural resources (BLM 2007b). Future opportunities for land acquisitions would be contingent on willing sellers, the condition of proposed acquired lands, and the availability of funding (BLM 2023a).

In general, the BLM will continue to consider land exchanges if such exchanges enhance public resource values and improve land ownership patterns and management capabilities of both private and public lands by consolidating ownership and reducing the potential for conflicting land use. Small, isolated parcels of public lands, especially those surrounded by large blocks of individually owned private parcels, are most likely to be considered for disposal in the future. Generally, the BLM would also consider the disposal of some isolated parcels near communities, if those parcels are deemed necessary for community expansion and economic development. The BLM anticipates an increase in requests from private individuals and communities to acquire public lands in the future (BLM 2019).

The lands and realty program responds to requests for ROWs, permits, leases, withdrawals, and land tenure adjustments from other programs or outside entities. The frequency of such requests is anticipated to increase as neighboring communities grow, and as the demand for use of public lands increases. As a result, future management of the lands and realty program may become more intense, complex, and costly (BLM 2019).

The main land use topics addressed in this section focus on renewable energy; ROWs, particularly utility corridors; and military flight operations. While military flight operations are not an actual use of BLM-administered lands, they could have potential effects on energy corridors, particularly those involving above-ground transmission lines.

5.7.9.1 Renewable Energy

Current Conditions and Context

In 2005, the BLM signed a ROD implementing a wind energy development program. BLM-administered lands were categorized into areas having a low, medium, or high potential for development of wind energy production based on wind power classifications. Lands categorized as having low potential fall in wind power Classes 1 and 2, lands with a medium potential fall in wind power Class 3, and lands with a high potential fall in wind power Class 4 and higher. Wind resources in Class 4 and higher are generally considered to be economically developable with current technology. Class 3 wind resources are expected to become more economical as low-wind-speed turbines become increasingly available (BLM 2005).

The designated corridor has mostly low potential for wind energy production, except for about MP 0 to MP 10 that has medium potential. Most of the Proposed Wamsutter-Powder Rim Corridor Addition also has low potential for wind energy production, except for 4 mi at the northern end of the corridor addition that has medium potential and 10 mi also on the northern end of the corridor addition that has medium-to-high potential (BLM 2005).

In 2012, the BLM approved the Western Solar Plan, implementing RMP amendments for a solar energy development program in six southwestern states, including Colorado (BLM 2012a). The Solar PEIS ROD designated SEZs, areas that the BLM prioritizes for utility scale production of solar energy as well as variance areas (areas potentially available for utility-scale solar energy development located outside of SEZs). On December 8, 2022, the BLM published an NOI to prepare a PEIS and conduct scoping to evaluate the environmental effects of potential improvements and expansions to the BLM's utility-scale solar energy planning (BLM 2022b). No SEZs occur near the decision area. (BLM and DOE 2014). No solar variance areas are located within the Colorado portion of the designated corridor; solar variance areas were not designated within Wyoming (BLM and DOE 2014). However, the entire decision area in Wyoming has medium potential for solar energy (e.g., 5.5 to 6.0 kWh/m^2/day) (Biewick and Wilson 2014).

Trends and Forecasts

Renewable energy production on BLM public lands has increased in recent years. As of November 2021, permitted renewable energy projects on BLM-managed lands include 36 wind, 37 solar, and 48 geothermal projects with a total combined capacity of more than 12 gigawatts of power (BLM 2023b). Continued growth of responsible renewable energy has recently been supported by Executive Order 14008, the Energy Act of 2020, and Congressional direction to seek to permit at least 25 gigawatts of solar, wind and geothermal energy production on public lands no later than 2025 (BLM 2023c). In addition, laws enacted in most of the western states require energy companies and utilities to provide a portion of their energy from renewable energy sources. As a result, the BLM anticipates an increased interest in the use of public lands for renewable energy development.

The placement of renewable energy facilities depends on a number of factors that are not always addressed in BLM land use plans, such as economics, proximity to the electrical grid, project design, current technology, and potential resource impacts. However, BLM land use plans can be amended through the public process to accommodate such uses if necessary (BLM 2008c).

Under the Western Solar Plan, areas that are not included as part of the SEZs or variance areas are to be considered as potential exclusion areas for utility-scale solar energy development. Exclusion areas are identified based on the potential for resource conflicts (e.g., Greater Sage-grouse habitat) or because lands are not well suited for utility-scale solar energy development (BLM 2019). The upcoming Solar PEIS may identify additional areas as suitable for utility-scale solar energy development, potentially increasing future solar energy development on BLM-administered land.

As the potential for wind and solar resources are somewhat limited within the decision area, it is unlikely that utility-scale renewable energy projects will be developed in the area. However, the corridor could provide a pathway for electrical transmission for wind energy projects developed elsewhere in Colorado and Wyoming.

5.7.9.2 Rights-of-Way

Current Conditions and Context

Section 503 of FLPMA provides for the designation of energy corridors and encourages use of ROW collocation to minimize environmental impacts and the proliferation of separate ROWs.

Corridor 138-143 follows Highway 789 in Wyoming and Highway 13 in Colorado. The corridor is partially collocated with, or crossed by, several pipelines. Several miles of the Regional Review Recommendation (Wamsutter-Powder Rim Corridor Addition along TransWest Express route) would be collocated with a pipeline, while a number of pipelines would intersect the proposed corridor. The Regional Review Recommendation would be collocated with the approved TransWest Express transmission line ROW.

The Regional Review Recommendation would provide a north–south pathway from Wyoming through Colorado on federally administered land. There are three north–south corridors in the Rawlins, Wyoming to Craig, Colorado vicinity: (1) Wamsutter-Powder Rim (local utility corridor) is designated multi-modal along the TransWest Express authorized route; (2) Section 368 Energy Corridor 73-133 is designated underground-only and follows pipelines along its entire route; and (3) Section 368 Energy Corridor 138-143 is designated multi-modal from MP 0 to MP 50, and electric only from MP 50 to MP 68. There is some redundancy in having three energy corridors following the same general pathway, and the regional review report concluded that the Wamsutter-Powder Rim corridor addition could serve as a preferred pathway for electrical transmission in the area (BLM, Forest Service, and DOE 2022).

Trends and Forecasts

In general, the requests for ROWs will continue to increase due to increasing population growth and urban development, which in turn, will increase the demand for energy and the need for improved electric transmission grid reliability. Demand for ROWs may increase within areas that have potential for wind, solar, and geothermal energy. Existing or designated corridors could provide grid connectivity to accommodate the anticipated growth in renewable energy production. BLM will continue process and grant ROWs, consistent with national, state, and local plans. The BLM will continue to encourage colocation of ROWs where possible to minimize environmental impacts and proliferation of separate ROWs.

As with past and present development, designated energy corridors or colocation with existing infrastructure will continue to be preferred for future development of linear utility infrastructure projects (particularly large projects). Collocation of utility infrastructure could continue to concentrate development, and associated surface disturbance, to certain areas, including areas adjacent to highways and major county roads, railroads, Section 368 energy corridors, and other existing or proposed energy corridors (BLM 2019).

5.7.9.3 Military Training Flight Operations

Military training flight operations do not occur within the Corridor 138-143/Wamsutter-Powder Rim decision area and will not be discussed further.

5.7.10 Lands with Wilderness Characteristics

There are no managed lands with wilderness characteristics units within the Corridor 138-143/Wamsutter-Powder Rim decision area. However, lands with wilderness character have been identified with the Little Snake Field Office 2011–2013 inventories. The Twelve Mile Mesa, Simsberry Draw, Deep Canyon, Lower and Upper Little Snake, West Seven Mile, Spence Gulch, and Ant Hill Draw units are within the vicinity of the decision area.

5.7.11 Livestock Grazing and Wild Horse and Burro

General information for livestock grazing and wild horse and burro that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.11

5.7.11.1 Livestock Grazing

Current Conditions and Context

Management direction for livestock grazing comes primarily from the RMPs that provide management for livestock grazing and rangeland health. Most BLM-administered lands are or can be grazed by livestock, except for lands considered unsuitable due to steep slopes (greater than 70%) or barren areas (less than 2% vegetation) (BLM 1993, 2008d; BLM and DOE 2008). The number of AUMs could be modified over time [e.g., based on whether or not the allotments meet the land health standards (BLM 2008e)]. There are 30 grazing allotments within the designated corridor and 23 grazing allotments within the Wamsutter-Powder Rim Addition (Table 5.7-10 and Figure 5.7-4). Within the designated corridor, 11 allotments overlap less than 5% of the total size of the allotment, and 19 allotments overlap between 5 and 45% of the total size of the allotment. Within the Wamsutter-Powder Rim Addition, 15 allotments overlap less than 5% of the total size of the allotment, and eight grazing allotments overlap between 5 and 13% of the total size of the allotment.

Table 5.7-10. Livestock Grazing Allotments Intersected by the Corridor 138-143/Wamsutter-Powder Rim Decision Area[a]

Allotment Name (Allotment Number)	Administrative State	Allotment Acreage	Percentage of the allotment within the decision area
Designated Corridor 138-143			
Pole Gulch (04514)	Colorado	21,392	0.1
George Dew (10531)	Wyoming	1,010	0.1
Baggs Sub Unit (00403)	Wyoming	5,013	1.1
Riner (10615)	Wyoming	55,950	1.7
Lazy Y S Ranch (10626)	Wyoming	17,831	1.7
Cherokee (00408)	Wyoming	66,405	1.9
Doty Mountain (00415)	Wyoming	85,834	2.9
Big Robber (10503)	Wyoming	17,630	3.0
Cottonwood Hill (10508)	Wyoming	14,554	3.2
Cottonwood Hill (10508)	Wyoming	14,554	3.2
Mexican Flats (10515)	Wyoming	15,428	3.2
Coal Bank Wash (10604)	Wyoming	7,636	5.0
State Block EU (04578)	Colorado	12,791	7.5
Adam's Ranch (10501)	Wyoming	305	7.5
Headquarters Ranch (10529)	Wyoming	481	7.6
East Muddy (00443)	Wyoming	6,132	7.6
North Pine Butte (10612)	Wyoming	2,317	8.8
South Pine Butte (10625)	Wyoming	943	10

Allotment Name (Allotment Number)	Administrative State	Allotment Acreage	Percentage of the allotment within the decision area
Gravel Pit (04046)	Colorado	1,616	10
Lower Fortification (04506)	Colorado	1,966	13
Brimmer Pastures (10721)	Wyoming	1,503	15
North Baggs (10624)	Wyoming	1,087	17
W Four Mile (04513)	Colorado	4,274	17
Chicken Sage (04508)	Colorado	4,587	23
Dad (00442)	Wyoming	675	26
South Muddy (10530)	Wyoming	1,558	26
Grieve Pasture (00740)	Wyoming	2,175	28
Little Robber (00514)	Wyoming	507	30
V Spreaders (10527)	Wyoming	338	33
South Baggs (01129)	Wyoming	250	45
Wamsutter-Powder Rim Corridor Addition			
Elk Springs (06326)	Colorado	28,278	0.04
Cherokee Trail (00505)	Wyoming	11,841	0.8
Sand Wash (04219)	Colorado	76,082	1.4
North Laclede (10613)	Wyoming	41,471	1.8
Lazy Y S Ranch (10626)	Wyoming	17,831	2.0
Sheepherder Spring (04217)	Colorado	86,318	2.3
Disappointment (04400)	Colorado	32,188	2.5
Nipple Peak (04225)	Colorado	15,551	2.6
Echo Springs (10607)	Wyoming	45,475	2.7
E Powder Wash (04202)	Colorado	27,413	2.8
South Wamsutter (10620)	Wyoming	31,386	3.1
Rotten Springs (10523)	Wyoming	21,124	3.2
South Laclede (10610)	Wyoming	52,922	3.8
Powder Wash (04214)	Colorado	27,635	4.2
Cedar Springs Draw (04402)	Colorado	35,470	4.4
Snake River (04206)	Colorado	62,434	6.2
Mexican Graves (10516)	Wyoming	20,239	7.5
Continental (10506)	Wyoming	25,702	8.7
Powder Rim Rotation (10520)	Wyoming	46,992	9.1
Sand Creek (10524)	Wyoming	30,009	9.3
Grounds (04222)	Colorado	8,008	11.6
Horse Draw (04204)	Colorado	7,405	12.3
South Barrel (10525)	Wyoming	10,291	13.2

[a] Only allotments with BLM-administered lands within corridors included.

Source: BLM 2023d

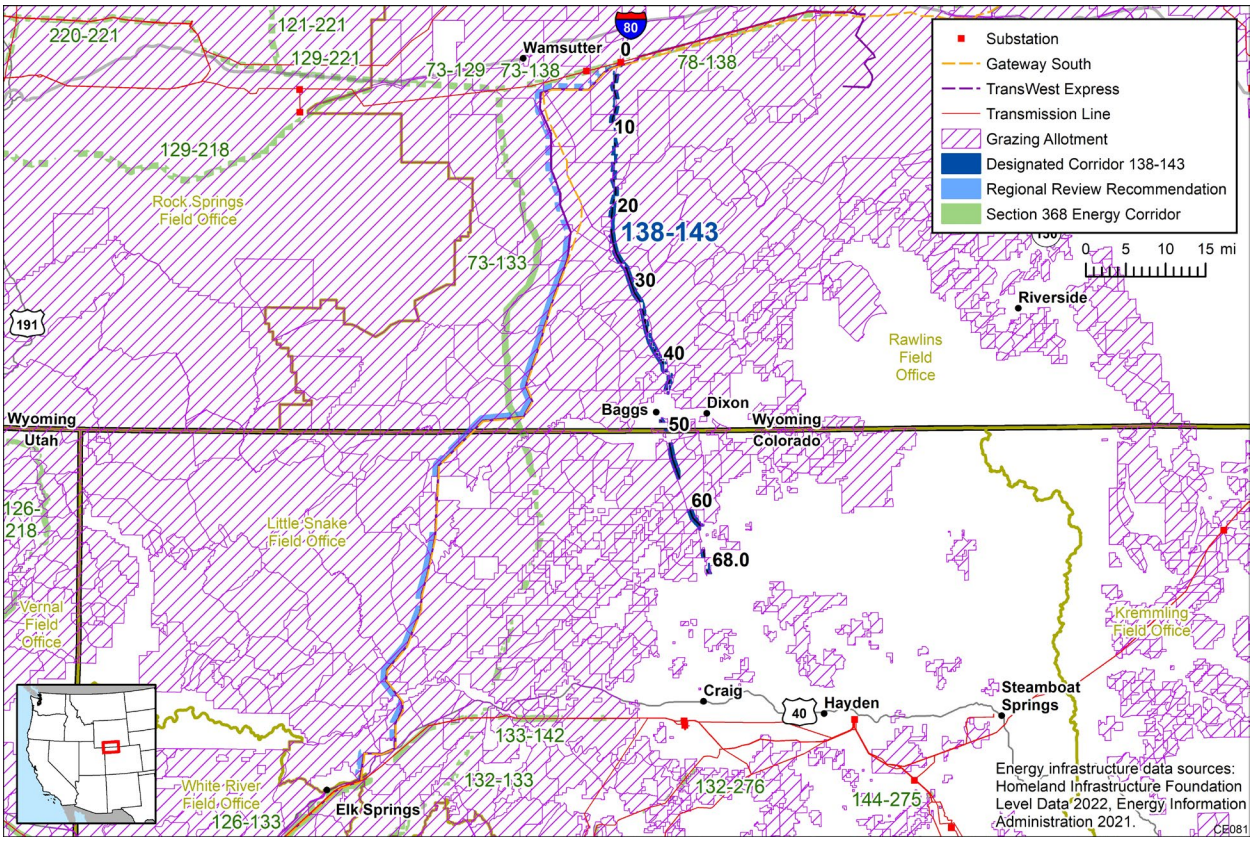

Figure 5.7-4. Grazing Allotments within the Vicinity of the Decision Area

Trends and Forecasts

Livestock grazing will continue to be managed through existing laws, regulations, and policies. Appropriate BMPs will be followed to protect rangeland resources and, where necessary, to mitigate any conflicts with other uses and values. The BLM will continue to assure compliance with existing permit/lease requirements, to modify permits and leases, to monitor and supervise grazing use, and to remedy unauthorized grazing use. Management direction for livestock grazing comes primarily from the RMPs that provide current management for livestock grazing and rangeland health. Review of existing AUMs would be conducted on individual allotments through assessment of existing activity plans (i.e., allotment management plans, livestock grazing decisions, habitat management plans, watershed management plans, biological opinions, and multiple-use decisions). The BLM enhances range conditions by controlling animal numbers, regulating season of use, regulating duration of use, and periodically resting rangelands as part of livestock management systems and following catastrophic events, such as fire (BLM 2008d).

The occurrence of weather extremes or shifts in climatic variables, such as the increase in frost-free days, change in the timing or amount of precipitation, and warmer summers, is often cited as a growing trend that may be the result of climate change (see Section 5.1.2). Increases in temperatures and shifts in precipitation patterns may reduce livestock forage production and alter the livestock carrying capacity on BLM-

administered lands. Season or timing of grazing use and livestock numbers, distribution, intensity, and type of livestock may need to be adjusted on a temporary or long-term basis in response to climatic factors.

5.7.11.2 Wild Horse and Burro

Current Conditions and Context

The Adobe Town wild horse herd management area (HMA) is intersected by the Regional Review Recommendation (Wamsutter-Powder Rim Corridor along TransWest Express route).

