



Biological Assessment/Biological Evaluation for the Jones Fire Mitigation Project, San Juan County, NM

Prepared for

New Mexico Energy, Minerals, and Natural Resources
Department, Mining and Minerals Division - Abandoned Mine
Lands Program



Energy, Minerals and Natural Resources Department



August 2025

ParametriX

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**New Mexico Energy, Minerals, and Natural Resources Department, Mining and Minerals Division -
Abandoned Mine Lands Program**
1220 South St. Francis Drive
Santa Fe, NM 87505

Prepared by

Parametrix
4041 Jefferson Plaza NE, Suite 210
Albuquerque, NM 87109
T. 505.821.4700 F. 1.206.649.6353
www.parametrix.com

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Contents

1. Introduction and Project Description	1
1.1 Project Description	1
1.2 Project Location	1
2. Regulatory Context.....	5
3. Environment and Existing Conditions	5
3.1 Methods	5
3.1.1 Pre-Field Methods.....	5
3.1.2 Field Methods.....	6
3.2 Elevation and Climate	6
3.3 Physiography and Geology	6
3.4 Soils	7
3.5 Waterways, Wetlands, and Floodplains	7
3.5.1 Waterways	7
3.5.2 Wetlands.....	8
3.5.3 Floodplains	8
3.6 Vegetation	9
3.6.1 Colorado Plateau Pinyon-Juniper Woodland	9
3.6.2 Colorado Plateau Mixed Bedrock Canyon and Tableland	9
3.6.3 Inter-Mountain Basins Big Sagebrush Shrubland.....	9
3.6.4 Inter-Mountain Basins Semi-Desert Shrub Steppe	10
3.7 Federal and State-Listed Plant Species	10
3.8 Federal and State-Listed Animal Species	11
4. Results	12
4.1 Soils	12
4.2 Water Resources	13
4.2.1 Waterways	13
4.2.2 Wetlands.....	13
4.2.3 Floodplains	13
4.3 Vegetation	15
4.3.1 Plant Communities.....	17

Contents (continued)

4.3.2	Special Status Plants.....	19
4.3.3	Noxious Weeds.....	20
4.4	Fauna.....	22
5.	Listed Species and Critical Habitat Analysis.....	22
5.1	Critical Habitat Analysis.....	23
5.2	Listed-Species Analysis	23
6.	Effects Analysis	32
6.1	Direct Effects.....	32
6.1.1	Temporary.....	32
6.1.2	Permanent.....	33
6.2	Indirect Effects.....	33
6.3	Cumulative Effects.....	34
7.	Avoidance, Minimization, and Mitigation Measures.....	34
7.1	Wildlife.....	34
7.1.1	USFWS Consultation	34
7.1.2	Migratory Birds	34
7.1.3	Downstream Measure for Aquatic and Semi-Aquatic Species.....	35
7.1.4	Prairie Dogs and Burrowing Owls.....	35
7.1.5	Bats.....	35
7.1.6	Pollinators.....	36
7.1.7	Trenching Procedures.....	36
7.2	Vegetation	36
7.2.1	Revegetation	36
7.2.2	Special Status Plants.....	36
7.2.3	Noxious Weeds.....	36
7.3	Waterways.....	37
7.4	Floodplains.....	37
7.5	Soils	37
8.	References.....	38

Contents (continued)

FIGURES

Figure 1. Project vicinity.....	2
Figure 2. USGS 7.5-minute (1:24,000) quadrangle map depicting the project area	3
Figure 3. Aerial map depicting the project area	4
Figure 4. NHD and NWI data compared to field data for Jones Arroyo	14
Figure 5. Locations of special status plant species and noxious weeds within project area	21

TABLES

Table 1. NRCS classified soils in the project area	7
Table 2. Federal and State-Listed Plant Species	10
Table 3. Federal and State-Listed Animal Species for the Project Area	11
Table 4. Observed Plant Species	15
Table 5. Observed Fauna	22
Table 6. Critical Habitat Distances from the Project Area	23
Table 7. Listed Species for the Project Area and Effects Determination	24

APPENDICES

- A Pre-field Resources

Acronyms and Abbreviations

°F	degrees Fahrenheit
AML	Abandoned Mine Land
BA	Biological Assessment
BE	Biological Evaluation
BLM	Bureau of Land Management
BLM-FFO	Bureau of Land Management, Farmington Field Office
CFR	Code of Federal Regulations
CGP	Construction General Permit
CWA	Clean Water Act
EMNRD	New Mexico Energy, Minerals, and Natural Resources Division
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
IPaC	Information, Planning, and Conservation System
NAD	North American Datum
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NMAC	New Mexico Administrative Code
NMDA	New Mexico Department of Agriculture
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environmental Department
NMERT	New Mexico Environmental Review Tool
NMRPTC	New Mexico Rare Plant Technical Council
NMSA	New Mexico Statutes Annotated
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

Acronyms and Abbreviations (continued)

NWI	National Wetland Inventory
OHWM	ordinary high-water mark
SWPPP	Storm Water Pollution Prevention Plan
SWReGAP	Southwest Region Gap Analysis Project
USACE	U.S Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WOTUS	Waters of the U.S.