The recommended Wamsutter-Powder Rim Corridor addition transects the Adobe Town HMA east of MP 26 to MP 40 of Corridor 73-133 (Figure 5.7-5).

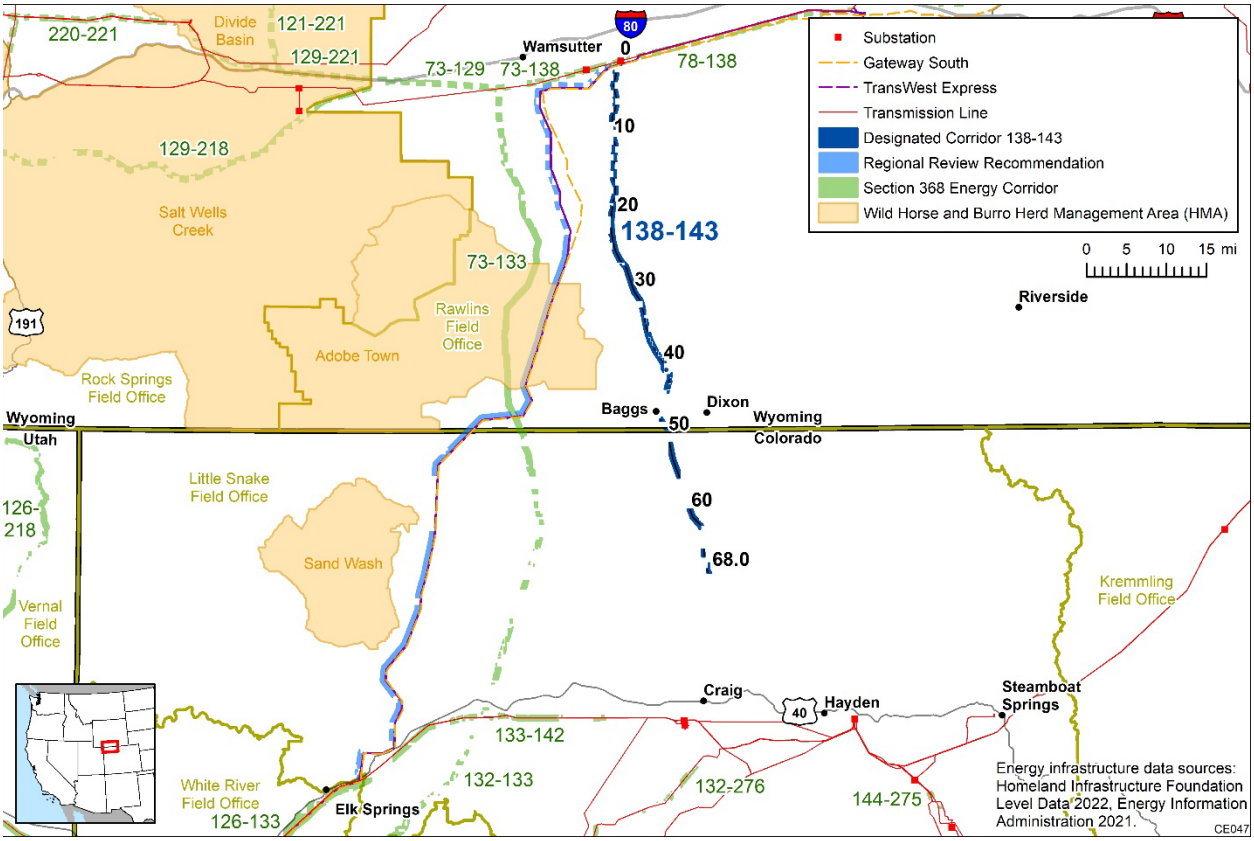

Figure 5.7-5. Herd Management Areas in the Vicinity of the Decision Area

Pertinent information on this HMA is listed below (BLM 2023e). Herd areas (HAs) created from other HAs do not list acres in the HA columns, and will appear with a value of zero. The last gather month and year data reflect the removal of 10 or more animals during the fiscal year.

Adobe Town HMA (Wyoming)

HA size: 0

HMA size: 478,875 ac (444,244 ac on BLM-administered land)

AML: 610–800, 2023 population estimate 1,693 (most recent population inventory November 2022)

Most recent year at AML: 2018

Most recent gather: November 2021

Trends and Forecasts

Challenges to wild horse and burro management include controlling populations within HMAs to maintain herd and rangeland health. Wild horse and burro herds that are above their established AML are at increased risk for food and water scarcity and habitat degradation, especially as extreme drought conditions continue to threaten animal and land health across the West.

BLM-wide population estimates from March 2022 indicate a two-year decline in wild horse and burro population; the population decreased by 3,805 animals between March 2021 and March 2022. As of March 2022, the estimated total wild horse and burro population was 82,384 animals, three times the BLM's goal of approximately 27,000 animals (BLM 2022c). Climate change effects, including change in precipitation patterns and temperature, could further reduce water and forage availability and habitat for wild horses and burros.

5.7.12 Noise

General information for noise resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.12.

Current Conditions and Context

Colorado has a noise statute with quantitative noise limits by zone and time of day (Colorado Revised Statutes, Title 25, "Public Health and Environment," Article 12, "Noise Abatement," Section 103, "Maximum Permissible Noise Levels"), as shown in Table 5.7-11. Wyoming does not have statutes or regulatory standards associated with noise from energy corridor activities (NPC 2022).

Moffat County in Colorado and Carbon and Sweetwater Counties in Wyoming do not have any quantitative noise limits associated with energy corridor activities.

Table 5.7-11. Colorado Limits on Maximum Permissible Noise Levels

Zone	Maximum Permissible Noise Levels (dBA)[a]	
	7 a.m. to 7 p.m.[b]	7 p.m. to next 7 a.m.
Residential	55	50
Commercial	60	55
Light Industrial	70	65
Industrial	80	75

[a] At a distance of 25 ft or more from the property line. Periodic, impulsive, or shrill noises are considered a public nuisance at a level of 5 dBA less than those tabulated.

[b] The tabulated noise levels may be exceeded by 10 dBA for a period not to exceed 15 minutes in any 1-hr period.

Source: Colorado Revised Statues, Title 25 "Public Health and Environment," Article 12 "Noise Abatement." Available at https://casetext.com/statute/colorado-revised-statutes/title-25-public-health-and-environment/environmental-control/article-12-noise-abatement/section-25-12-103-maximum-permissible-noise-levels.

Noise sources in the Corridor 138-143/Wamsutter-Powder Rim decision area include road traffic, railroad traffic, aircraft flyover mostly by civilian aviation, agricultural activities, animal noise from nearby wildernesses, industrial activities (e.g., oil and gas development or pipeline operations), and infrequent community activities and events. In addition, crackling or hissing corona noise from transmission lines and humming noise from substation transformers are additional noise sources along the corridor. Except Baggs, Wyoming in the mid-portion of the designated corridor, the decision area is mostly undeveloped, sparsely populated, and remote, and its overall character is considered mostly pristine to rural.

Airports: The nearest airport is Mesa View Ranch Airport in Moffat County, Colorado, about 0.5 mi (0.8 km) near the southern end of the designated corridor. The next closest is Dixon Airport in Carbon County, Wyoming, about 7 mi (12 km) east of the designated corridor, near Baggs. Many public and private airports along with heliports in these counties are clustered in Rawlins and Rock Springs in Wyoming and Craig in Colorado.

Roads and Railroads: Wyoming State Route 789 is within the entire designated Corridor 138-143, and this route continues as Colorado State Route 13, which runs mostly along the corridor boundary. Wyoming State Route 70 travels from an intersection with Wyoming State Route 789 in Baggs eastward and is as close as 0.3 mi (0.5 km) from the designated corridor. Colorado State Route 318 crosses the Wamsutter-Powder Rim Corridor Addition, the southernmost end of which was intersected by U.S. Route 40. East–west Interstate 80 runs parallel to the northern portion of the designated corridor within 4 mi (6 km) of the corridor. In addition, many county roads and local roads are located in the decision area. The UPRR along Interstate 80 runs parallel to the northern portion of the designated corridor in Wyoming as close as 2.5 mi (4.0 km), while the UPRR runs through Craig in Colorado, which is located about 15 mi (24 km) south of the south end of designated Corridor 138-143.

No environmental noise survey has been conducted in the decision area. Based on the population density, the day-night average sound level (Ldn or DNL) is estimated to be 25 dBA for Carbon County in Wyoming, 28 dBA for Sweetwater County in Wyoming, and 26 dBA for Moffat County in Colorado, all of which correspond to wilderness areas (Cavanaugh and Tocci 1998, Miller 2002).

Trends and Forecasts

Primary noise sources include roads, airports, railroads, oil and gas development, and stationary sources. In general, doubling the number of noise sources of the same intensity increases the sound level only by 3 dB, which is a barely noticeable difference. For example, if the number of passenger cars increases from 1,000 to 2,000 vehicles per hour on any road, the noise level increases only by 3 dB. This level of drastic change in activities is not anticipated in the remote and unpopulated decision area. As a result, even with population and industrial growth in the region, noise level in the decision area is forecasted to increase slightly and unnoticeably in the near future unless new and noisy sources, to which the receivers have never been exposed before, come into the region.

5.7.13 Paleontology

General information for paleontological resources that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.13.

Current Conditions and Context

Figure 5.7-6 depicts the PFYC Classes within the decision area. The PFYC Classes represent an estimate based on the available regional geologic data; they are not meant to replace project-specific evaluations of potential paleontological resources. The PFYC Classes within the decision area along both the designated corridor and the Wamsutter-Powder Rim corridor addition have been identified almost entirely as PFYC Class 5 (very high). PFYC Class 5 areas indicate a high probability of impacting significant paleontological resources. The area should be assessed prior to land tenure adjustments, and pre-work surveys likely would be required.

Although a comprehensive paleontological inventory has not been conducted within the Little Snake planning area, governmental, academic, and private entities have studied paleontological resources within the planning area, and more than 1,000 paleontological localities (areas of known paleontological resources within defined boundaries) have been documented. No paleontological localities were identified on BLM-administered lands within the Little Snake planning area during development-related surface disturbance in the early 2000s. During this same time period, active paleontological use permits have been issued for BLM-administered lands within the Little Snake planning area (BLM 2010b).

Some of the richest paleontological resources in the United States, specifically vertebrate fossils, are found in the Rawlins planning area, and many institutions have studied the paleontology of the area. Most fossils are discovered as scattered finds

in areas of exposed rocks, and several paleontological localities within the Rawlins planning area have yielded the only fossil record of several extinct species. Portions of the decision area are on the Wasatch Formation, the Green River Formation, the Laney Member of the Green River Formation, Washakie Formation, and Fort Union Formation. In the Wasatch Formation, vertebrate fossils are found primarily in the non-red facies of the variegated beds, including sandstones. The Washakie Formation contains fossils of algae, mollusks, and mammals. Well-preserved fossil fish are contained in the Laney Member of the Green River Formation, and plant and animal fossils have been found throughout the Fort Union Formation (BLM 2008a).

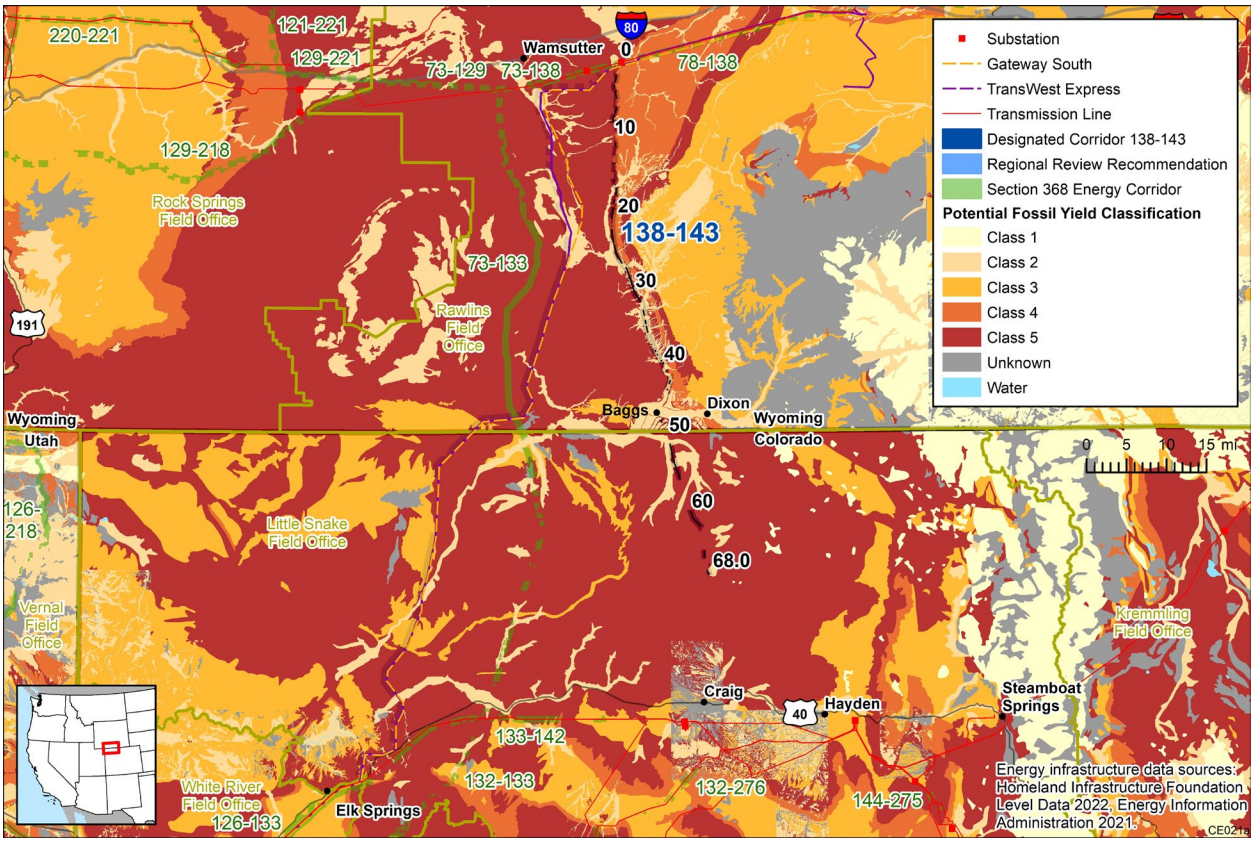

Figure 5.7-6. Potential Fossil Yield Classification in the Vicinity of the Decision Area

Trends and Forecasts

The current trend of paleontological resource use permits is likely to continue, and possibly increase, in the future. As development and surface-disturbing activities continue, it is possible that additional paleontological localities will be identified (BLM 2010).

5.7.14 Recreation

General information for recreation that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.14.

Current Conditions and Context

A broad range of outdoor recreation opportunities will continue to be provided on all segments of BLM-administered lands. Two portions of the Four Trails Feasibility Study (National Study Trail) cross the decision area (see Section 5.7.14). The National Study Trail is being evaluated for possible additional routes to the Oregon NHT, the California NHT, the Mormon Pioneer NHT, and the Pony Express NHT. These trails offer the opportunity for the public to retrace past events through historic sites, points of interests, trail segments, and waterways.

The Western Extensive Recreation Management Area (ERMA) encompasses the decision area (BLM 2008b). ERMAs recognize existing recreation use and demand and are managed to sustain principal recreation activities and associated qualities and conditions of the ERMA, commensurate with management of other resources (BLM 2011b). Generally, recreation opportunities in ERMAs are dispersed, unstructured activities that do not require intensive management or substantial investment in trails or facilities **(**BLM 2011b). Emphasis will be placed on dispersed recreation, trail development, signing, maintenance of primitive and semi-primitive characteristics, management or abatement of natural and man-made hazards, and protection of resources and sites of recreational interest (BLM 1999).

Management objectives for the Western ERMA are to provide for the health and safety of visitors, to prevent or mitigate resource damage resulting from recreational uses, and to coordinate with other programs to minimize conflicts and adverse impacts with respect to recreational opportunities (BLM 2008b).

OHV use within the decision area is primarily limited to existing roads and trails (BLM 2008b, 2011a).

Trends and Forecasts

As population pressures increase, and with them the demand for quality outdoor recreation, the BLM field offices will retain and develop their ability to provide a wide variety of recreational opportunities. In part, this demand would be met by restoration and regular maintenance of existing recreation sites, creation of new recreational facilities, and more intensive management. However, the unspoiled character of natural landscapes must be preserved and vulnerable areas would be excluded from all development (recreational and otherwise) in order to preserve their pristine, natural condition (BLM 2008b; 2011a; 2019; WAPA and BLM 2015).

The use of developed recreation sites is on an upward trend, following growth trends in adventure tourism and heritage tourism, and increased populations in communities.

It is reasonable to expect that there will be a continuing need to construct recreation facilities in response to community and tourism industry growth. With visitation to BLM–administered public lands continuing to increase (and with present visitation already creating the need for additional facilities), facilities to provide for these visitors must keep pace, so as to protect the land and to provide for human sanitation. Current

use levels continue to degrade resources, and additional facilities are needed to accommodate visitation and to stabilize resource values (BLM 2019). Construction and maintenance from surface disturbing activities, including energy transport infrastructure, could impact big game hunting for both the public and recreation outfitters.