1. Introduction and Project Description

1.1 Project Description

The New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) Abandoned Mine Land (AML) Program is proposing fire mitigation efforts at the Jones Coal Mine in San Juan County, New Mexico (Figure 1). This project will implement coal fire mitigation activities aimed at permanently extinguishing the underground coal seam fire within the Jones Coal Mine. Fire mitigation will include mass excavation of the coal waste piles, mixing and blending coal waste with insert material, and replacing the newly mixed sediment into the excavated area. A total of 36,300 cubic yards sediment is expected to be excavated and replaced over a 1.5-acre area. Post-mitigation, the area would be contoured and reseeded.

The mine is accessed via Bureau of Land Management, Farmington Field Office (BLM-FFO) lands (Figure 2). Access road improvements are included in the project to allow travel of large equipment such as bulldozers, excavators, drillings rigs, water trucks, and ancillary support vehicles to and from the mine site. Access road improvements include blading and grading the current two-track dirt access road into an easily passable footprint.

Mitigation itself will take place in a 1.5-acre area and along the access road. However, the project area is defined as a 34-acre area encompassing a larger area around the mine on private lands (27 acres), the staging area on BLM lands (2 acres) and access road corridor on BLM lands (5 acres) leading to the larger area on private lands (Figure 2 and Figure 3). A larger area was assessed to account for surrounding features that may be environmentally relevant or species outside the area of impact that could be impacted directly or indirectly. This area also encompasses areas that might be impacted by moving vehicles and equipment and any exploratory measures that may be necessary during fire remediation.

Major construction activities considered to be federal actions that could significantly affect the quality of the human environment, as described in the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4332(2)(C)), must be evaluated with a Biological Assessment (BA), a written analysis of the potential effects of a given action on the local biological resources, usually for listed species. This document therefore complies with Section 7(a)(2) of the Endangered Species Act (ESA), which requires that these actions be evaluated to determine whether they are likely to jeopardize the continued existence of federally-listed species including Threatened, Endangered, or Proposed federal species, or result in the destruction or adverse modification of any critical habitat (Title 50 Code of Federal Regulations [CFR] 402.01). As a combined BA and Biological Evaluation (BE), this document also presents the findings of a pedestrian biological survey of the project area and takes into consideration the action area; describes natural resources and species observed in the project area; provides analyses of impacts resulting from the proposed project; and recommends measures to avoid, minimize, and/or mitigate impacts to natural resources and species consistent with federal, state, and local laws.

1.2 Project Location

The project area is located approximately three miles northwest of La Plata in San Juan County, New Mexico, and it encompasses approximately 34 acres of private and BLM-managed lands. It is located within the La Plata (36108-H2) United States Geological Survey (USGS) 7.5-minute quadrangle and in Township 32 North, Range 13 West, and Sections 21 and 28 (Figure 2).

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Figure 1. Project vicinity



Figure 2. USGS 7.5-minute (1:24,000) quadrangle map depicting the project area

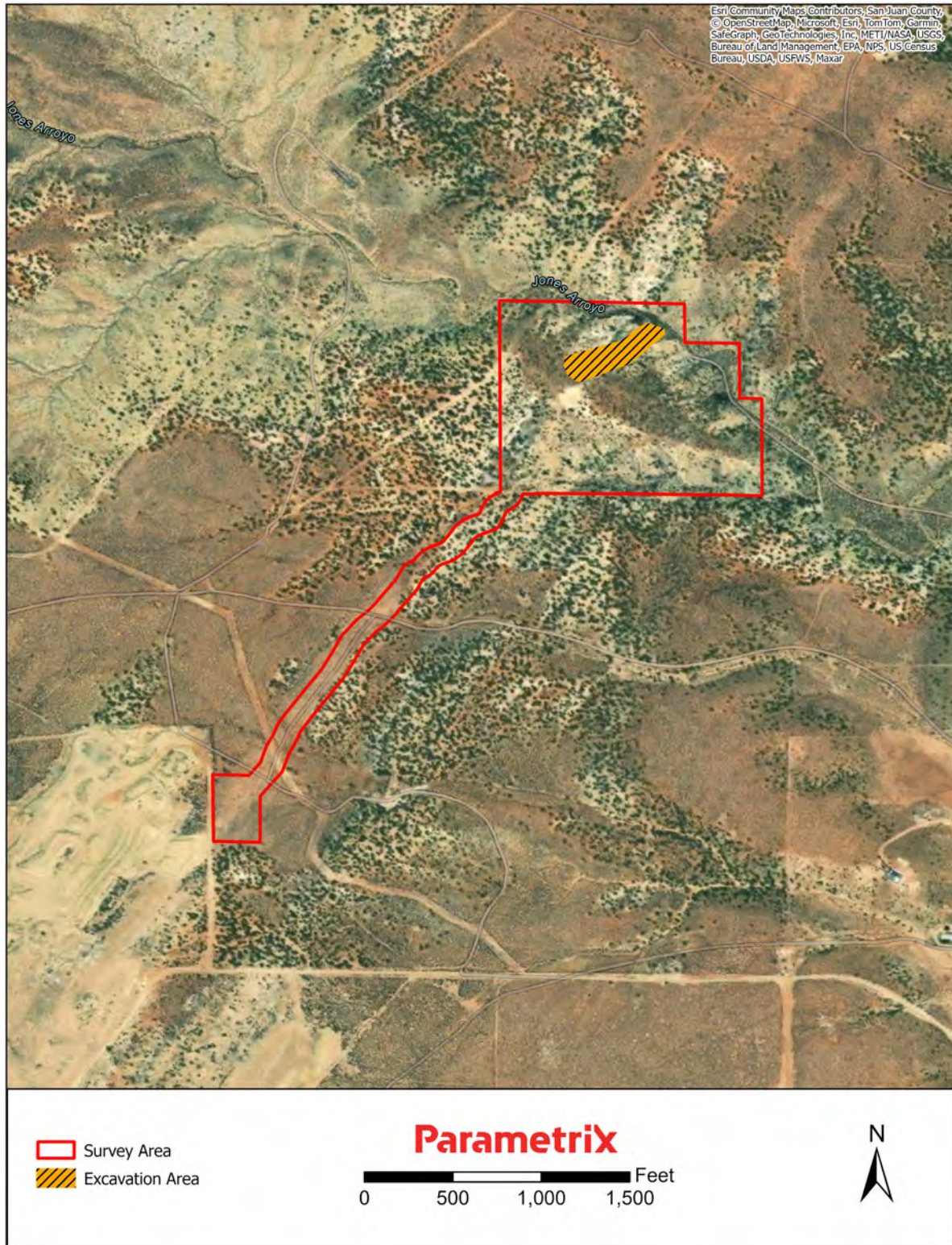


Figure 3. Aerial map depicting the project area

2. Regulatory Context

The following environmental laws and regulations are applicable to the project and action areas:

- Bald and Golden Eagle Protection Act as amended (USC 668-668c)
- Clean Water Act Sections 401, 402, 404 (33 USC 1251 et. seq.)
- Endangered Species Act of 1973 as amended (16 USC 1531 et seq.)
- Executive Order (EO) 11888 (Floodplain Management)
- Migratory Bird Treaty Act as amended (16 USC 701-715)
- New Mexico Endangered Plant Species (19.21.2.8 New Mexico Administrative Code [NMAC])
- New Mexico Noxious Weed Management Act (76-7D-1 to 76-7D-6 New Mexico Statutes Annotated [NMSA] 1978)
- EO 11990 (Protection of Wetlands)
- NEPA (43 USC 1638)

3. Environment and Existing Conditions

This section of the report describes the existing environmental conditions of the project area, as determined through pre-field review of available records pertaining to the climate, physiography and geology, soils, vegetation, water resources, and wildlife of the area, including special status species.

3.1 Methods

3.1.1 Pre-Field Methods

Prior to conducting the field survey, information from the following resources was reviewed:

- U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC), *Listed Species in the Project Area* (USFWS 2025a)
- New Mexico Department of Game and Fish (NMDGF) New Mexico Environmental Review Tool (NMERT), *Listed Species in San Juan County* (NMDGF 2025a)
- Bureau of Land Management (BLM) Sensitive Species Lists for Plant and Animal Species (BLM 2024)
- New Mexico Rare Plant Technical Council (NMRPTC) (1999)
- EMNRD Endangered Plant Program (EMNRD 2023)
- New Mexico Department of Agriculture (NMDA) Noxious Weed List (NMDA 2020)
- Natural Resources Conservation Service (NRCS) Web Soil Survey online map (NRCS 2025)
- National Hydrography Dataset (NHD) (USGS 2016)
- National Wetland Inventory (NWI) (USFWS 2025b)
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panels (FEMA, Department of Homeland Security [DHS] 2025)

These resources were used to identify federally listed, state-listed, and species of special concern with potential to occur within the project and action area. These resources also provide information on biotic and abiotic conditions of the project's local environment, including waterways, wetlands, floodplains, and soils. See Appendix A for copies of the consulted lists and graphics.

3.1.2 Field Methods

A pedestrian biological survey was conducted in the project area to inventory natural resources and assess potential effects the project may have on biological and natural resources. When observed, special status species, migratory birds, nests (occupied or unoccupied), intermittent and perennial waterways and their ordinary high-water mark (OHWM), wetlands and other relevant biological and natural resources were documented. To assess which types of flora and fauna are actively or potentially using the project area, field biologists compiled a general species list which included some species not designated as species of special concern. Faunal species were observed in a variety of ways, such as visual and auditory cues. Auditory cues include songs and calls, whereas visual cues include the sighting of a live animal or carcass, or documenting sign such as scat, tracks, feathers, rubs, burrows, etc. Species were categorized based on their relative abundance during the time of survey.