OHV use has become a substantial issue, because of the number of users who participate in this recreation opportunity, and because of concerns related to the potential resource degradation that can result from high levels of unmanaged use in sensitive areas. OHV use has become one of the fastest growing recreation activities. Visitors are drawn to these areas to experience the numerous roads and trails available for OHV use, the diverse backcountry opportunities, the spectacular scenery, and the challenging OHV opportunities the landscape and terrain provide. This trend is expected to continue (BLM 2019). Increasing OHV traffic on public lands has caused the uncontrolled proliferation of user-created, undesignated trails arising from repeated cross-country travel. Unauthorized motorized use causes natural resource damage (e.g., to soils and habitat) and increased public safety concerns (WAPA and BLM 2015). The development of field office–wide OHV plans will help to control the social and environmental impacts related to this activity (BLM 2007b).

5.7.15 Socioeconomics

Current Conditions and Context

Socioeconomic data are presented for an ROI around the Corridor 138-143/Wamsutter-Powder Rim decision area, composed of the counties in which the corridor would be located. The ROI for the decision area includes Moffat County in Colorado and Carbon and Sweetwater counties in Wyoming.

Population

Corridor 138-143 is located in a sparsely populated area. The nearest towns are Baggs, Wyoming, located about MP 46 of the currently designated corridor near the Wyoming-Colorado border (2021 population of about 400), Wamsutter, Wyoming, located about 12 mi (20 km) west of MP 1 of the designated corridor (2021 population of 200), and Rawlins, Wyoming, located about 30 mi (48 km) east of MP 1 of the designated corridor (2021 population of about 8,300).

In 2020, the population of the three-county ROI was 70,101 people (Table 5.7-12). During the period 2010 to 2020, population declined at low annual average rates in each of the three counties, and is projected to fall to 68,501 by 2040.

Employment and Income

Table 5.7-13 presents the average civilian labor force statistics for the ROI in 2021. Almost 32,880 people were employed, and 1,741 were unemployed. Unemployment rates ranged from 3.9% for Carbon County to 5.6% for Sweetwater County (Table 5.7-13). Wage and salary employment (not including self-employed

persons) by industry for 2020 is provided in Table 5.7-14. More than 14,480 people in the ROI were employed in services (41.7% of the total), with 4,467 (12.9%) employed in mining, quarrying, and oil and gas extraction, and 4,364 (12.6%) persons employed in wholesale and retail.

Table 5.7-12. ROI Population

	Population			Average Annual Growth Rate, 2010–2020 (%)
County	2010	2020	2040	
Moffat, Colorado	13,795	13,292	12,621	<-0.01
Carbon, Wyoming	15,885	14,537	14,100	-0.01
Sweetwater, Wyoming	43,806	42,272	41,780	<-0.01
ROI Total	73,486	70,101	68,501	-0.01

Sources: Colorado Department of Local Affairs, 2022; U.S. Census Bureau 2022c, 2022d; Wyoming Department of Administration and Information 2022.

Table 5.7-13. ROI Civilian Labor Force Statistics, 2021

County	Employed, 2021	Unemployed, 2021	Unemployment Rate, 2021
Moffat, Colorado	6,939	347	4.8
Carbon, Wyoming	7,579	305	3.9
Sweetwater, Wyoming	18,360	1,089	5.6
Total	32,878	1,741	5.0

Source: U.S. Department of Labor 2022.

Table 5.7-14. ROI Employment by Industry, 2020

	County				
Sector	Moffat, Colorado	Carbon, Wyoming	Sweetwater, Wyoming	ROI Total	Share of ROI Total (%)
Agriculture, forestry, fishing, and hunting	124	441	97	662	1.9
Mining, quarrying, and oil and gas extraction	682	484	3,301	4,467	12.9
Utilities	260	109	485	854	2.5
Construction	700	665	1,229	2,594	7.5
Manufacturing	176	760	1,170	2,106	6.1
Wholesale and retail trade	534	927	2,903	4,364	12.6
Transportation and warehousing	270	383	1,401	2,054	5.9
Finance, insurance, and real estate services (FIRE)	200	87	777	1,064	3.1
Services, not incl. FIRE	2,885	2,310	9,288	14,483	41.7
Public Administration	302	844	921	2,067	6.0
Total	6,133	7,010	21,572	34,715	

Source: U.S. Census Bureau 2022e.

Table 5.7-15 details income in the ROI for 2020. Total personal income stood at $3.8 billion, generated primarily in Sweetwater County ($2.3 billion), while median annual income ranged from $54,583 in Moffat County to $73,384 in Sweetwater County.

Table 5.7-15. ROI Personal Income, 2020

County	Total Personal Income ($ billions)	Median Income ($)
Moffat, Colorado	0.6	54,583
Carbon, Wyoming	0.9	62,423
Sweetwater, Wyoming	2.3	73,384
ROI Total	3.8	

Sources: U.S. Census Bureau 2022f; U.S. Department of Commerce 2022.

Housing

Table 5.7-16 details housing characteristics in the ROI in 2020. There were 2,162 vacant rental housing units in the ROI as a whole, with rental vacancy rates ranging from 3.0% in Moffat County to 8.2% in Sweetwater County.

Table 5.7-16. ROI Housing Characteristics, 2020

County	Housing Units		
	Total	Vacant Rental	Vacancy Rate (%)
Moffat, Colorado	6,197	185	3.0
Carbon, Wyoming	8,809	348	4.0
Sweetwater, Wyoming	19,842	1,629	8.2
ROI Total	34,848	2,162	6.2

Sources: U.S. Census Bureau 2022g, 2022h.

Trends and Forecast

In 2020, the population of the three-county ROI was 70,101, with the majority of people (42,272) living in Sweetwater County (Table 5.7-12). Population in the three-county ROI is projected to decline at an annual rate of -0.1% between 2020 and 2040. As noted above, population is projected to reach 68,501 by 2040.

Given the lack of appropriate geographic-specific forecasts for changes in employment opportunities, business costs, cost of living, and consumer preferences, the effects of which may be more easily predicted at the regional or national level, forecasts of their effects on employment, employment by industry, unemployment, income, and housing at the county level are not available. Preparing forecasts for rural counties, with smaller populations and lower levels of economic activity, where activity is often concentrated in a smaller number of industries, is particularly problematic. Specific, unpredictable changes in industry activity, such as the arrival or exit of a manufacturing plant or energy production facility, or the loss of markets for agricultural products, can have sharp and wide-ranging impacts on local economic activity that are difficult to forecast.

5.7.16 Special Designations

General information for special designations that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.16.

Special designations are addressed in this section only if they are intersected by or located within close proximity to the Corridor 138-143/Wamsutter-Powder Rim decision area. These include:

- The Overland and Cherokee Historic Trails Study Trails, which are components of the Four Trails Feasibility Trails (National Study Trails).

The proximity of special designation areas to the decision area is depicted in Figure 5.7-7. At one time, Muddy Creek was determined eligible for recreational classification as a Wild and Scenic River. It parallels the designated corridor from MP 16 to MP 45, crosses the designated corridor from MP 16 to MP 16.5 and at MP 26, and is within the designated corridor at MP 23 and from MP 32 to MP 45. However, the Rawlins Field Office ultimately determined that the creek segments did not meet suitability factors and would be given no further consideration for inclusion within the National Wild and Scenic Rivers System (WAPA and BLM 2015). Because Muddy Creek is not being considered as a Wild and Scenic River, it is not discussed further in this section.

5.7.16.1 National Historic and Scenic Trails (Including National Study Trails)

Current Conditions and Context

Two portions of the Four Trails Feasibility Study (National Study Trail) intersect the Corridor 138-143/Wamsutter-Powder Rim decision area: the Overland Historic Study Trail and the Cherokee Historic Study Trail (Figure 5.7-7).

Overland Historic Study Trail

The historic Overland Trail trends east–west through the area managed by Rawlins Field Office. Due in part to a combination of emigrant travel to the California gold fields and government expeditions, the Overland Trail became the primary central overland route in 1862. The Overland Trail remained in use until 1869, when the Union Pacific Railroad was completed across southern Wyoming; subsequently, the federal mail and passenger service was transferred to the railroad. The Overland Trail, however, remained in use as a thoroughfare for emigrant and freight traffic. Only three of the stage stations built along the trail exist on currently administered public lands: the Midway, Sage Creek, and Washakie Stations. The Washakie Station is listed on the National Register and still retains some of the original structure. The other two stage stations have been destroyed, although their locations are well documented. Evidence of the trail remains in the form of ruts and swales, as well as associated artifacts (BLM 2008a).

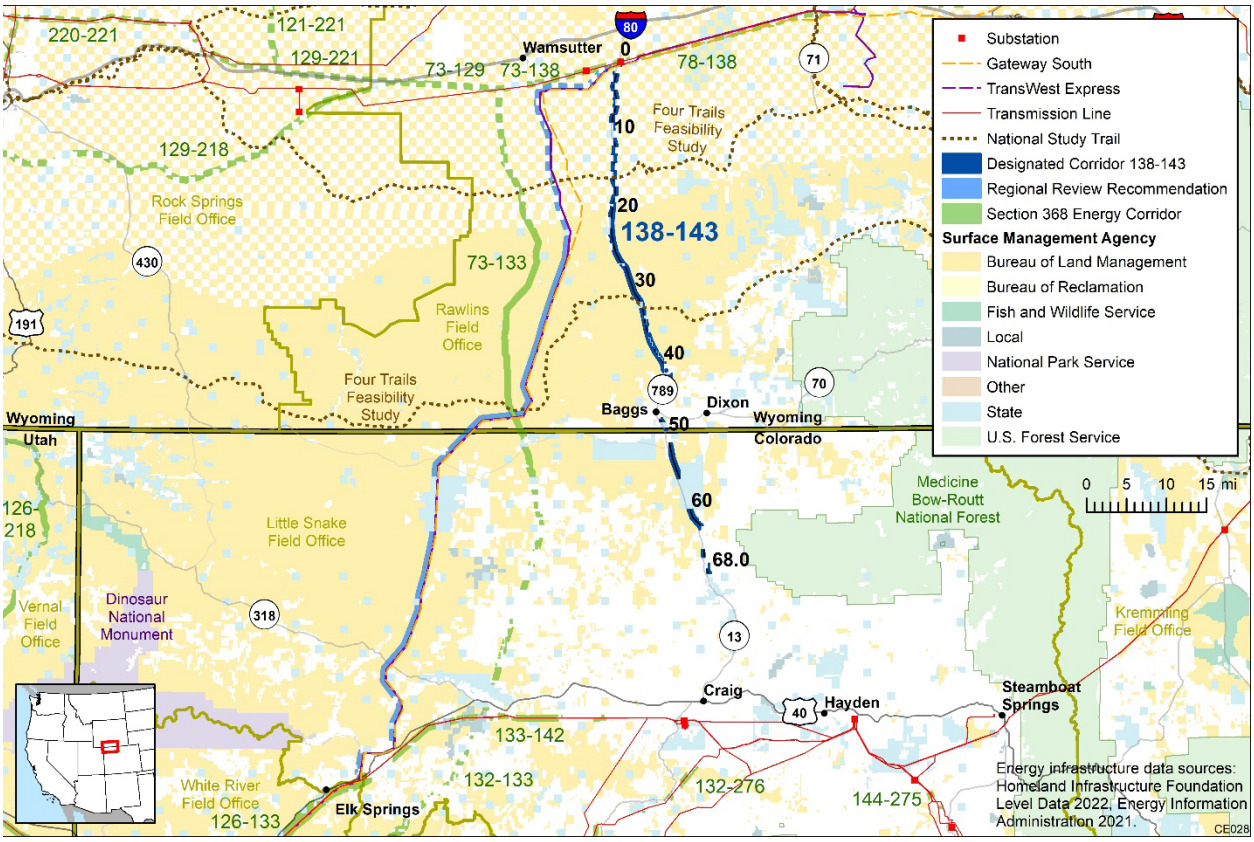

Figure 5.7-7. Special Designations in the Vicinity of the Decision Area

The Overland Historic Study Trail crosses the designated corridor at MP 15 and crosses the Regional Review Recommendation at two locations (Figure 5.7-7). The Overland Historic Trails Study Trail is considered an avoidance area for linear utility and transportation systems (BLM 2008b).

Cherokee Historic Study Trail

The California gold rush was the catalyst for the Cherokee Trail, the northern route of which would become the precursor of an overland wagon road across the southern portion of future Wyoming Territory. The Cherokee Trail connected Bent's Old Fort on the Santa Fe Trail to Fort Bridger on the Oregon-California Trail. In 1849, Lewis Evans led a party of Cherokee Indians from Oklahoma to the California gold fields. From the South Platte River, they headed north along the east side of the Front Range, passing over the future route of Highway 287 to Virginia Dale and Tie Siding and onto the Laramie Plains. They proceeded west around the north end of the Medicine Bow Mountains, then south of Elk Mountain through Pass Creek, and continued west well north of Bridger's Pass and across the Red Desert on their way to Fort Bridger. In 1850, several parties of Cherokee followed the 1849 route to the southern Laramie Plains, then headed west across the southern portion of the Medicine Bow Mountains, crossing the Laramie River south of future Woods Land and passing into North Park, Colorado, where they crossed the North Platte River, then headed north along the east flank of the Sierra Madre Mountains. They crossed the Continental Divide at Twin Groves near the

north end of the Sierra Madre and proceeded west along the Wyoming-Colorado border north of the Little Snake. Today, evidence of the Cherokee Trail is scarce, but it can be found in the form of ruts and swales (BLM 2008a).

The Cherokee Historic Study Trail crosses the designated corridor from MP 31 to MP 32 and crosses the Regional Review Recommendation (Wamsutter-Powder Rim Corridor Addition) at two locations (Figure 5.7-7). The Cherokee Historic Trails Study Trail is considered an avoidance area for linear utility and transportation systems (BLM 2008b).

Trends and Forecasts

The BLM will continue to preserve, protect, and maintain the historic and scenic values, as well as the cultural landscapes and viewsheds, of NHTs (BLM 2012b). Prior to designating new Section 368 energy corridors or corridor segments, the BLM would need to identify and mitigate any potential impacts on NHTs. The BLM would continue to preserve and protect the historic trails to ensure that they are available for appropriate uses by present and future generations, and to reduce imminent threats from natural or human-caused deterioration or potential conflict with other resource uses (BLM 2008b).

5.7.17 Tribal Interests

General information for tribal interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.17.

Current Conditions and Context

The BLM has identified 18 Federally recognized Tribes with cultural affiliation and an interest in the Corridor 138-143/Wamsutter-Powder Rim decision area. There are no Indian Reservations or Indian lands held in trust by the federal government near the designated corridor (Heizer 1978a, 1978b, 1978c; BIA 2022; BLM 2022d; HUD 2022). Due to a history of removal and displacement since the early 1800s, it is difficult to identify all Tribes with affiliation to the project area. Any additional Tribes not mentioned in this document should be identified through ongoing formal outreach and-consultation.

The following Tribes have been identified as having cultural affiliation with the lands near the designated corridor:

- Crow Creek Sioux
- Eastern Shoshone Tribe of the Winder River Reservation, Wyoming
- Hopi Tribe of Arizona
- Northern Arapaho
- Northern Cheyenne
- Oglala Sioux Tribe
- Omaha Tribe of Nebraska

- Ponca Tribe of Nebraska
- Pueblo of Jemez, New Mexico
- Santee Sioux Nation
- Shoshone-Bannock Tribes of the Fort Hall Reservation
- Spirit Lake Tribe
- Standing Rock Sioux Tribe
- Southern Ute Indian Tribe of the Southern Ute Reservation, Colorado
- Three Affiliated Tribes of Mandan, Hidatsa, and Arikara Nation
- Ute Mountain Ute Tribe
- Ute Tribe of the Uintah and Ouray Reservation
- Winnebago Tribe of Nebraska

Within the Corridor 138-143 decision area, a wide variety of archaeological site types and areas may be of significant cultural importance to Tribes affiliated with the designated corridor. The Cedar Ridge Complex has been documented as an important TCP for the Eastern Shoshone and Northern Arapaho Tribes, and possibly for other Native American Tribes, and continues to be a sacred place for Tribes (BLM 2015a). The town of Medicine Bow, Wyoming is near the designated Corridor 138-143. This area was named after the Arapaho and Cheyenne Tribes that traversed through the region to gather materials. Along the banks of the Medicine Bow River, Tribes used materials in this location to create bows. The mountain that carried water to the river, known as Medicine Bow Mountain, was a place of significance to the Tribes (BLM 2008a). For more information regarding cultural resources near the corridor, see Section 5.7.3.

Viewsheds obstructed by any future proposed project within a Section 368 Energy Corridor may impact areas of traditional cultural importance (BLM 2022d). Native American Tribes may desire access to other BLM administered lands to practice traditional cultural ceremonies. Medicine Bow Mountain is of cultural significance to Arapaho and Cheyenne Tribes, and potentially to other Tribes affiliated with the area. This mountain is near the corridor and may be visually impacted if infrastructure were introduced (BLM 2008a, 2022b). More information on potential areas of viewshed concerns can be found in Section 5.7.18.

Tribes previously have been interested in working with BLM to collect flat rock—volcanic decorative rock occurring in relatively thin (often less than an inch) layers in northeast California—that has commonly been used by some southeastern Tribes in sacred ceremonies and practices (BLM 2007c). There previously also have been Tribal interests in preservation of pinyon, juniper, and sage-grouse habitats that are present within the decision area (see Section 5.7.4.4) (BLM 2007c, 2015b). Pinyon pine nuts are a traditional food source for several Native American groups and are considered an important resource in traditional ceremonies and festivals (BLM 2008d).