To record locations of pertinent field data (e.g., special status species habitat and noxious weeds) Juniper Archer 4 tablets with a sub-meter accurate Global Navigation Satellite System (GNSS) antenna. Data was collected using the North American Datum (NAD) 83 UTM coordinates.

The biological survey was conducted by Parametrix biologists Evan Crawford and Robert Sivinski on June 9, 2025.

3.2 Elevation and Climate

The project area is located on the southwestern rim of Jones Canyon approximately 2.5 miles northwest of the community of La Plata. The area consists of a rolling hills heavily dissected by large drainage structures. The project area elevations between 5,959-6,060 ft above mean sea level.

Climate data from the Prism Climate Group was collected for the project area shows that the area is generally warm and dry, like most regions in New Mexico (Prism Climate Group 2025). On average, the area receives 0.89 inches of precipitation per month and has a mean monthly maximum temperature of 66.2 degrees Fahrenheit (°F) and a mean monthly minimum temperature of 35.6 °F (Prism Climate Group 2025).

3.3 Physiography and Geology

The project area is in the Navajo Section of the Colorado Plateau physiographic province. The Colorado Plateau physiographic province spreads across northwestern New Mexico as well as parts of Utah, Colorado, and Arizona. The Navajo Section is characterized by two large structural basins: the San Juan Basin and the Gallup-Zuni Basin. These basins consist of Mesozoic and Lower Cenozoic shale, mudstone, and sandstone. Extensive coal seams exist in the area. Uplifted areas, such as the Chuska Mountains, Shiprock, and hogback structures, are present throughout the area. Badlands are well developed in the eastern part of the province (Hawley 1986). These features consist of late Cretaceous and early Cenozoic shale. Surficial geology consists of quaternary or block-rubble colluvium and valley-fill or river alluvium (Griffith et al. 2006).

3.4 Soils

The NRCS web soil viewer was used to collect information on the soils located within the project area (NRCS 2025). Three soil types were documented within the project area. These soil types are summarized in Table 1.

Project area soils occur on a variety of landforms, including mesas, terraces, fan remnants, hills and escarpments. The most abundant soil types in the project area are Haplargids-Blackston-Torriorthents complex, very steep and Farb-Persayo-Rock outcrop complex, moderately steep. Soils within the project area are generally well drained and are infrequently flooded. None of the project area soils are considered prime farmland and none have hydric character (NRCS 2025). A comprehensive soil report for the project area can be found in Appendix A.

Table 1. NRCS classified soils in the project area

Soil Type	Landform	Parent Material	Frequency of Flooding	Drainage Class	Depth to Restrictive Feature	Prime Farmland	Acres in Project Area
Doak-Avalon association, gently sloping	Stream terraces, mesas, fan remnants	Sandstone and shale alluvium, aeolian deposits over alluvium	None	Well-drained	>80 inches	Not Prime Farmland	4.4
Farb-Persayo-Rock outcrop complex, moderately steep	Hills, breaks	Sandstone residuum, shale residuum	None	Well-drained to excessively drained	0 inches in areas of exposed bedrock, >80 inches in other areas	Not Prime Farmland	12.2
Haplargids-Blackston-Torriorthents complex, very steep	Escarpments	Mixed alluvium	None	Well-drained	>80 inches	Not Prime Farmland	17.2

3.5 Waterways, Wetlands, and Floodplains

3.5.1 Waterways

The Clean Water Act (CWA) is administered by both the Environmental Protection Agency (EPA) and the U.S Army Corps of Engineers (USACE), with the USACE being responsible for provisions that involve dredging or placing fill in waterways that are classified as Waters of the U.S. (WOTUS). WOTUS are defined in 33 CFR Part 328.3 (b) and are protected by Section 404 of the Clean Water Act, which is administered and enforced by the USACE.

The definition of WOTUS has evolved over multiple decades to incorporate various regulations developed by different administrations and subsequently contested in several lawsuits. In 2021, the EPA under the Biden administration announced that it would return to the pre-2015 definition of WOTUS and vacate the 2020 Navigable Waters Protection Rule. The proposed rule under the Biden administration was finalized on December 30, 2022. In May 2023, the United States Supreme Court

issued a decision on the Sackett v. EPA case, which limited the scope of the CWA by eliminating the significant nexus clause. On August 29, 2023, the EPA and USACE issued a revised definition of WOTUS to conform to the Supreme Court Ruling (EPA 2023).

Under the new interpretation of the CWA, WOTUS are defined as those formerly, currently, or potentially used in interstate or foreign commerce, including waters subject to the ebb and flow of the tide, territorial seas, and interstate waters. Tributaries of the above are also WOTUS if they are relatively permanent, standing or continuously flowing with the body of water. Impoundments are also included in the definition if they are borne from a WOTUS as defined above. Wetlands and interstate lakes are considered jurisdictional if they have a continuous surface connection to a WOTUS (US National Archives 2024).

The project area is located in northwest New Mexico within the Middle San Juan watershed. The Rio Middle San Juan watershed is approximately 1,244,784 acres in size, flows to the west, and feeds into the larger San Juan watershed. Water from this watershed ultimately flows into the Colorado River (USGS 2016).