Not all Tribal cultural practices involving natural and cultural resources of religious and cultural importance are known. Tribes have a deep understanding and history with the land that has been passed down through generations and that cannot be properly identified by archaeological fieldwork alone. Therefore, formal government-to-government consultation concerning future projects and resource management remains the best means for identifying and addressing Tribal land use concerns and interests.

Trends and Forecasts

Tribes have previously expressed interest in implementing an IOP for Tribal concerns that includes a component to conduct ethnographic studies that would increase understanding of significant resources of concern to Tribes. The existing IOP from the 2009 WWEC PEIS ROD focused only on identifying sacred sites, sacred landscapes, gathering grounds, and burial areas, along with avoiding, minimizing, or mitigating impacts on these places through project proponents, consultation with Tribes, and relevant parties (BLM, Forest Service, and DOE 2022).

5.7.18 Visual Resources

General information for tribal interests that is relevant to all Section 368 energy corridors, including laws, regulations, and policy, is described in Appendix A.18.

Current Conditions and Context

Table 5.7-17 lists the key features for visual resources, and Figure 5.7-8 depicts VRM classes within the vicinity of the decision area.

Table 5.7-17. Key Features in the Corridor 138-143/Wamsutter-Powder Rim Decision Area

Key Feature	State	Agency	Physical Attributes (Land, Form, Water, Vegetation, Structures)	Viewer Groups and Experiences	BLM VRM Class Designation
Four Trails Feasibility Study Trail	Wyoming	NPS		Tourists	N/A
Sand Hills/Jo Ranch ACEC	Wyoming	BLM	Sand dunes with diverse vegetation. Riparian habitat along Cow Creek and in irrigated meadows.	Ranchers to use for sheep grazing.	VRM II
JO Ranch Rural Historic Landscape	Wyoming	BLM; National Register(NPS)	Flat, low-lying valley with sage brush.	Ranchers and tourists for ranching experience.	Within VRM Class II
Red Rock	Wyoming	National Register (NPS)			N/A
First State Bank of Baggs	Wyoming	National Register (NPS)			N/A
Stockgrowers Bank	Wyoming	National Register(NPS)			N/A
Cross Mountain WSA	Colorado	BLM	Oblong, flat-topped land mass above the floodplain, with the Yampa River forming a gorge.	Hikers, backcountry campers, photographers, wildlife enthusiasts, hunters, fishermen	VRM I

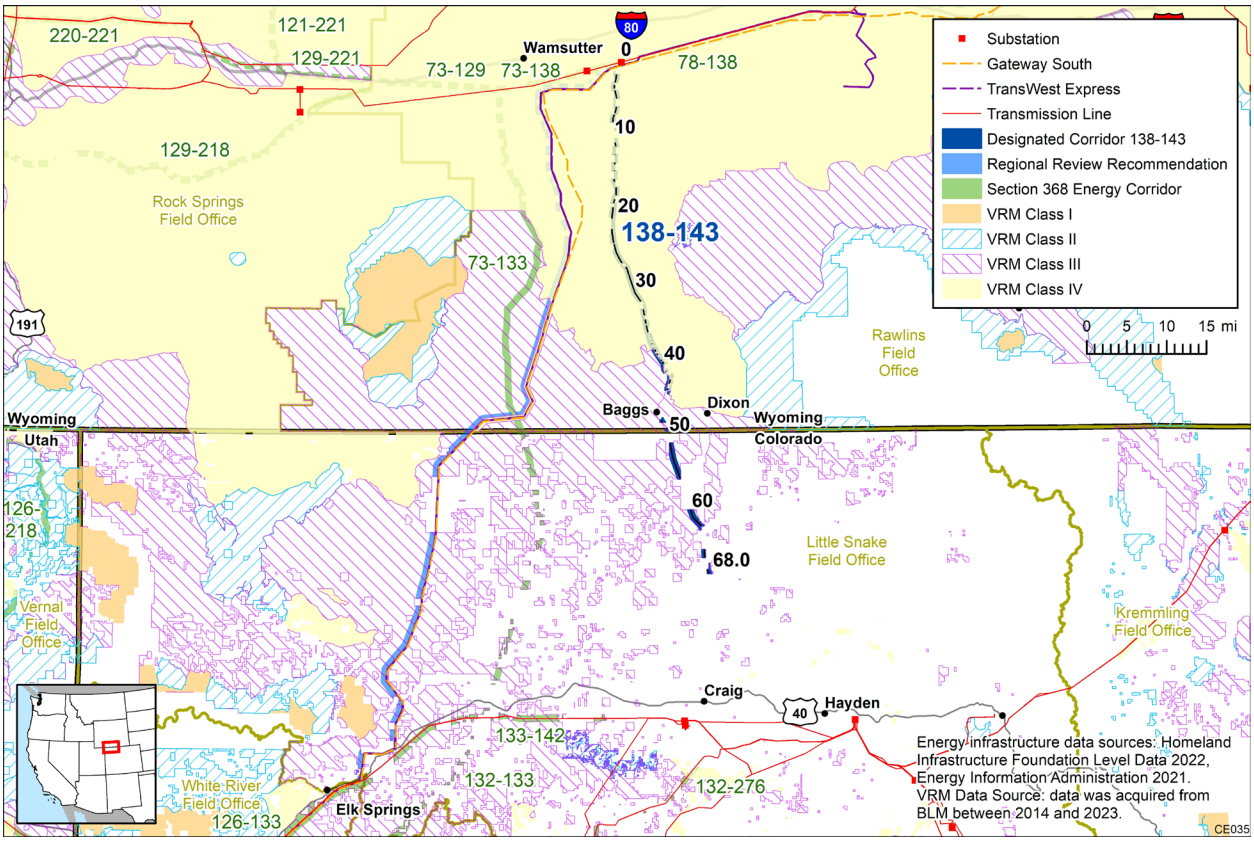

Figure 5.7-8. VRM Class Areas in the Vicinity of the Decision Area

The characteristic landscape in this region is broad, open plain, interrupted by linear escarpments, rolling hills, and low mountains. Vegetation types are mostly grass and sage, with juniper and pinyon pine on higher-elevation slopes. Riparian vegetation is common along the Yampa River and the Little Snake River; both of which are recreation rivers (BLM 2016). Range improvements and oil and gas developments have changed much of the scenery (BLM 2011).

In Wyoming, the Rawlins-to-Baggs area is a popular dispersed recreation destination, particularly for hunters. The scenic quality of the area is not impaired by an abundance of permanent facilities. Cultural values in this area include the Overland and Cherokee Historic Trails, the Rawlins-to-Baggs Freight Road, the historic JO Ranch, and numerous other significant cultural properties (BLM 2008b).

In Colorado, general recreation use that is, in part, dependent upon the visual quality of an area includes a variety of activities, such as boating and river-based recreation, hiking and equestrian recreation, hunting and wildlife-based recreation, and OHV use on and off roads and trails (BLM 2011a).

The Four Trails Feasibility Study intersects the decision area. In Wyoming, the nearby Sand Hills ACEC contains diverse vegetation of low-growing shrubs on natural sand dunes, with riparian habitat along Cow Creek and in irrigated meadows (BLM 2008b).

The decision area in Wyoming contains several buildings listed on the National Register. The JO Ranch Rural Historic Landscape is within the Sand Hills ACEC. It was a sheep-ranching operation from 1885 to the 1990s. It still contains original buildings of the ranch and bunk houses, barns, and corrals, and portions of the site are still used by ranchers (BLM n.d.-a).

The Red Rock (listed on the National Register) is a landmark of eroded rock formations located along the Overland Trail in Wyoming. The sandstone rock formations range in color from light pink to rust and contain the names of passing travelers. One of the names carved into the rocks dates to 1850 (Wyoming SHPO 2022a).

The Town of Baggs, Wyoming contains the First State Bank of Baggs, also on the National Register of Historic Places. It was built in 1907 and is one of the few original buildings in town (Wyoming SHPO 2022b). Dixon is a town just east of Baggs and contains the Stockgrowers Bank, also on the National Register of Historic Places. It served the upper Snake River farmers and ranchers until 1923, and later as the Dixon Town Hall (Wyoming SHPO 2022c).

The Wamsutter-Powder Rim Addition is near the Cross Mountain WSA in Colorado, a flat-topped land mass rising above the floodplain of the Yampa and Little Snake Rivers. Rising over 2,200 ft, it is a visible landmark in the region. The Yampa River forms a gorge that provides challenging whitewater for kayakers. Various portions of the mountains are used for day hikes, backcountry camping, fishing, and hunting. The scenery attracts photographers and is an excellent area for wildlife viewing (BLM n.d.-b).

Trends and Forecasts

In Wyoming, it is anticipated that an increase in unmanaged, unmonitored OHV use within the area, both for recreation and for access to the surrounding Forest Service-managed lands and to the dunes area, is creating direct, negative visual impacts (BLM 2008b).

The widespread development of petroleum, natural gas, and coal also is creating direct, negative visual impacts. Currently, visual mitigation of this activity is preventing mineral development activities from exceeding the established VRM objectives within these areas. The trend toward continued expansion of natural resource development is creating areas of potential conflict between this activity and the established VRM class objectives. Utilities are also having an increasing visual impact. As increasing numbers of sightseers and persons seeking various types of recreational opportunities pass through, an awareness of scenic values and the existing scenic quality will grow (BLM 2008b).

In some areas in Colorado, concentrated recreation use is beginning to create visual resource impacts and increased user conflicts. Wildlife-related recreation opportunities include wildlife viewing and wild horse observation. Although wildlife-based recreation activity levels are relatively constant, there is a potential for increase (particularly

viewing of wintering elk). Wildlife and bird watching tours are also common (BLM 2011a).

5.7.18.1 Night Sky

Night sky can be impacted by required utility lighting. The FAA Advisory Circular 70/7460-1K (2007) requires that all airspace obstructions higher than 200 ft or close to an airfield have appropriate lighting. Some transmission towers will require obstruction-warning lighting, and lights may be placed at higher elevations if blocked by trees or terrain. For very tall towers, this includes daytime strobe lighting as well as nighttime lighting (FAA 2007).

6 Preliminary Range of Alternatives

6.1 Introduction

Under NEPA, federal agencies are required to consider a range of reasonable alternatives. 'Reasonable alternatives' must be technically and economically feasible and meet the purpose and need for the proposed action. This AMS presents the preliminary range of alternatives to engage the public, agency partners, and BLM staff and leadership to ensure that a robust set of reasonable alternatives are identified for analysis at an early stage of the planning process. Identified alternatives are subject to refinement throughout the planning process as new information and conditions are identified. The BLM has developed preliminary alternatives based on the results from the regional review and will continue to develop additional alternatives responsive to the purpose and need based on early engagement from the public, cooperators, and consulting agencies, as well as from comments received during the scoping period initiated by the NOI. The range of alternatives could result in a variety of alternatives to currently designated corridor segments, including potential changes to corridor width, as well changes not identified during the regional review.

Reasonable alternatives respond to the purpose and need and explore trade-offs that:

- Look at unresolved questions regarding allocation of a specific resource and consider new information;
- Address major land use conflicts and/or overlapping designations; and
- Develop opportunities to reduce conflict.

6.2 Description of the Alternatives

6.2.2 No Action Alternative

The No Action alternative is comprised of the seven Section 368 energy corridors, as designated, and the existing land use planning decisions that apply to those corridors. The proposed corridor addition would not be designated as a Section 368 energy corridor.

6.2.3 Action Alternatives

A. Implement Regional Review Recommendations

The changes recommended in the regional reviews for each of the corridors are listed below and represent the Regional Review Recommendations Alternative.

- Corridor 16-104 (identified in Settlement Agreement as a Corridor of Concern) – remove corridor designation.

- Corridor 18-23 (identified in Settlement Agreement as a Corridor of Concern) – shift corridor along 1000-kV transmission line and narrow corridor width to 250-ft.
- Corridor 27-41 – shift corridor east at MP 130 along existing 500-kV transmission line and extend corridor east to Laughlin, Nevada.
- Corridor 30-52 – add a corridor braid along the Ten West Link Project authorized right-of-way (ROW) between milepost (MP) 94 and MP 200. Realign the corridor between MP 190 and MP 200 with the existing transmission line as the northern boundary of the corridor to avoid the Big Horn Mountains Wilderness Area and widen the corridor at MP 169 to maintain corridor width where a land conveyance to La Paz County was identified.
- Corridor 81-213 – add a corridor braid to the north along the Southline Transmission Project authorized ROW and the SunZia Southwest Transmission Line Project authorized ROW. Revise the corridor along the existing 500-kV transmission line from MP 0 to MP 18 to avoid overlap with the Afton Solar Energy Zone (SEZ).
- Corridor 113-114 – add corridor braid from MP 0 to MP 104 along the TransWest Express Transmission Project authorized ROW as well as an east-west connector at MP 30, connecting the designated corridor to the TransWest Express Transmission Project authorized ROW in eastern Nevada.
- Corridor 138-143 – remove corridor designation and replace Corridor 138-143 with a new corridor (Wamsutter-Powder Rim Corridor Addition) along the TransWest Express Transmission Project authorized ROW. The northern end of the corridor would begin at the intersection with Corridor 73-138 (MP 15) in Wyoming and the southern end would terminate at the intersection with Corridor 126-133 in Colorado.

B. Other Action Alternatives

Additional action alternatives for individual corridors may be identified by Cooperators, Federal agencies, Tribes, state and local agencies and the public during the scoping process or identified by the BLM during its NEPA review. Any action alternatives would need to be responsive to the purpose and need.

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7.4 Chapter 4

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7.5 Chapter 5

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7.6 Chapter 6

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7.7 Appendix A

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Appendix A: Resource-Specific Information Common to All Corridors

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Tables

Appendix A: Resource-Specific Information Common to All Corridors

A.1 Air Quality

Under the CAA, the EPA has established the NAAQS for pollutants considered harmful to public health and the environment (EPA 2022). The EPA has set NAAQS for six principal pollutants (known as "criteria" pollutants): O_3, PM with an aerodynamic diameter of 10 microns (µm) or less and 2.5 µm or less (PM_{10} and $PM_{2.5}$, respectively), CO, NO_2, SO_2, and Pb. The CAA established two types of NAAQS: primary standards (also referred to as "health effects standards") to provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly; and secondary standards (referred to as the "quality of life standards") to provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Many of the NAAQS standards address both short- and long-term exposures (e.g., 1-hr, 8-hr, 24-hr, and annual).

CAA sections 111 and 112 allow EPA to transfer primary implementation and enforcement authority for most of the federal standards to state, local, or tribal regulatory agencies, so-called "delegation."

Among criteria pollutants, the key pollutants of concern for BLM management activities along with wildfires are O_3 and PM, mostly $PM_{2.5}$. Wildland fire produces two additional pollutants – NO_X and VOCs - and they are precursors for ground-level O_3. NO_X is also a precursor for acid depositions and regional haze, which is caused by both PM directly emitted from burning and PM from formation in the atmosphere by chemical reactions of precursor emissions. In addition, PM_{10} of fugitive and windblown dust associated with land disturbances becomes an issue but, due to its larger particle size, PM_{10} can travel shorter distances and has relatively less impacts on human health and the environment compared to $PM_{2.5}$.

The EPA assigns area designations based on how the air quality of an area compares to the NAAQS. Areas with air quality that is as good as or better than NAAQS are designated as "attainment areas," while areas in which air quality is worse than NAAQS are designated as "nonattainment areas." Areas that previously were nonattainment areas but where air quality has improved to meet the NAAQS are redesignated "maintenance areas," and any area that cannot be classified based on available information as meeting or not meeting the NAAQS for any pollutant is defined as an "unclassifiable area." These area designations impose federal regulations on pollutant emissions and the time periods in which the area must again attain the standard, depending on the severity of the regional air quality problem. In general, attainment status is a key indicator of air quality for the area of interest, such as county.

A.2 Climate

The climate system has experienced recent changes which are unprecedented over many centuries to many thousands of years. According to the IPCC, it is unequivocal that human influence has warmed the atmosphere, ocean and land (IPCC 2021). The irrefutable connection between a warming climate and humans has strengthened over the years as is evidenced by the assertions from previous IPCC reports. The likely range of total human-caused global surface temperature increase from 1850–1900 to 2010–2019 is 1.4 to 2.3°F (0.8 to 1.3°C), with a best estimate of 1.93°F (1.07°C). The main human causes of climate change are the heat-absorbing GHG released by fossil fuel combustion, deforestation, and agriculture, which warm the planet; and aerosols such as sulphate from burning coal, which have a short-term cooling effect that partially counteracts human-caused warming.

Human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability. Climate-related changes include rising temperatures and sea levels; increased frequency and intensity of extreme weather (e.g., heavy downpours, floods, and droughts); earlier snowmelts and associated frequent wildfires; and reduced snow cover, glaciers, permafrost, and sea ice (IPCC 2021).

A.3 Cultural Resources

The BLM recognizes cultural resources and cultural property as “definite location[s] of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence.” and as such, are “fragile, irreplaceable resources with potential public and scientific uses, representing an important and integral part of our Nation's heritage.” (BLM 2004). Included in this definition are both prehistoric and historic sites, trails, structures, landscapes, and areas with natural resources important to native cultures (e.g., significant plants, lithic resources).

Prehistoric cultural resources include archaeological sites and related materials, structures, ideologically significant landforms and viewsheds, trails, artifacts created or modified by native cultures prior to the arrival and establishment of Europeans in the area of interest. Types of prehistoric resources include (but are not limited to) habitation sites, structures, burials, shelters, rock art, hunting blinds, raw source quarries, trails, and isolated artifact finds. Historic cultural resources refer to material remains related to the arrival and establishment of Euro-Americans in the region. These resources may include trails/roads, settlements, homesteads, mines and related structures, agricultural /irrigation features, communication lines, trash dumps, and vehicles.

Cultural resources are managed by the BLM under the following laws, regulations, and executive orders:

- National Historic Preservation Act (1966)

- Federal Land Policy and Management Act (1976)
- Archaeological Resource Protection Act (1979)
- Historic Sites Act (1935)
- Antiquities Act (1906)
- Archaeological Data Preservation Act (1974)
- Native American Graves Protection and Repatriation Act (1990)
- American Indian Religious Freedom Act (1978)
- Executive Order 13007 – Indian Sacred Sites (1996)

Section 106 of the National Historic Preservation Act requires federal agencies to consider and mitigate potential effects of the agency on cultural resources in consultation with the State Historic Preservation Office and other stakeholders as appropriate. This process normally follows several steps: 1) field survey to identify and inventory cultural resources; 2) evaluation of resources for NRHP eligibility/significance, and 3) mitigate deleterious effects on resources by avoidance or damage reduction.

The National Register of Historic Places provides a set of criteria against which identified cultural resources are evaluated for eligibility on the register. Sites that are eligible will meet at least one listed criterion and bear a level of integrity in location, design, setting, materials, workmanship, feeling, and association. In addition, BLM guidance implements a use-category classification for known/recorded sites and as yet unknown resources. Known cultural resources in the affected area provide context for the assignment of use categories and include:

A. Scientific Use: Preserved until research potential is realized
B. Conservation for future use: Preserved until conditions for use are met
C. Traditional Use: Long-term preservation
D. Public Use: Long-term preservation, on-site interpretation
E. Experimental Use: Protected until used
F. Discharged from management: No use after recordation; not preserved

Prehistoric and historic resources are weighted using these criteria, where the former is emphasized primarily by scientific research potential whereas the latter relies mainly on the integrity of the resources, serving as a guide for evaluation. Resources in both periods may be assigned more than one classification where multiple elements of scientific research merit, integrity, temporal use limitations, etc. are met (BLM 2005a).

A.4 Ecology

The MBTA is intended to ensure the sustainability of populations of all protected migratory bird species. The MBTA applies only to migratory bird species that are native to the U.S. or its territories (BLM 2007b).

Under Executive Order 13186, each federal agency that is taking an action that could have, or is likely to have, negative impacts on migratory bird populations must work with the USFWS to develop a MOU to conserve those birds. The MOUs developed by this consultation are intended to guide future agency regulatory actions and policy decisions. In addition, the MBTA implements a variety of treaties and conventions between the United States, Canada, Mexico, Japan, and Russia. This treaty makes it unlawful to take, kill, or possess migratory birds, as well as their eggs or nests (DOE and BLM 2008).

The Endangered Species Act is designed to protect critically imperiled species from extinction as a 'consequence of economic growth and development untampered by adequate concern and conservation.' BLM is required to implement conservation programs to recover imperiled species and their habitats and ensure BLM authorized activities are carried out without contributing to further harm of the species or its habitat. If the BLM is considering an action that may affect a federally-listed or proposed species or its critical habitat, the BLM must consult with the USFWS and the National Marine Fisheries Service for recommendations to minimize or avoid potential adverse effects (BLM 2023a). BLM Manual 6840, the Special Status Species Management Manual provides policy and guidance for the conservation of BLM special status species and ecosystems upon which they depend on BLM-administered lands (BLM 2008a). BLM special status species are:

- Species listed or proposed for listing under the ESA
- Species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. These are called BLM sensitive species are ae designated by the State Directors. All Federal candidate species, proposed species, and delisted species in the 5 years following delisting will be conserved as BLM sensitive species.

A.5 Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (59 FR 7629) requires Federal agencies to incorporate environmental justice as part of their missions. Specifically, it directs these agencies to address, as appropriate, any disproportionately high and adverse human health or environmental effects of their actions, programs, or policies on minority and low-income populations.

The following definitions were used to define minority and low-income population groups:

- ***Minority.*** Persons are included in the minority category if they identify themselves as belonging to any of the following racial groups: (1) Hispanic; (2) Black (not of Hispanic origin) or African American; (3) American Indian or Alaska Native; (4) Asian; or (5) Native Hawaiian or Other Pacific Islander. Persons may classify themselves as having multiple racial origins (up to six racial groups as the basis of their racial origins).

- ***Low-Income.*** Individuals whose annual income is below or equal to twice the federal poverty rate are classified as low-income. The federal poverty rate for 2022 was $13,590 for an individual and $23,030 for a family of three people. The poverty rate takes into account family size and age of individuals in the family. For any given family below the poverty line, all family members are considered as being below the poverty line for the purposes of the analysis without consideration of individual income variations within the family.

The CEQ (1997) and BLM (2022a) guidance state that low-income and minority populations should be identified where either (1) the low-income or minority population of the affected area exceeds 50%, or (2) the low-income percentage of the affected area is equal to or greater than the low-income population percentage in the general population or other appropriate unit of geographic analysis (in this case, the reference area is the county in which the buffer is located), or (3) the minority population percentage of the affected area is meaningfully greater (10 percentage points or more) than the minority population percentage in the general population of the reference area. Additional local data and information from the scoping process can also be used to help identify low-income and minority populations.

A.6 Geology, Soils, and Mining and Mineral Resources

For geology, soils and mining and mineral resources, there is no resource-specific information common for all corridors. See Sections 5.1.6, 5.2.6, 5.3.6, 5.4.6, 5.5.6, 5.6.6, and 5.7.6 for geology, soils, and mining and mineral resources-related data relevant to energy corridors evaluated in this planning effort.

A.7 Human Health and Safety

General. The long-distance transport of high-voltage electricity via transmission lines and of other fuels (i.e., natural gas, crude oil, other liquid petroleum products, and hydrogen) via pipelines involves well-developed technologies and system, such that potential health and safety impacts for both workers and the general public are well addressed through existing regulations. Transmission lines and pipelines are all subject to federal (Federal Energy Regulatory Commission [FERC], Department of Transportation [DOT], Occupational Safety and Health Administration [OSHA], EPA) and state regulations that focus on the protection of workers, public health, and the environment. Transport of hydrogen via pipelines involves some special considerations due to its high combustibility; hydrogen is regulated as a flammable gas under DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA), including corresponding pipeline safety requirements. Industry best practices also are based on ensuring safe construction and reliable (i.e., safe) operation.

Worker Health and Safety. Table A.7-1 provides a summary of the major health and safety issues associated with the *construction* of high-voltage electricity transmission systems and pipelines. Some of these health and safety impacts result from the fact that construction activities mainly occur in outdoor environments, sometimes exposing

workers to extremes of temperature and storms, and include the potential for harmful interactions with plants, insects, and animals.

Many of the health and safety impacts associated with *routine operations* are unique to the systems, such as potential exposure of transmission line workers to energized systems, or potential exposure of pipeline workers to flammable materials or high operating pressures. Tables A.7-2 and A.7-3 provide summaries of the major health and safety issues associated with the routine operation of high-voltage electricity transmission systems and pipelines, respectively.

Table A.7-1. Major Health and Safety Hazards Associated with Construction of High-Voltage Electricity Transmission Systems and Pipelines[1]

Activity	Generic Hazard	Control
Clearing ROW and constructing access roads	Physical hazards from use of heavy equipment, power saws; falling trees and branches; exposure to herbicides; bee stings and animal bites; noise exposure; trips and falls; eye pokes; heat and cold stress; smoke inhalation	Training; health and safety plan; daily safety briefing; use of PPE; safeguards on equipment; safe practices for downing trees; safe operation of equipment; approved herbicide application procedures; first aid; burn permit/waste management plan
Construction and use of temporary power and/or energy systems used during construction activities, working on electrical systems	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.)	Electrical safety program; appropriate design and installation of temporary systems; PPE program; appropriately designed electrical devices
Exposure to hazardous materials/chemicals	Employee contact with hazardous materials/chemicals as a result of accidental releases	PPE program; spill/emergency response plans, equipment; worker training
Exposure to hazardous waste	Personnel who are working with or have the potential to be exposed to contaminated soil, groundwater, or debris during construction	Hazardous waste management program
Confined space entry (equipment vaults)	Employee injury from physical and chemical hazards; dangerous atmospheres	Permit required; confined space entry, air monitoring, PPE, and respiratory protection programs
General construction activity: trenching and excavation (most applicable for pipelines)	Employee injury resulting from trench wall collapse; injury from trenching excavating equipment	Proper bracing of trench walls; trench stabilization techniques; employee training programs; rescue response plans, equipment, and training
General construction activity: power tools	Employee injury from hand and portable power tools	Hand and portable power tool safety program; PPE program
General construction activity: hoisting and lifting	Employee injury or property damage from falling loads; injury or damage from contact with derrick or crane	Hoisting and rigging program; employee awareness training; PPE
General construction activity: walking/working	Employee injury/property damage from uneven walking/work surfaces	Housekeeping and material handling and storage program
General construction activity: noise	Employee exposure to occupational noise	Hearing conservation program; PPE program
General construction activity: material handling	Employee injury from improper lifting and carrying of materials and equipment	Back injury prevention program

Activity	Generic Hazard	Control
General construction activity: impacts	Employee injury to head, eye/face, hand, body, foot, and skin	PPE program
General construction activity: dusts, vapors, fumes	Employee exposure to hazardous gases, vapors, dusts, and fumes	Hazard communication program; respiratory protection program; PPE program; air monitoring program; fugitive dust management plans
General construction activity: various hazards	Employee exposure to various hazards; reporting of hazardous conditions during construction	Injury and illness prevention program
General construction activity: heat/cold stress	Heat and cold stress; weather extremes	Heat and cold stress monitoring and control program; shelter from weather extremes; appropriate clothing
General construction activity: fall potential	Fall potential resulting from working in rugged areas	Safety harnesses; General safety, employee training, and rescue response plans, equipment, and training
General construction activity: welding	Employee exposure to compressed gases (welding gases) (compressed air-driven tools and equipment)	Hazard communication program, compressed gas storage, handling, and use training
General construction activity: working near/in water	Employee exposure to water (water crossings)	Special construction techniques and training; special personal protective devices
Installation and testing of gas-filled equipment	Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure	Gas-filled equipment safety program; electrical safety program
Dangerous animals/insects	Bites and injuries sustained from contact with dangerous animals, insects, and plants	Hazard awareness training; protective clothing; pest and vegetation control and dangerous animal management programs; on-site first-aid capabilities
Activities Specific to Transmission Line Construction:		
Installing transmission line support towers	Heavy equipment operation, crane operation; overhead work/falling items; falls from height	Licensed equipment operators; work area controls; PPE/hard hats; safety equipment
Stringing conductors	Rotating equipment; lines under tension; suspended loads; overhead work/falling items	Work area controls; PPE; safety equipment
Installing AC mitigation	Heavy equipment operation; buried utilities; falls in trenches	Trenching/confined space entry plan; ground surveys
Building substations	General construction hazards; working around live electricity and energized equipment; exposure to hazardous materials	Electrical safety plan; hazardous materials safety plan
Activities Specific to Pipeline Construction:		
Construction and testing of high-pressure natural gas systems	Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure	Pressure vessel and pipeline safety program; electrical safety program

[1] Table adapted from the WWEC PEIS, Tables 3.14-6 and 3.14-7 (DOE and BLM 2008).

Table A.7-2. Major Health and Safety Hazards Associated with Operation of High-Voltage Electricity Transmission Systems[1]

Activity	Generic Hazard	Control
Alternating current (AC) flow	EMF exposure	Line routing; ROW spacing; clearances; de-energizing when possible
Induced currents	Corrosion of adjacent pipelines and other metallic buried infrastructure	Monitoring; cathodic protection systems; pipe coatings
Induced voltages	Shock hazards	AC mitigation installation; use of ground fault mats; grounding of metallic equipment and objects
ROW maintenance/hot work repairs	Heavy equipment operation; power saw operation; falling trees, branches; exposure to herbicides; working around energized transmission lines and shock hazards	Health and safety plan; daily briefings; licensed operators; safeguards on equipment; PPE and safety equipment; electrical safety plan and procedures
Transmission line maintenance	Falls from heights; shock hazards; helicopter/plane operation risks	Training; safety equipment; work in good weather
Inspections conducted on the ground	Weather extremes; rugged terrain; dangerous animals, insects, and plants	Hazard training; protective clothing; heat and cold stress control, pest & vegetation control, & dangerous animal management programs; on-site first-aid

[1] Table adapted from WWEC PEIS, Table 3.14-9 (DOE and BLM 2008)

Table A.7-3. Major Health and Safety Hazards Associated with Pipeline Operations[1]

Activity	Generic Hazard	Control
Motor vehicle and heavy equipment use	Employee injury and property damage from collisions between people and equipment	Motor vehicle and heavy equipment safety program
Forklift operations	Same as heavy equipment use	Forklift operation program
Trenching and excavation during pipeline repair/replacement activities	Employee injury and property damage from the collapse of trenches and excavations	Excavation/trenching program
Working at elevated locations	Falls from the same level and elevated areas	Fall protection program; scaffolding/ladder safety program
Use of cranes, derricks, or other lifting devices	Employee injuries and/or property damage from falling loads; injuries and property damage from contact with crane or derrick	Crane and material handling program
Working with flammable and combustible gases (natural gas) and flammable liquid fuels	Fire/spills; accidental exposures	Emergency response plans, equipment, and first responder training; fire protection and prevention and hazard communication programs; PPE
Working with hazardous materials	Employee injury due to ingestion, inhalation, dermal contact	Hazard communication program; PPE; engineered barriers
Hot work (including cutting and welding)	Employee injury and property damage from fire; exposure to fumes, UV and/or ultraviolet radiation during cutting and welding	Hot work safety, respiratory protection, employee exposure monitoring, and fire protection and prevention programs; PPE

Activity	Generic Hazard	Control
Troubleshooting and maintenance of pipeline systems and general operational activities	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.); employee exposure to gases maintained at high pressures (natural gas and hydrogen pipeline systems only)	Electrical safety program; high pressure gas training
Working on electrical equipment and systems	Employee contact with live electricity	Electrical safety program; PPE program
Confined space entry	Employee injury from physical and chemical hazards and life-threatening atmospheres	Permit required; confined-space entry program; PPE; respirator program
General pipeline operation activities: power tools	Employee injuries from hand and portable power tools	Hand and portable power tool safety program; PPE program
General pipeline operation activities: walking/working on surfaces	Employee injury and property damage from inadequate walking and work surfaces	Housekeeping and material handling and storage program
General pipeline operation activities: noise	Employee overexposure to occupational noise	Hearing conservation program; PPE program
General pipeline operation activities: material handling	Employee injury from improper lifting and carrying of materials and equipment	Back injury prevention program
General pipeline operation activities: hazardous chemicals	Employee overexposure to hazardous gases, vapors, dusts, and fumes	Hazard communication program; respiratory protection program; PPE program; employee exposure monitoring program
General pipeline operation activities: various hazardous conditions	Reporting and repair of hazardous conditions	Injury and illness prevention program
General pipeline operation activities: heat/cold stress	Heat and cold stress	Heat and cold stress monitoring and control program
General pipeline operation activities: ergonomics	Ergonomic injuries	Ergonomic awareness program
Maintenance and repair of natural gas system: compressed gases	Employee injury and property damage due to failure of pressurized system components or unexpected release of pressure	Pressure vessel and pipeline safety program; electrical safety program
Maintenance and repair of natural gas system: compressed gases, flammable materials	Employee injury and property damage due to natural gas ignition and fire	Emergency action program/plan; risk management plan

[1] Table adapted from WWEC PEIS, Table 3.14-8 (DOE and BLM 2008)

Public Health. Activities that could impose health and safety impacts on the public include movement of construction and worker vehicles along public roadways (increased traffic), and transportation of heavy or oversized loads during construction and decommissioning of a project or for repairs or technology upgrades occurring during operations. Additional hazards to the public could be associated with risks from unauthorized access to construction worksites and material storage and laydown areas. Traffic management plans for specific projects could aid in minimizing risks to workers and the public. Planning to protect against unauthorized access by intruders during off-hours could also minimize risk to the public.

When current flows through transmission lines electric and magnetic fields are generated (described collectively as electromagnetic fields or EMFs). These fields rapidly decrease in strength with distance from the source. For example, for a single-circuit 500-kV lattice structure transmission line, the magnetic field strength is about 250 milliGauss (mG) directly under the line, decreases to about 25 mG at 38 m (125 ft) distance from the centerline, and to less than 10 mG at 61 m (200 ft) from the centerline (Stokes and Funkhouser 2018).