The NHD indicates that only one waterway, Jones Arroyo, intersects the project area. This drainage is classified as intermittent on the NHD (USGS 2016). Under the new interpretation of the CWA, intermittent drainages are sometimes considered jurisdictional resources. Appendix A contains an overview map of the NHD-depicted waterways in the project area.

3.5.2 Wetlands

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (EPA, 40 CFR 230.3 and 33 CFR 328.3). Compliance with EO 11990, Wetlands Protection, is applicable to federal projects or to projects funded by federal money.

To determine if wetlands were present within the project area the USFWS NWI was accessed prior to the pedestrian survey (USFWS 2025b). The NWI database did not indicate the presence of any non-riverine wetlands in the area. However, one riverine wetland was depicted along Jones Arroyo. An overview map of the NWI-depicted wetlands in the survey area can be found in Appendix A.

3.5.3 Floodplains

Protection of floodplains and floodways is required by EO 11988, Floodplain Management and 23 CFR 650, Subpart A, Location and Hydraulic Design of Encroachment on Floodplains. These guidelines require that any potential impacts to drainage conditions of floodplain areas be studied, assessed, and identified to reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains.

A review of FEMA FIRMs showed that most of the project is located outside of the 500-year floodplain. However, the Jones Arroyo is within the 100-year flood plain. (FEMA, DHS 2025) [See Appendix A for FIRM panels].

3.6 Vegetation

In North America, ecoregions are divided into four levels, with Level I the broadest and Level IV the most detailed. For brevity, only Level IV will be discussed in detail. The project area is situated in the Semiarid Benchland and Canyonlands ecoregion (Griffith et al. 2006). The Semiarid Benchland and Canyonlands ecoregion is a portion of the Colorado Plateau with alternating areas of high relief and low relief. It is characterized by more lush vegetation than other areas on the Colorado Plateau. Piñon, juniper, four wing saltbush, sagebrush, and occasionally Gambel oak are frequent in this ecoregion.

The above ecoregions contain many different landcover and vegetation communities, a group of plants coexisting in a common environment with other wildlife and abiotic factors. Communities are classified by dominant plant types but also influence the rarer plant types within them and which animal species are likely to occur. Vegetation models by Southwest Region Gap Analysis Project (SWReGAP) show five distinct vegetation communities within the project and action areas (USGS 2005; Lowry et al. 2005):

- Colorado Plateau Pinyon-Juniper Woodland
- Colorado Plateau Mixed Bedrock Canyon and Tableland
- Inter-Mountain Basins Big Sagebrush Shrubland
- Inter-Mountain Basins Semi-Desert Shrub Steppe

3.6.1 Colorado Plateau Pinyon-Juniper Woodland

The Colorado Plateau Pinyon-Juniper Woodland community can be found in the northwest corner of New Mexico between elevations of 4,900 ft to 8,000 ft. This community type occurs on the dry mountains, mountain foothills, ridges, slopes, mesas, and plateaus. Within New Mexico, the overstory is dominated by one-seed juniper (*Juniperus monosperma*), juniper hybrids (*Juniperus sp.*), and piñon pine (*Pinus edulis*). The understory may consist of a mixed shrub or graminoid layer and could include four wing saltbush (*Artemisia tridentata*), antelope bitterbrush (*Purshia tridetata*), Gambel oak (*Quercus gambelli*), blue grama (*Bouteloua gracilis*), James' galleta (*Pleuraphis jamesii*), or muttongrass (*Poa fendleriana*).

3.6.2 Colorado Plateau Mixed Bedrock Canyon and Tableland

The Colorado Plateau Mixed Bedrock Canyon and Tableland is characterized by an almost barren landscape upon cliffs, canyons, and tablelands. Plant cover typically remains below 10 percent in this community type. Overstory consists of a very open layer of juniper, piñon pine, or ponderosa pine (*Pinus ponderosa*). The understory is composed of a sparse herbaceous layer.

3.6.3 Inter-Mountain Basins Big Sagebrush Shrubland

Inter-Mountain Basins Big Sagebrush Shrubland is a community type that is widespread across the western United States. It occurs in low relief areas between 4,900 ft and 7,550 ft in elevation. This community is dominated by big sagebrush (*Artemisia tridentata*). Other shrub species, such as four wing saltbush, antelope bitterbrush, and black greasewood (*Sarcobatus vermiculatus*), may co-occur. The herbaceous and graminoid layer are usually low density and may consist of blue grama, James' galleta, needle-and-thread (*Hesperostipa comata*), squirreltail (*Elumus elymoides*), and Sandberg bluegrass (*Poa secunda*).