While no federal regulations or guidelines exist for magnetic field exposures, the International Committee on Electromagnetic Safety (ICES) and International Commission on Non-Ionizing Radiation Protection (ICNIRP) have developed guidelines. These guidelines for exposures among the general public are 9,040 mG for (ICES) and 2,000 mG (ICNIRP) (ICES 2002, ICNIRP 2010). The guidelines appear to apply to short-term exposures and are based on threshold-type (non-cancer) health effects such as induced temperature change in the body. Additionally, 2 states (Florida and New York), have standards for magnetic field strengths at the edges of ROWs, which are 150 mG and 200 mG, respectively (Stokes and Funkhouser 2018).

The 2009 WWEC PEIS presented information on the potential health effects associated with exposure to EMFs, particularly the lack of scientific consensus regarding the relationship between exposure to EMFs and adverse health consequences. Since that time some additional research has focused on resolving the question of whether high magnetic field exposures cause childhood leukemias. Two studies conducted between 2000 and 2010 that pool results of many epidemiologic studies found a 1.4 and 1.7-fold increase in childhood leukemia among children with estimated daily average exposures of 3 mG or higher (NCI 2022). This level of exposure is very rare within homes – fewer than 3% of the children in these studies experienced this high level of exposure. However, due to a lack of identified mechanisms, no similar findings observed in animal experimental studies, and shortcomings in the epidemiological studies, the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) opinion is that the EMF exposures cannot be proven causal for the childhood leukemias observed (European Commission 2015).

Physical and Geologic Hazards. Some health and safety impacts may arise due to the presence of site-specific physical or geologic features. For example, construction activities in rugged terrain or in areas of heightened potential for natural hazards such as landslides and earthquakes impose additional unique hazards and increase the potential for impacts to occur. The health and safety impacts related to physical and geologic features include increased risks of spills and fires if the integrity of the infrastructure is damaged.

Specific geologic features related to health and safety impacts that are evaluated for the corridors include volcanic hazards, seismic hazards, fault (surface rupture) crossings, liquefaction, and landslide hazards.

Volcanic hazards include direct blasts from volcanoes in which lava (hot melted rock) flows at high speed down slopes and into valleys destroy whatever is in their path;

physical impacts from falling fragments of rock, lava, and ash; fires, earthquakes; and floods produced by rapid melting of snow and ice during eruptions.

Earthquake hazards include strong ground-shaking, liquefaction of soil, landslides, soil compaction, and surface fault ruptures. Seismic hazards are generally measured in terms of the intensity of an earthquake. Intensity is measured as peak ground acceleration (PGA) in units of %g, defined relative to the gravity of earth (980 cm/sec^2). To put this into perspective, earthquakes of 0.1 %g are perceptible by people; 2%g cause people to lose their balance, and 50%g are very intense but buildings can survive if well-designed and earthquake duration is short (Lorant 2016).

Earthquakes may reactivate faults and cause displacements. The displacements can shear, compress, or pull structures if they are built directly across the faults. Significant structural damage can result if the displacement is large. Surface rupturing (or faulting) commonly recurs along existing fault traces. Younger faults are likely to be more active than older faults.

Landslides are defined as the downhill movement of geologic material by the force of gravity. They can include rock falls, catastrophic avalanches and debris flows, and deep-seated landslides of weathered and unconsolidated materials. Landslides commonly occur in weak geologic material, such as weathered and fractured rocks and unconsolidated sediment, and on steep slopes (although saturated debris flows can occur on gentler slopes). Landslides are commonly triggered by heavy rains and/or rapid snowmelts, volcanic eruptions, earthquakes, and toe-cutting on unstable slopes by natural erosion or human activities.

Liquefaction occurs when saturated sandy and/or silty soils experience intense ground shaking and lose their bearing capacity, damaging any overlying structures. The WWEC PEIS identified locations of liquefaction risk within the 11-state study area (Figure 3.14.3 of the WWEC PEIS) (DOE and BLM 2008).

Fire Hazards. Clearing and maintaining a ROW through a wooded area (e.g., especially one containing high-fire-risk species such as pinion juniper) can result in the creation of a man-made firebreak. Clearing mainline ROWs and certain functional areas, such as electrical substations and pump and compressor stations, for operational safety can also reduce the amount of fuel available within the ROW for fires. However, potential impacts would also include an increased risk of fires because of the use of flammable fuels and hazardous materials during construction or decommissioning, spills or releases of flammable commodities from operational pipelines, and the operation of internal combustion sources (e.g., vehicle engines) and external combustion sources (e.g., boilers) during construction and decommissioning phases and, to a lesser extent, during operating phases of any of the energy transport systems that might be located within the corridor.

Vegetation management could also increase the risk of fire or facilitate the spread of fire. A ROW cleared of native vegetation that subsequently becomes populated by certain invasive species would result in increased risks of both initiation and spread of fire. For example, if invasive annual grasses (e.g., cheatgrass) were allowed to invade

and populate a ROW, the risk of fires in that ROW might be more than the risks in the undisturbed ROW. Fire risks might increase because of the presence of certain structures associated with energy transport systems.

Tall electricity transmission towers and communication towers, as well as structures that are substantially taller than surrounding vegetation, represent an increased potential for lightning strikes (however, standard practice would require that all such structures be grounded). Ground faults or arcing from energized electricity conductors and substation equipment also represent an increased potential for fire.

The number of wildfires and area burned annually has been increasing drastically in the western United States since the 1980s, due mainly to climate change, past fire management practices, and increased areas of invasive species (Dennison et al. 2014). Transmission lines can both cause wildfires (for example, the 2018 Camp Fire in California was caused by high winds that downed power lines; Jahn et al. 2022) and be impacted by wildfires started elsewhere. Geological hazards such as volcanic eruptions and earthquakes could also result in damage to towers or conductors, causing wildfires. Damage to towers or power conductors due to exposure to intense heat from an adjacent fire could cause wholesale failure of transmission systems involving electrical arcing to ground. Such failure of transmission systems would increase risks to fire-fighting personnel and equipment in the immediate vicinity. For example, power lines and their support towers would represent obstacles to safe staging of fire-fighting equipment (including air tankers).

A.8 Hydrology

For hydrology resources, there is no resource-specific information common for all corridors. See Sections 5.1.8, 5.2.8, 5.3.8, 5.4.8, 5.5.8, 5.6.8, and 5.7.8 for hydrology-related data relevant to energy corridors evaluated in this planning effort.

A.9 Lands and Realty

Land use on BLM-administered lands are governed by various land use plans including RMPs. RMPs and the decisions they promulgate are the basis for every on-the-ground action the agency undertakes. As required by FLPMA, NEPA, and Federal land management policy, public lands are managed under the principles of multiple use and sustained yield (BLM 2005a).

Land use and land management is closely associated with the multiple resource uses and sustained yield of diverse natural resources occurring within BLM-administered lands. Most land use topics have been addressed in other sections of this AMS including cultural resources, ecology, fire and fuels, mining and mineral resources, livestock grazing, wild horses and burros, recreation, visual resources, Tribal interests, and special land designations. These uses are managed within a framework of numerous laws, the most comprehensive of which is FLPMA. The FLPMA established the "multiple use" management framework for public lands, so that "public lands and their various resource values . . . are utilized in the combination that will best meet the

present and future needs of the American people" (from Section 103(c) of FLPMA). The FLPMA ensures there is no predominant or single use that overrides the multiple-use concept on any of the lands managed by the BLM (BLM and 2008).

FLPMA, as amended, enables BLM to accomplish a variety of lands actions, including but not limited to sales, withdrawals, acquisitions, exchanges, leases, permits, easements, and ROWs (BLM 2016). The lands and realty program consists generally of two distinct segments: land use authorizations and land tenure. A BLM land use authorization permits an applicant to use a specific piece of public land for a certain project. The BLM receives inquiries and proposals from federal, state, and local governments, as well as from private individuals and companies interested in either acquiring access across or locating facilities on public land (BLM 2007b; 2010a).

Land tenure includes purchases and acquisitions, sales and exchanges, and withdrawals of public lands. Land tenure activities aim to improve management of natural resources; increase recreational opportunities and ensure public access to public lands; preserve open space and traditional landscapes; secure key property necessary to protect endangered species, promote biological diversity, and preserve wildlife habitat and migration corridors; preserve archaeological, historical and paleontological resources; and accomplish specific acquisitions authorized by Congress (BLM 2023b). Public lands identified for potential land tenure adjustments include lands identified for either retention and acquisition or lands available for either disposal or exchange. Lands identified for retention and acquisition have higher resource values, facilitate management efficiency, and provide public access to resources. Lands identified for disposal or exchange contain lands that are inefficient to manage because of their small size or isolated location, or have no known or minimal resource values (BLM 2007b, 2007c; 2010a).

Land tenure adjustment are administered by BLM field offices on a case-by-case basis in response to public demand or at the initiative of BLM in order to meet its land management objectives. Prior to making land tenure adjustments, BLM must determine whether the adjustment would comply with FLPMA criteria (BLM 2016), conduct an environmental analysis, and evaluate the consistency of the action with the appropriate management framework plans or land use plans (BLM 2007c). Areas with anticipated higher potential for land tenure adjustments include inholdings or lands adjacent to specially designated areas such as ACECs, SRMAs, WSAs, and existing or potential recreation sites. In addition, public lands that interface with areas of increasing population growth could be targets for potential land tenure adjustments (BLM 2019a).

Retention and Acquisition

Retention areas are generally large expanses of public lands with smaller private inholdings or areas with special management considerations or significant resources. They are often portions of and, in some cases, all of specific existing management areas. Special management areas where public lands would be retained include WSAs, ACECs, resource natural areas, ROWs, and other special management areas (BLM 2007c, 2007d). Other special management areas include lands with habitat for

federally listed, proposed, or candidate species or proposed or critical habitat (unless the disposal results in the acquisition of land with higher quality habitat), portions of the National Trails System, lands containing resources qualifying as National Natural Landmarks, lands with springs and creeks that contain fisheries in federal ownership (unless the disposal of these lands will result in the acquisition of lands with higher quality habitat), and lands in areas with high recreation value (unless state and county entities show an over-riding need through an acceptable recreation management plan) (BLM 2007d, 2008b).

Acquisition of private land is authorized under section 205 (a) of FLPMA (BLM 2016) and can be pursued to facilitate various resource management objectives (BLM 1999). Land acquisition objectives are to acquire lands with high resource or recreational values that complement existing management programs, facilitate implementation of the Field Office RMP, or eliminate split-estate lands by acquiring either the surface or subsurface rights. Parcels identified for acquisition, much like lands identified for retention, are specific to areas with known unique characteristics, areas necessary to ensure public access for recreation, and parcels targeted to solidify holdings within or adjacent to special management areas (such as National Conservation Lands), or eliminate split-estate by acquiring either the surface or subsurface rights, if acquisition of rights will be in the public interest.

Acquisition of non-federal lands would be prioritized based on the potential to enhance the conservation and management of listed species habitats, riparian habitat, key big game habitat, or to improve the overall manageability of wildlife habitat; or to acquire lands that contain areas of critical cultural or historic values. Other acquisitions are considered when specific proposals are offered to BLM by private individuals. Acquisitions will include surface and subsurface rights, and water rights whenever possible. The purposes of acquiring these lands include improving manageability and ensuring access to BLM-administered public lands, and to protect or enhance important resources (BLM 1991; 1999; 2007b, 2007c; 2010a; 2015a; 2019a, 2019b).

Lands acquired will be managed in a manner consistent with adjacent or nearby lands, or managed for the goals, objectives, and standards for which they were acquired. For example, lands acquired within Wilderness Areas will automatically become wilderness, and lands purchased within an existing ACEC would become part of the ACEC (BLM 2015a).

Disposal and Exchange

Public lands that BLM intends to dispose of either by land exchange or sale are referred to as disposal areas. The BLM-administered lands to be exchanged or sold into private ownership in the disposal areas are generally smaller, scattered, isolated parcels surrounded by private land in areas where BLM does not generally intend to focus on long-term continued management (BLM 2007d). Laws such as FLPMA and the Federal Land Exchange Facilitation Act provide specific authority for land exchanges. The emphasis for the exchange program is to acquire private and State trust lands in areas that have high resource values or unique characteristics that would enhance

management of the public land, and dispose of public land that is valuable for urban expansion or other physical characteristics that make them difficult or uneconomical for BLM to manage (BLM 1993a; 2019a). Exchanges of public land are conducted in accordance with FLPMA Section 206 (BLM 2016), which requires a determination that the public interest will be well served by making an exchange (BLM 2019a). Generally, exchanges are pursued when private parcels have higher resource values than BLM lands (BLM 2008c).

The BLM manages public land sales under the disposal criteria set forth in FLPMA Section 203. Public lands determined suitable for sale are to be sold at not less than fair market value. Criteria for disposal include: the tract location or characteristics is difficult and uneconomic to manage and is not suitable for management by another Federal department or agency; the tract was acquired for a specific purpose that is no longer required; and disposal of the tract will serve important public objectives (BLM 2016). Any lands to be disposed of by sale that are not identified in the current RMP will require a plan amendment before a sale can occur.

Under 43 CFR Part 2710.0-3, BLM is authorized to sell public lands where, as a result of land use planning, it is determined that (1) the tract was acquired for a specific purpose but is no longer required for that or any other federal purpose, (2) disposal of such tracts serves important public objectives, including expansion of communities and economic development, and (3) such tracts are difficult and uneconomical to manage because of their location or other characteristics (BLM 1999; 2019a).

Trespass

Trespass involves the use, occupancy, or development of public lands or their resources without a required authorization or in a way that is beyond the scope and terms and conditions of the authorization. Trespass is a prohibited act which includes acts or omissions causing unnecessary or undue degradation to the public lands or their resources. Samples of trespass include but are not limited to illegal dump sites; unauthorized construction of facilities, structures, or roads; and residential or agricultural uses (BLM 2010a). Land disposal may be used to resolve inadvertent occupancy trespass (cases where survey error has resulted in home construction on BLM-administered land). Disposals to resolve inadvertent occupancy trespass will be limited to the smallest legal subdivision which includes the private development (BLM 1993b).

It is the BLM's responsibility to protect the public lands from trespass and encroachment through means of prevention, detection, and resolution. Existing management guides the resolution of unauthorized land uses/trespass through cessation of use, authorization by ROW, lease or permit, or disposal (though direct sale under FLPMA Section 203 or other appropriate means) (BLM 2019a).

A.9.1 Renewable Energy

U.S. energy policy calls for an increase in renewable energy production on federal lands. Wind, solar, and geothermal resources are the main renewable energy resources with the potential for development on BLM-administered lands. Wind and solar are processed through the lands and realty program as ROW actions. Since geothermal resources are considered a fluid leasable mineral that the BLM processes according to the provisions of the Mineral Leasing Act, only limited discussion of this resource will be discussed here (BLM 2008d). Beginning in 2003, BLM and DOE initiated a series of environmental reviews for renewable energy development in the western United States. The overall objective of these reviews was to expedite the amendment of individual land use plans throughout the BLM for renewable energy development. A PEIS for wind energy development was completed in 2005 (BLM 2005b) and a RMPA/ROD for leasing geothermal resources was completed in 2008 (BLM 2008d). The PEIS for solar energy development was completed in 2012 (BLM and DOE 2012). The decisions that followed those reviews established agency-wide policies and procedures for processing renewable energy applications. They also included lease stipulations and/or design features to minimize environmental impacts, and processes for land use allocations based on renewable energy resource potential (BLM 2019a).

It is BLM policy to provide opportunities for development of renewable energy, where development of renewable energy is practicable. BLM-administered lands are available for renewable energy development, and adverse impacts on other resources can be minimized. However, specially designated lands such as Wilderness Areas, WSAs, NCAs, National Monuments, and ACECs are often designated as exclusion or avoidance areas for renewable energy development (BLM 2007b; 2008b, 2008c).

A.9.2 Rights-of-Way

A ROW is an authorization to place facilities over, on, under, or through public lands for construction, operation, maintenance, or termination of a project. ROW authorizations include such uses as roads, water pipelines, natural gas pipelines, power lines, telephone lines, fiber optic cables, railroads, canals, ditches, and communication sites (BLM 2023b).

With the exception of ROW exclusion and avoidance areas, most public lands are open to ROW applications. ROW exclusion areas are lands which are not available for ROWs under any conditions and generally include wilderness areas, wild and scenic rivers, and other Congressionally designated areas (BLM 2005a). ROW avoidance areas are lands to be avoided but may be available for ROWs with special stipulations and generally include ACECs or other designations.; Designated corridors are BLM's preferred routes for placing ROWs for utilities (e.g., pipelines and power lines) and transportation (e.g., highways and railroads). Areas with the highest demand potential for utility corridors include the corridors designated by the WWEC PEIS and existing major roads, trans-regional pipelines, electric transmission power lines, and railways (DOE and BLM 2008). ROWs are authorized through ROW grants. The grant authorizes rights and privileges for

a specific use of the land for a specific period of time. In general, ROW applications are initiated by the public to address a need for access across BLM-administered lands. Other uses, such as communications facilities, require a ROW lease for use of public land (BLM 2007c).

A.9.3 Military Training Flight Routes

Military training flight operations conducted by DoD is more of an activity that occurs over BLM-administered lands rather than an actual land use of BLM-administered lands. The military training operations program is a joint venture by the FAA and the DoD to develop routes for the purpose of conducting low-altitude, high-speed training. The DoD trains in a wide range of airborne tactics, including low-level combat. Military training generally occurs below 10,000 feet at speeds of more than 288 mph, with some training flights occurring close to ground surface) (BLM and Western 2015). Development within BLM-administered lands that occur within military flight operations areas, particularly transmission lines and wind-energy facilities, would require consultation with the DoD during project planning to ensure projects do not conflict with DoD training activities (DOE and BLM 2008**;** BLM and Western 2015).

Military training operations include SUAs and MTRs. The FAA and DoD define SUA as follows (BLM and Western 2015):

- Prohibited Areas - airspace that may contain a high volume of pilot training activity or an unusual type of aerial activity, neither of which is hazardous to aircraft.
- Restricted Area - airspace designated for hazardous military activities including live firing of weapons. Restrictions are placed on all non-participating air traffic.
- Warning Areas - international airspace designated for military activities. Although activities may be hazardous, international agreements do not provide for prohibition of flight in international airspace.
- Military Operations Areas (MOAs) - airspace designated for non-hazardous military activity such as acrobatics, air combat tactics, and formation training. The designation informs and segregates non-participating instrument flight rules aircraft from the activity. Visual flight rules aircraft are not restricted from operating in MOAs.

MTRs involves military flight training at airspeeds in excess of 288 mph. The major types of MTRs are (BLM and Western 2015):

- Instrument Flight Rules (MTR-IR): low-altitude navigation and tactical training below 10,000 feet and at airspeeds in excess of 288 mph at night and in foul weather, and
- Visual Flight Rules (MTR-VR): low-altitude navigation and tactical training below 10,000 feet at airspeeds in excess of 288 mph under visual flight rules.

There are also slow speed, low altitude training routes (MTR-slow speed). While not a true MTR, they are otherwise treated as one. An MTR-slow speed training route is similar to an MTR-VR, but without the permission to exceed 288 mph. Transmission line structures (or wind turbines) built along training routes generally need to be limited in height to less than 200 feet, and consultation with military authorities is advised (BLM and Western 2015).

A.10 Lands with Wilderness Characteristics

For lands with wilderness characteristics, there is no resource-specific information common for all corridors. See Sections 5.1.10, 5.2.10, 5.3.10, 5.4.10, 5.5.10, 5.6.10, and 5.7.10 for lands with wilderness characteristics-related data relevant to energy corridors evaluated in this planning effort.

A.11 Livestock Grazing and Wild Horse and Burro (Rangeland Resources)

A.11.1 Livestock Grazing

Livestock grazing is managed on about 90% of the BLM-administered public lands in the 11 western states (DOE and BLM 2008). BLM is directed to authorize and manage livestock grazing on public land under the principles of multiple use and sustained yield and to prevent the degradation of the rangeland resources by providing for their orderly use, improvement, and development. Grazing is authorized under the Taylor Grazing Act of 1934, FLPMA of 1976, and the Public Rangelands Improvement Act of 1978 (PRIA), several executive orders, and public land orders. FLPMA directs the management of public land for multiple use and sustained yield; while PRIA directs improvement of rangeland conditions and provides for rangeland improvements including establishing habitat for wildlife. The Endangered Species Act of 1973, the Archaeological Resource Protection Act of 1971, and NEPA can affect livestock grazing activities by requiring additional resource management actions. The process to allocate grazing use involves a number of steps including the classification of an area as suitable for grazing, an adjudication process to determine who is eligible to graze, the determination of allocations, numbers of livestock, class of livestock (sheep, cattle and/or horses) and seasons of use (BLM 1993a, 2002, 2008b, 2011).

The BLM authorizes livestock grazing via leases and permits. Livestock grazing can be authorized on BLM-administered lands that are designated in land use plans as available for livestock grazing The leases and permit specify the grazing preference, including active use (the AUMs available for livestock grazing) and suspended use (the AUMs that are not available for livestock grazing), and the terms and conditions under which permittees make grazing use during the term of the lease or permit. An AUM is a standardized unit of measurement as a month's use and occupancy of range by 1 cow, bull, steer, heifer, horse, burro, mule, 5 sheep, or 5 goats or the amount of forage necessary for the sustenance of one cow or its equivalent for a period of 1 month(43 CFR Part 4130).

BLM objectives for grazing management on public lands are to: a) promote healthy, sustainable rangeland ecosystems that produce a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, clean water, and safe and functional watersheds; b) restore and improve public rangelands to properly functioning condition, where needed; c) provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy rangelands; and d) ensure that public land users and stakeholders have a meaningful voice in establishing policy and managing public rangelands (BLM 1999, 2007d).

In some areas, there is direct competition for forage and water between livestock and wild horses and/or livestock and wildlife. Where this competition occurs, wild horses and wildlife are generally emphasized over livestock use. In areas where livestock grazing is not be compatible with other uses, grazing would not be permitted. Additionally, public land would not be allocated for livestock grazing where the land is not suitable for livestock grazing, or the public land contains resource values that cannot be adequately protected from livestock impacts through mitigating measures (BLM 2011, 2019a).

A.11.2 Wild Horse and Burro

The Wild Free-Roaming Horses and Burros Act (16 USC 1331 et seq.) passed by Congress in 1971 gave BLM the responsibility to protect, manage, and control wild horses and burros . Under this Act, wild horses and burros are considered an integral part of the national system of public lands in the areas where they were found in 1971. These areas are classified as herd areas. The general management objectives for wild horses are to (1) protect, maintain, and control viable, healthy herds with diverse age structures while retaining their free-roaming nature; (2) provide adequate habitat for wild horses through the principles of multiple use and environmental protection; (3) maintain a thriving natural ecological balance with other resources; (4) provide opportunities for the public to view wild horses; and (5) protect wild horses from unauthorized capture, branding, harassment, or death (BLM 2010b; DOE and BLM 2008). To achieve this goal, the BLM designates HMAs for the long-term maintenance of herds and collects data about the animals and their habitat (BLM 2010b).

Herd population management is important for balancing herd numbers with forage resources and with other uses of the public and adjacent private lands. The AML is a population range within which wild horses and burros can be managed for the long term. AMLs include an upper and lower limit, and applies to the number of adult wild horses and burros to be managed within the population. The AML upper limit is established as the maximum number of wild horses and burros, above which rangeland damage could occur; while the AML lower limit establishes a number that allows the population to grow (at the annual population growth rate) to the upper limit over a period of 3 to 5 years. (BLM 2010b; DOE and BLM 2008).

The BLM manages populations in each of the HMAs through wild horse gathers and removals, periodically gathering and removing excess animals before the range is

overgrazed and damaged. Gathered wild horses and burros are sent to the BLM preparation facility where they are placed for adoption through the Wild Horse and Burro Adoption Program or placed on off-range pastures rented from land owners in the Great Plains and Midwest. Wild horses and burros that are found outside of HMAs are considered excess and are subject to annual removal (BLM 2023c; DOE and BLM 2008).

Within all BLM-administered lands, HAs total 42,304,802 acres and HMAs total 26,917,766 acres. The wild horse high end AML is 23,866, but the estimated wild horse population is 64,604. The burro high end AML is 2,919, but the estimated burro population is 17,780. Overall, the total wild horse and burro population is estimated at 82,384, whereas the overall wild horse and burro AML is 26,785 giving an excess wild horse and burro estimate of 55,599. Of the 177 HMAs in the 10 western states, only 37 are at AMLs (BLM 2022b).

A.12 Noise

Any pressure variation that the human ear can detect is considered sound; noise is unwanted sound. Sound is described in terms of amplitude (perceived as loudness) and frequency (perceived as pitch). Sound pressure levels are typically measured with the logarithmic decibel (dB) scale. To account for human sensitivity to frequencies of sound (i.e., less sensitivity to lower and higher frequencies, and most sensitivity to sounds between 1 and 5 kHz), A-weighting (denoted by dBA) is widely used and is correlated with a human's subjective reaction to sound (ASA 1983, 1985). To account for variations of sound with time, the equivalent continuous sound level (L_{eq}), which is the continuous sound level during a specific time period that would contain the same total energy as the actual time-varying sound, is used. For example, $L_{eq(1\text{-}h)}$ is the 1-hr equivalent continuous sound level. In addition, human responses to noise differ depending on the time of the day; humans experience more annoyance from noise during nighttime hours due to relatively low background levels. The day-night average sound level (L_{dn} or DNL) metric describes a receiver's cumulative noise exposure from all events over a full 24 hours $L_{eq(24\text{-}h)}$, with a 10-dB penalty applied to nighttime hours (between 10 pm and 7 am) to account for the greater sensitivity of most people to nighttime noise. The Community Noise Equivalent Level (CNEL) was introduced in the early 1970s by the State of California and gives 5-dB weighting to evening hours (7 to 10 pm), whereas L_{dn} has no weighting. As a practical matter, the CNEL and L_{dn} are almost equivalent, usually differing by less than 1 dB, and thus they can be used interchangeably.

People's responses to changes in sound levels generally exhibit the following characteristics (NWCC 2002). Except under laboratory conditions, a 1-dB change in sound level is not perceptible. Generally, a 3-dB change is considered a just noticeable difference, and a 10-dB increase is subjectively perceived as a doubling in loudness and almost always causes an adverse community response.

At the federal level, the Noise Control Act of 1972, along with its subsequent amendments (Quiet Communities Act of 1978, USC 42 4901–4918), delegates the authority to the states to regulate environmental noise and directs government

agencies to comply with local community noise statutes and regulations. Gas pipelines are subject to noise limitations under FERC.

The EPA has a noise guideline that recommends an L_{dn} of 55 dBA, which is sufficient to protect the public from the effect of broadband environmental noise in typical outdoor and residential areas (EPA 1974). These levels are not regulatory goals but are "intentionally conservative to protect the most sensitive portion of the American population" with "an additional margin of safety." For protection against hearing loss in the general population from nonimpulsive noise, the EPA guideline recommends an $L_{eq(24\text{-}h)}$ of 70 dBA or less over a 40-year period.

The FAA and the Federal Interagency Committee on Urban Noise (FICUN) have issued land use compatibility guidelines indicating that a yearly L_{dn} of less than 65 dBA is compatible with residential land uses and that, if a community determines it is necessary, levels up to 75 and 80 dBA may be compatible with residential uses and transient lodgings (but not mobile homes), respectively, if such structures incorporate noise-reduction features (14 CFR Part 150, Appendix A).

FERC requires natural gas pipelines to demonstrate that stations with compressors will not exceed an L_{dn} of 55 dBA in noise-sensitive areas, such as schools, hospitals, and residences (18 CFR Part 380.12(k)(4)(v)(A)).

A.13 Paleontology

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. As a fragile and nonrenewable resource, paleontological resources represent an important component of America's natural heritage and provide scientific, educations and recreational value. Archaeological resources and cultural items are excluded from the definition of paleontological resources (excluding materials associated with an archaeological resource or any cultural item (Paleontological Resources Preservation Act of 2009).

BLM manages paleontological resources under the following laws, regulations and policies:

- Federal Land Policy Management Act (FLPMA);
- National Environmental Policy Act (NEPA);
- Paleontological Resources Preservation Act (PRPA), Title VI, subtitle D of the 2009 Omnibus Public Land Management Act;
- Archaeological Resources Protection Act of 1979;
- Antiquities Act of 1906;
- Secretarial Order 3104; the Federal Cave Resources Protection Act of 1988
- BLM Manual 8270, Paleontological Resources Management; and

- BLM Handbook 8270-1, General Procedural Guidance for Paleontological Resources Management; and
- Permanent Instruction Memorandum, Implementing the Paleontological Resources Preservation Act of 2009, among others.

The federal government protects paleontological resources under the Paleontological Resources Preservation Act Title VI, subtitle D of the 2009 Omnibus Public Land Management Act (16 USC 7202, et seq.) (PRPA). The Department of the Interior has published regulations 43 CFR Part 49 – Paleontological Resources Preservation in order to implement the Paleontological Resources Preservation Act of 2009 (PRPA). The PRPA and the regulations require the BLM to:

- Manage paleontological resources using scientific principles and expertise;
- Maintain a program of inventory and monitoring of paleontological resources; and
- Establish an education program to increase public awareness about paleontological resources.

The regulations implement a BLM permitting program for the collection of paleontological resources, require the BLM to preserve paleontological objects for the public in approved museum collections, and provide for casual collection of common non-vertebrate fossils by the public without a permit (43 CFR Part 49).

The BLM's classification system to assess potential occurrences of paleontological resources and evaluate possible impacts is called the PFYC system and BLM guidance for the PFYC System on BLM lands is provided in the August 2022 Permanent Instruction Memorandum (BLM 2022c). The PFYC system provides an estimate of the potential that significant paleontological resources will be found in a mapped geological unit and allows BLM staff to make initial assessments of paleontological resources to plan for multiple uses of public lands, consider disposal or acquisition of lands, analyze potential effects of a proposed action under NEPA, or conduct other BLM resource-related activities (BLM 2022c).

The PFYC system provides baseline guidance for assessing paleontological resources and is used assist in determining the need for further assessment or actions. Geologic units are assigned a class based on the relative abundance of significant paleontological resources and their sensitivity to adverse impacts. The classification is not intended to be applied to specific paleontological locations or small areas within units; rather, the major determinant for the assigned classification is the overall abundance of scientifically important localities (BLM 2022c).

Class 1 – Very Low

Geologic units that are not likely to contain recognizable paleontological resources. Units assigned to Class 1 typically have one or more of the following characteristics:

- Geologic units are igneous or metamorphic, excluding air-fall and reworked volcanic ash units.
- Geologic Units are Precambrian in age.

Management concerns for paleontological resources in Class 1 units are usually negligible or not applicable. Paleontological mitigation is unlikely to be necessary except in very rare or isolated circumstances that result in the unanticipated presence of paleontological resources, such as unmapped geology contained within a mapped geologic unit.

Class 2 – Low

Geologic units are not likely to contain paleontological resources and typically have one or more of the following characteristics:

- Field surveys have verified that significant paleontological resources are not present or are very rare.
- Units are generally younger than 10,000 years before present.
- Recent aeolian deposits.
- Sediments exhibit significant physical and chemical changes (i.e., diagenetic alteration) that make fossil preservation unlikely.

Except where paleontological resources are known or found to exist, management concerns for paleontological resources are generally low and further assessment is usually unnecessary except in occasional or isolated circumstances. Paleontological mitigation is only necessary where paleontological resources are known or found to exist.

Class 3 – Moderate

Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence and typically have some of the following characteristics:

- Marine in origin with sporadic known occurrences of paleontological resources.
- Paleontological resources may occur intermittently, but abundance is known to be low.
- Units may contain significant paleontological resources, but these occurrences are widely scattered.
- The potential for an authorized land use to impact a significant paleontological resource is known to be low-to-moderate.

Management concerns for paleontological resources are moderate because the existence of significant paleontological resources is known to be low. Common invertebrate or plant fossils may be found in the area, and opportunities may exist for casual collecting. Paleontological mitigation strategies will be proposed based on the nature of the proposed activity.

Class 4 – High

Geologic units that are known to contain a high occurrence of paleontological resources and typically have the following characteristics:

- Significant paleontological resources have been documented, but may vary in occurrence and predictability.
- Surface disturbing activities may adversely affect paleontological resources.
- Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present.
- Illegal collecting activities may impact some areas.

Management concerns for paleontological resources in Class 4 are moderate to high, depending on the proposed action. Paleontological mitigation strategies will depend on the nature of the proposed activity, but field assessment by a qualified paleontologist is normally needed to assess local conditions.

Class 5 – Very High

Highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources and typically have some or all of the following characteristics:

- Significant paleontological resources have been documented and occur consistently.
- Paleontological resources are highly susceptible to adverse impacts from surface disturbing activities.
- Unit is frequently the focus of illegal collecting activities.

Management concerns for paleontological resources in Class 5 areas are high to very high. A field survey by a qualified paleontologist is almost always needed. Paleontological mitigation may be necessary before or during surface disturbing activities.

Class U – Unknown Potential

Geologic units that cannot receive an informed PFYC assignment. Characteristics of Class U may include:

- Geological units may exhibit features or preservational conditions that suggest significant paleontological resources could be present, but little information about the actual paleontological resources of the unit or area is known.
- Geological units represented on a map are based on lithologic character or basis of origin, but have not been studied in detail.
- Scientific literature does not exist or does not reveal the nature of paleontological resources.

- Reports of paleontological resources are anecdotal or have not been verified.
- Area or geologic unit is poorly or under-studied.
- BLM staff has not yet been able to assess the nature of the geologic unit.

Until a provisional assignment is made, geologic units that have an unknown potential have

medium to high management concerns. Lacking other information, field surveys are normally necessary, especially prior to authorizing a ground-disturbing activity.

Class W – Water

Includes any surface area that is mapped as water. Most bodies of water do not normally contain paleontological resources. However, shorelines, reservoirs, and karst areas could be a concern.

Class I – Ice

Includes any area that is mapped as ice or snow.

A.14 Recreation

Most of the American public's interaction with BLM-administered lands is through outdoor recreational activities (DOE and BLM 2008). It is BLM policy to ensure the continued availability of public lands for a diversity of resource-dependent outdoor recreation opportunities while maintaining its commitment to manage public lands as a national resource under the principle of balanced multiple use. The majority of BLM-administered lands are managed for traditional dispersed recreation use; while certain areas are intensively managed where outdoor recreation is a high priority (BLM 2001; 1991; 2008c,e; 2015a).