3.6.4 Inter-Mountain Basins Semi-Desert Shrub Steppe

The Inter-Mountain Basins Semi-Desert Shrub Steppe vegetation community is widespread throughout lower elevation regions of the western United States. It occurs on alluvial fans and flats in intermountain regions. Mixed grasses are the primary component of this community but an open shrub layer may also be present. Typical grass species include Indian ricegrass (*Achnatherum hymenoides*), blue grama, needle-and-thread, James' galleta, and alkali sacaton (*Sporobolus airoides*). The shrub layer may include four wing saltbush, big sagebrush, ephedra (*Ephedra sp.*), rubber rabbitbrush (*Ericameria nauseosa*), broom snakeweed (*Gutierrezia sarothrae*), and winterfat (*Krascheninnikovia lanata*).

3.7 Federal and State-Listed Plant Species

Prior to the field survey, an IPaC list was obtained from the USFWS, an NMERT species list was obtained from NMDGF, and the BLM Sensitive Plant Species list was reviewed for BLM FFO species. Table 2 shows the state and federally listed species for the project area.

Table 2. Federal and State-Listed Plant Species

Common Name	Scientific Name	Status
Acoma fleabane	<i>Erigeron acomanus</i>	BLM Sensitive
Aztec gilia	<i>Aliciella formosa</i>	State Endangered
Clipped wild buckwheat	<i>Eriogonum lachnogynum</i> var. <i>colobum</i>	BLM Sensitive
Clover's cactus	<i>Sclerocactus cloverae</i>	State Endangered
Golden lady's slipper	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	State Endangered
Goodding's onion	<i>Allium gooddingii</i>	State Endangered
Knowlton's cactus	<i>Pediocactus knowltonii</i>	State Endangered
Mancos milkvetch	<i>Astragalus humillimus</i>	State Endangered
Mancos saltbush	<i>Proatriplex pleiantha</i>	BLM Sensitive
Mesa Verde cactus	<i>Sclerocactus mesae-verdae</i>	Federal Threatened
Navajo bladderpod	<i>Physaria navajoensis</i>	BLM Sensitive
Parish's alkali grass	<i>Puccinellia parishii</i>	State Endangered
San Juan milkweed	<i>Asclepias sanjuanensis</i>	BLM Sensitive
Sivinski's blazingstar	<i>Mentzelia sivinskii</i>	BLM Sensitive
Threadleaf blazingstar	<i>Mentzelia filifolia</i>	BLM Sensitive
Zuni fleabane	<i>Erigeron rhizomatus</i>	State Endangered

3.8 Federal and State-Listed Animal Species

The IPaC and NMERT lists were also reviewed for listed animal species, and the BLM Sensitive Animal Species list was reviewed for BLM FFO species. Table 3 shows the state and federally listed species for the project area.

Table 3. Federal and State-Listed Animal Species for the Project Area

Common Name	Scientific Name	Status
Mammals		
Hoary bat	<i>Lasiurus cinereus</i>	BLM Sensitive
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	BLM Sensitive
New Mexico Meadow jumping mouse	<i>Zapus hudsonius luteus</i>	Federal Endangered
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM Sensitive
Spotted bat	<i>Euderma maculatum</i>	State Threatened, BLM Sensitive
Birds		
Bald eagle	<i>Haliaeetus leucocephalus</i>	State Threatened
Bendire's thrasher	<i>Toxostoma bendirei</i>	BLM Sensitive
Chestnut-collared longspur	<i>Calcarius ornatus</i>	BLM Sensitive
Gray vireo	<i>Vireo vicinior</i>	State Threatened,
Loggerhead shrike	<i>Lanius ludovicianus</i>	BLM Sensitive
Mexican whip-poor-will	<i>Antrostomus arizonae</i>	BLM Sensitive
Mountain plover	<i>Charadrius montanus</i>	BLM Sensitive
Peregrine falcon	<i>Falco peregrinus</i>	State Threatened
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	BLM Sensitive
Virginia's warbler	<i>Leiothlypis virginiae</i>	BLM Sensitive
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Federal Threatened
Amphibians		
Northern leopard frog	<i>Lithobates (Rana) pipens</i>	BLM Sensitive
Western Toad	<i>Anaxyrus boreas</i>	State Endangered
Fish		
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	Federal Endangered
Razorback sucker	<i>Xyrauchen texanus</i>	Federal Endangered
Roundtailed chub	<i>Gila robusta</i>	State Endangered. BLM Sensitive
Insects		
American bumble bee	<i>Bombus pensylvanicus</i>	BLM Sensitive
Monarch butterfly	<i>Danaus plexippus</i>	Proposed Threatened, BLM Sensitive
Suckley's cuckoo bumble bee	<i>Bombus suckleyi</i>	Proposed Endangered
Western bumble bee	<i>Bombus occidentalis</i>	BLM Sensitive

4. Results

The following sections present the findings of the field survey. The field survey took place on June 9, 2025 between 9:07 AM – 4:00 PM. In the morning, skies were sunny, winds calm, and the temperature was 63 degrees F. By the afternoon, skies were cloudy, winds had increased, and the temperature was 72 degrees F.