Dispersed recreation is commonly defined as outdoor activities that take place outside of sites or areas developed or managed for concentrated recreational use (BLM 2019a). The types of dispersed recreation include, but are not limited to, camping, fishing, hiking, backpacking, hunting, photography, mountain biking, kayaking, OHV use, wildlife viewing, horseback riding, rock hounding/fossil collecting, recreational prospecting, wild horse and burro viewing, exploration of historic and archaeological sites, picnicking, cross-country skiing, and driving for pleasure. This wide range of dispersed recreational activities is possible because BLM-administered lands are generally both accessible and offer a variety of settings suitable for different recreational activities (BLM 2019a).

To support dispersed recreation, BLM maintains the undeveloped, open character of the majority of the public lands. These areas have minimal regulatory constraints to allow the public freedom to choose where to go and what to do. These lands are managed to provide wide-open spaces where visitors can explore on their own and be away from crowds. BLM-administered lands in which this management role predominates

generally fall into the category of Extensive Recreation Management Areas (ERMAs) (BLM 2001).

Developed recreation sites incorporate visitor use with infrastructure such as roads, parking areas, and facilities that protect the resource and support recreation users in their pursuit of activities, experiences, and benefits. Visitor-use infrastructure is a management tool that can minimize impacts to resources, concentrate use, and reduce visitor conflicts (BLM 2019a). BLM places management efforts in these areas to ensure their long-term availability for high quality outdoor recreation opportunities. BLM-administered lands in which this management role predominates generally fall into the category of SRMAs (BLM 2001).

Among the most prevalent recreational activities on BLM-administered lands, both in terms of use and management concerns, is OHV use. The BLM provides opportunities for OHV use while protecting wildlife habitat, cultural resources, hydrological and soil resources, nonmotorized recreation opportunities, natural/aesthetic values, and other uses of the public land. OHVs are used for both recreational and non-recreational purposes. Administrative use involves vehicles driven by local ranchers for administration of their grazing operations. Administrative motorized vehicle use occurs in association with permitted uses and is determined case by case. OHV use has also become a popular method of recreation, and a means of transportation while hunting, fishing, or camping. Snowmobile use occurs in certain areas during the winter months when sufficient snow is present (BLM 2019a,b).

BLM-administered lands are required to have OHV area designations with areas classified as open, limited, or closed to motorized travel activities based on protection of resources, promotion of user safety, and minimization of conflicts among various uses of the public lands (43 CFR Part 8342.1). Criteria for open, limited, and closed area designations are established in 43 CFR Part 8340.0-5(f), (g) and (h), respectively. These designations are defined as:

- Open: Areas designated as open are available for OHV travel without restriction, based on an analysis that determines there are “no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting cross-country travel;”
- Limited: Areas limited to either designated or existing roads and trails to restrict OHV travel to protect resources except when cross-country travel is needed for safety, required for federal, state, and local administrative needs, as authorized by a permit for big game retrieval, or as otherwise officially approved. Restrictions may include the number or types of vehicles, time or season of use, use of existing roads and trails only, use of designated roads or trails, or licensed use only. The BLM may also impose other restrictions as necessary to protect resources; and
- Closed: OHV travel is not allowed. Areas are closed in order to protect resources, ensure visitor safety, or reduce user conflicts. Areas may be temporarily closed to OHV use to allow resources to recover or for other purposes. OHV use in

closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer.

A.15 Socioeconomics

For socioeconomics, there is no resource-specific information common for all corridors. See Sections 5.1.15, 5.2.15, 5.3.15, 5.4.15, 5.5.15, 5.6.15, and 5.7.15 for socioeconomic-related data relevant to energy corridors evaluated in this planning effort.

A.16 Special Designations

In June 2000, the BLM responded to the growing concern over the loss of open space by creating the NLCS (now known as NCLs). This national system of public lands gained legal permanence in 2009 with the passage of the Omnibus Public Land Management Act (BLM 2012a). The BLM's NLCS was established to provide a national framework for managing Congressionally and Presidentially designated special management areas on public lands. Components of the NCLs include NCAs, National Monuments, Wilderness Areas, WSAs, NHTs and NSTs, and Wild and Scenic Rivers (DOE and BLM 2008). Other areas of special designation within BLM-administered lands include ACECs, National Scenic Areas, National Scenic Byways, and BLM Back Country Byways. Land with wilderness characteristics, while not specifically identified as areas of special designation, are also included here for convenience. Areas of special designation are managed under a combination of FLPMA authority and BLM regulations (DOE and BLM 2008).

Wilderness Study Areas

WSAs are designated by a federal land management agency as having wilderness characteristics. WSAs, and the unique features and ecosystems they contain, are to be protected until such time that Congress acts to designate WSAs as Wilderness Areas, or releases them from further consideration. WSAs that are released wilderness status by Congress would be managed under general BLM management authorities found in FLPMA and associated regulations and policies, including applicable land-use plans. BLM Manual 6330 provides information on the management of WSAs. WSAs must be managed in a manner that would not impair the suitability of the area for preservation as wilderness. WSAs would be designated as ROW exclusions for new ROWs. Existing ROWs may be renewed, although the BLM should consider new, additional, or modified terms and conditions to minimize impacts on wilderness characteristics. Valid existing rights associated with mineral uses will continue to be honored. Recreational activities and other activities would only be allowed if they meet the non-impairment standard or one of the seven classes of allowable exceptions to the non-impairment standard (BLM 2012b).

WSAs often have special qualities, such as ecological, geological, educational, historical, scientific, and scenic values, and must possess the following characteristics (BLM and Western 2015):

1. Size – Roadless areas of at least 5,000 contiguous acres of public land or of manageable size.
2. Naturalness – Generally appear to have been affected primarily by the forces of nature (unaffected by manmade influences).
3. Solitude – Provide outstanding opportunities for solitude or primitive and unconfined types of recreation.

National Scenic and National Historic Trails

National Historic and Scenic Trails (National Trails) are authorized and designated only by an Act of Congress under the National Trails System Act (NTSA). BLM Manual 6250 provides BLM policy and program guidance on administering congressionally designated National Trails as assigned by the Department of the Interior within the National Landscape Conservation System (NLCS) and this manual describes the BLM's roles, responsibilities, agency interrelationships, and policy requirements for National Trail Administrators (BLM 2012c).

The National Trails System is designated to allow outdoor recreation opportunities, protect nationally significant scenic, historic, natural, or cultural qualities of areas, and represent desert, marsh, grassland, mountain, canyon, river, forest, and other areas, as well as landforms that are characteristic of a region (BLM and Western 2015). National Historic Trails follow as closely as possible and practicable the original trails or routes of travel of national historical significance, and have as their purpose the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment (BLM 2012c).

National Scenic Trails are continuous and uninterrupted extended trails more than 100 miles long (BLM and Western 2015). They are established to provide 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, and may be located so as to represent the landform characteristics of the physiographic regions of the nation (BLM 2012c). Criteria for location of a National Scenic Trail include the highest possible scenic value; relative freedom from intrusion; maximum retention of natural conditions, scenic and historic features, and primitive character of the trail area; sustainable trail and resource conditions; opportunities for high-quality primitive non-motorized recreation experiences, including providing, where appropriate, campsites, shelters, and related-public-use facilities and to provide continuous and sufficient public access; and avoidance of, so far as practicable, highways, motor roads, mining areas, energy transmission lines, commercial and industrial developments, range fences and improvements, private operations, and any other foreseeable activities that would be incompatible with the protection of the trail in a natural condition and use for primitive outdoor recreation experiences (BLM 2012c).

Areas of Critical Environmental Concern

An ACEC is defined in FLPMA, Section 103(a), as an area within BLM-administered public lands where special management attention is needed to protect one or more of the following relevant and important values of the area from irreparable damage:

1. Historic, cultural, paleontological, and scenic values including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans;
2. Fish and wildlife resources including but not limited to habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity; and/or
3. A natural process or system including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relict plants or plant communities that are terrestrial, aquatic, or riparian; or rare geological features.

ACECs can also be designated to protect human life and safety from natural hazards. ACECs can only be designated during the land use planning process using the best available information and extensive public involvement (BLM 2023d).

The value, resource, system, process, or hazard described in the relevance section must have substantial significance and values to meet the importance criteria. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:

1. Has qualities that are more than locally significant, giving it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.
2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.
3. Is recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of FLPMA.
4. Has qualities that warrant highlighting to satisfy public or management concerns about safety and public welfare.
5. Poses a significant threat to human life and safety or to property.

Private lands and lands administered by other agencies may be located within the boundaries of ACECs, but are not subject to the prescribed management of the ACEC (BLM 1993a; 2015b).

Designation of Areas of Critical Environmental Concern does not by itself preclude any activities allowed under the public land laws. The ACEC designation is a recognition of the special resources of an area and a commitment to provide management which protects and/or enhances the area. No action that is inconsistent with the terms of an ACEC designation or that would adversely impact an ACEC protected resource will be permitted, unless it is found through the plan amendment process that the public

benefits of such an action outweigh the public benefits of continuing the ACEC protection and that there is no feasible alternative to the proposed inconsistent action. Protection of an ACEC is accomplished through management actions developed specifically for each individual area (BLM 2001).

National Scenic Area

An NSA is a federally designated area of outstanding natural and scenic value that receives a level of protection that is less stringent than Wilderness Area designation. NSAs are typically occupied or used in some manner by people and either cannot be considered for wilderness designation, or are seen as more suitable for a wider range of uses than those permitted under wilderness designation.

Wilderness Areas

The Wilderness Act of 1964, as amended, recognizes wilderness as: “an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.” Wilderness is further defined to mean “ an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”

With the passage of FLPMA in 1976, Congress directed the BLM to inventory, study, and recommend which lands under its administration should be designated wilderness. The general policies for the administration and management of BLM Wilderness Areas designated by Congress are provided by BLM Manual 6340 - Management of Designated Wilderness Areas (BLM 2012d). Wilderness Areas are to be managed and administered to preserve the wilderness character of the area. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use (BLM 2012d). Wilderness Areas are also managed as part of the BLM’s National Landscape Conservation System (BLM 2012a). The BLM’s objectives for managing wilderness areas are to (BLM 2012d):

1. Manage and protect BLM wilderness areas in such a manner as to preserve wilderness character;
2. Manage wilderness for the public purposes of recreational, scenic, scientific, education, conservation, and historic use while preserving wilderness character; and
3. Effectively manage uses permitted under Section 4(c) and 4(d) of the Wilderness Act of 1964 while preserving wilderness character.

No recreational facilities, including trails, will be constructed within the Wilderness Areas unless needed for public safety or the protection of natural conditions and/or any ecological, cultural, geological, or other features of scientific, educational, scenic, or historical value (BLM 2007d).

National Monuments

BLM Manual 6220 – National Monuments, NCAs, and Similar Designations (BLM 2017) provides guidance on managing BLM public lands that are components of the BLM's NLCS and that have been designated by Congress or the President as National Monuments, National Conservation Areas, and similar designations such as Outstanding Natural Areas (BLM 2017). These areas are managed to conserve, protect, restore, and enhance America's national and cultural heritage, while providing compatible multiple uses including grazing, oil, gas and mining. National Monuments provide opportunities for hunting, solitude, wildlife viewing, fishing, history exploration, scientific research and a wide range of traditional uses. They are home to threatened and endangered plant and animal species, significant cultural and paleontological resources, critical migration corridors for wildlife, and access to world class hunting and fishing areas.

National Conservation Areas

NCAs are a component of the BLM's NLCS. The mission of the NLCS is to conserve, protect and restore nationally significant landscapes recognized for their outstanding cultural, ecological and scientific values. NCAs are designated by Congress to conserve, protect, enhance, and manage public lands for the benefit and enjoyment of present and future generations (BLM 2015b).

A.17 Tribal Interests

Federally recognized Tribes are sovereign nations within the borders of the United States with the inherent right to govern themselves and are recognized as such under United States constitutions, treaties, statutes, Executive Orders, and court decisions. The US government, including BLM, has a special trust relationship with Indian Tribes due to the long history of Treaty making and it has been the "supreme law of the land" that such treaties must be upheld. Such treaties have enabled Federally recognized Tribes the unique rights to hunting, fishing, and gathering of foods, medicine, water and other mineral resources, and allowed rights of conducting spiritual and religious practices in traditional territories.

Native American Tribes have a profound connection to the land and possess historic knowledge passed through generations that uniquely enables them to identify resources and properties of cultural, spiritual, and historic significance. Resources of importance to Tribes can only be identified through formal government-to-government consultation with Native American Sovereign Nations. Failure to consult can result in adverse relationships with sovereign nations, unlawful treatment, damage or loss of unique resources and significant delays in project development.

The BLM and other federal agencies have an obligation to develop meaningful relationships with Federally recognized Tribes through formal government-to-government consultation. Federal agencies are responsible for identifying and consulting on cultural resources that may be of traditional, cultural, or historical importance pursuant of Executive Order 13175 and POTUS Memorandum on Consultation and Strengthening Nation-to-Nation Relationship (2021). Other Federal laws and Department of Interior guidance that requires BLM to consult on any actions on federally administered lands that may have the potential to affect Native American cultural and natural resources of importance include: Section 306108 (formerly known as Section 106) of the National Historic Preservation Act, 54 U.S.C § 300101 et seq and implementing regulations at 36 CFR Part 800, American Indian Religious Freedom Act (AIRFA) of 1978, the Native American Graves Protection and Repatriation Act (NAGRPA) of 1990, EO 13007 Indian Sacred sites (1996), DOI Secretarial Order No. 3215 (USDI 2000), 512 Department Manual Chapter 2 (DOI 1995), BLM Manual H-8160-1 (BLM 1994), and DOI Permanent Instruction Memorandum No. 2022-011 Co-Stewardship with Federally Recognized Indian and Alaska Native Tribes Pursuant to Secretary's Order 3403 (2022).

Areas that may potentially contain cultural and natural resources of traditional and historical importance to Native American Tribes may be ethnohistoric habitation sites, trails, burial sites, rock shelters, petroglyphs, prehistoric seasonal camps, and locations with plant, animal, minerals, and waters that may be used for sacred practices or subsistence practices. Sacred places may also be locations of tribal origins, history, or the nature of the world that religious practitioners or gatherings of tribal members go to in the past or present to perform traditional ceremony activities (BLM 2007c,d; BLM 2015a).

Due to each Tribes unique cultural ideologies, locations and resources of importance to Native American Tribes are difficult to define and should therefore only be identified through formal consultation. Each Tribe has their own traditional beliefs that have been passed down for generations and it is important to note that Native American Tribes may not wish to share specific details pertaining to the resource of importance and may only specify general areas that need to be protected or avoided, or may only share such information if they are in danger of disturbance.

A.18 Visual Resources

The BLM's VRM system provides a framework for managing visual resources on BLM-administered lands. This system is an evaluation and assessment process for identifying visual resource values on BLM-administered lands, minimizing the impacts of surface-disturbing activities on visual resources, and maintaining the scenic value of tracts of land for the future.

The VRM system involves the following:

- Inventorying scenic values of BLM-administered lands through the Visual Resource Inventory (VRI) process;

- Assigning VRM classes that establish VRM objectives for these BLM-administered lands;
- Evaluating proposed activities to determine their impact on VRI values and whether or not they conform to the established management objectives through the Visual Contrast Rating process;
- Monitoring the impacts of proposed activities and the effectiveness of mitigation actions; and
- Updating the VRI to reflect the changed conditions.

Visual design considerations should be incorporated into all surface-disturbing activities, including construction, operation, and decommissioning of energy facilities proposed within corridors on BLM management lands. Design considerations and impacts are evaluated through assessments of visual resources, which include all natural and cultural features of the environment that have the potential to be seen (Grinde and Kopf 1986).

These practices are supported by the establishment of district and field office RMPs. RMPs are comprehensive management documents that determine how the BLM will manage the public lands within the boundaries of a particular field office or district. As part of the RMP, management objectives are established for visual resources on all lands included in the RMP.

Management decisions in the RMP must consider the value of visual resources, along with other important resources and agency objectives. Management decisions regarding visual resources are framed as VRM Classes I through IV, with VRM Class I having the greatest degree of protection and VRM Class IV having the least.

Indicators for Visual resources are the Visual Resource classes established through RMP process on BLM land. The Visual Impact Assessments (VIA) process is an evaluation of the changes in a view from the development of a project or other activity and the potential impacts on the entities subjected to the changes to the visual landscape and/or visitor experience. Visual resources are analyzed by describing the physical elements seen in the landscape in terms of the landform, vegetation, water and structures and characterized in terms of their form, line color, texture and scale from a viewpoint or viewing area.

Visual indicators describe the aesthetic conditions derived within the VRI. The Visual Amenity: The overall pleasantness of the perceptual relationship of people views of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area. Intactness is the degree to which the viewed landscape represents the desired landscape character type; its visual integrity or how well its features “fit” together and Harmony: array of visual elements in a landscape, usually as a result of a sense of visual order, compatibility, and completeness between and among the landforms, water forms, vegetation, or structures visible in the landscape.

The link between Visual Amenity (perceptual), Intactness (the degree to which the landscape elements are connected, and Harmony (the pattern language) contributes to the establishment of sets of indicators which aesthetic values of landscapes are derived. Once the baseline indicators and scenic conditions of landscape are established, we would then reach out to the public to understand what their perceptions and values of scenic qualities within the specific viewing area. This is less of a measurement and more of a calibration between existing scenic qualities (based on above) and people's perceptions of how they relate to the aesthetic environment for which they engage (BLM 2006).