4.1 Soils

The project area bedrock consists of sandstone and shale. Sandstone and sandy shale outcrops are present throughout the vicinity. These outcropped areas are prone to colluvial movement. Exposed coal seams are present in some areas as well (Photograph 1). Within drainages, alkaline alluvial soils are present. The area is vulnerable to alluvial erosion. Many small drainages are present throughout and sheetwash is actively moving sediment. Soils along the access road include seleniferous channery soil that is nearly barren. These soils have a clayey character.

Throughout the project area, general soil clasts range between fine loamy aeolian or alluvial deposit with high gravel/pebble inclusion and some cobble inclusion (Photograph 2). Boulders are present on outcropped areas. Soil is generally soft and loosely compacted.



Photograph 1. Exposed coal seam in project area.



Photograph 2. Fine loamy soil with high gravel inclusion and some cobbly features.

4.2 Water Resources

4.2.1 Waterways

Numerous drainages were observed throughout the project area. However, these waterways did not display any Streamflow Duration Assessment Method (SDAM) criteria, such as obligate wetland plants, aquatic invertebrates or fish, that would allow them to be classified as intermittent or perennial waterways (Mazor et al. 2021). This includes Jones Arroyo, which the NHD shows flowing through the northeastern portion of the survey area. This drainage is classified as an intermittent drainage on the NHD. However, Parametrix field staff did not observe the appropriate SDAM criteria for this drainage to be classified as intermittent. Based on field observations, the reach of Jones Arroyo within the survey area is ephemeral and is not a jurisdictional waterway. Furthermore, on the ground, Jones Arroyo does not intersect the excavation area for the project (Figure 4). The data projected on the NHD appears to be mis-plotted. There are no anticipated direct effects to Jones Arroyo as a result of the project. See Sections 7.1.3 and 7.3 for recommendation to mitigate and minimize indirect impacts to Jones Arroyo and waterways.

4.2.2 Wetlands

No wetlands or potential wetlands were observed during the survey. There is one riverine wetland projected along the course of Jones Arroyo within the NWI. However, no wetland hydrology or vegetation was observed in this drainage during the filed survey. Wetland soil test pits were not excavated as a part of this effort. However, the arroyo appears too dry to develop or sustain hydric soils.

4.2.3 Floodplains

The Jones Arroyo floodplain is within the project area. This area is within the 100-year flood plain according to FEMA FIRM panels for the area (FEMA, DHS 2025). See Chapter 7 for recommendations on floodplain impacts.

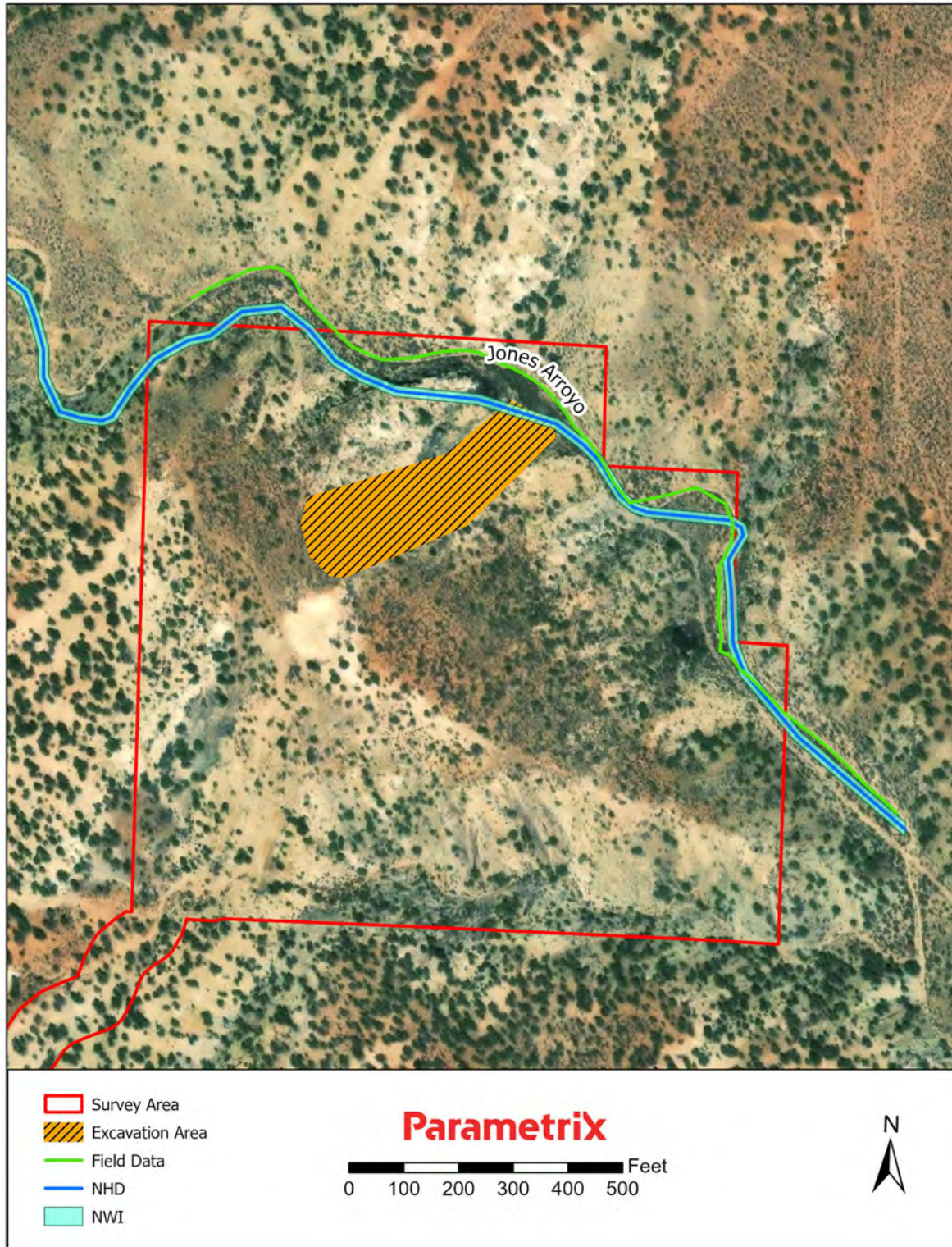


Figure 4. NHD and NWI data compared to field data for Jones Arroyo

4.3 Vegetation

A total of 84 plants species were observed during the field survey (Table 4). One of these plants, Siviniki's blazingstar (*Mentzelia sivinskii*) is a BLMs Sensitive species, and one, Cottam's milkvetch (*Astragalus monumentalis* var. *cottamii*), is considered rare by the NMRPTC. One species of milkweed was also observed. See Section 4.3.2 for more on these species.

Table 4. Observed Plant Species

Common Name	Scientific Name	Native/Non-Native Status
Woody Plants and Cacti		
Antelope bitterbush	<i>Purshia tridentata</i>	Native
Bailey's yucca	<i>Yucca baileyi</i>	Native
Banana yucca	<i>Yucca bacata</i>	Native
Big sagebrush	<i>Artemisia tridentata</i>	Native
Bigelow's sagebrush	<i>Artemisia bigelovii</i>	Native
Claret-cup cactus	<i>Echinocereus triglochidiatus</i>	Native
Cutler's jointfir	<i>Ephedra cutleri</i>	Native
Four-wing saltbush	<i>Atriplex canescens</i>	Native
Greasewood	<i>Sarcobatus vermiculatus</i>	Native
Green jointfir	<i>Ephedra viridis</i>	Native
Greene's rabbitbrush	<i>Chrysothamnus geenei</i>	Native
Juniper mistletoe	<i>Phoradendron juniperinum</i>	Native
Lanceleaf buckwheat	<i>Eriogonum lonchophyllum</i>	Native
Mountain mahogany	<i>Cercocarpus montanus</i>	Native
Narrowleaf brickellbush	<i>Brickellia oblongifolia</i>	Native
Pale wolfberry	<i>Lycium pallidum</i>	Native
Parry's rabbitbrush	<i>Ericameria parryi</i>	Native
Piñon pine	<i>Pinus edulis</i>	Native
Rubber rabbitbush	<i>Ericameria nauseosa</i>	Native
Shadescale	<i>Atriplex confertifolia</i>	Native
Slender buckwheat	<i>Eriogonum microthecum</i>	Native
Snakeweed	<i>Gutierrezia sarothrae</i>	Native
Threeleaf sumac	<i>Rhus trilobata</i>	Native
Utah juniper	<i>Juniperus osteosperma</i>	Native
Grasses		
Alkali sacaton	<i>Sporobolus airoides</i>	Native
Blue grama	<i>Bouteloua gracilis</i>	Native
Cheatgrass	<i>Bromus tectorum</i>	Exotic
Galleta	<i>Hilaria jamesii</i>	Native
Indian ricegrass	<i>Eriocoma hymenoides</i>	Native
Needle and thread grass	<i>Hesperostipa comata</i>	Native

Biological Assessment/Biological Evaluation for the Jones Fire
Mitigation Project, San Juan County, NM
New Mexico Energy, Minerals, and Natural Resources Department, Mining and Minerals
Division - Abandoned Mine Lands Program

Common Name	Scientific Name	Native/Non-Native Status
Purple three-awn	<i>Aristida purpurea</i>	Native
Russian wildrye	<i>Psathyrostachys juncea</i>	Exotic
Sand dropseed	<i>Sporobolus cryptandrus</i>	Native
Sandberg bluegrass	<i>Poa secunda</i>	Native
Squirreltail	<i>Elymus elymoides</i>	Native
Western wheatgrass	<i>Pascopyrum smithii</i>	Native
Forbs		
Alyssum	<i>Alyssum simplex</i>	Exotic
Antelope horns	<i>Asclepias apserula</i>	Native
Baker's oreocarya	<i>Oreocarya bakeri</i>	Native
Bownut oreocarya	<i>Oreocarya suffruticosa</i>	Native
Branched noseburn	<i>Tragia ramosa</i>	Native
Colorado four o'clock	<i>Mirabilis multiflora</i>	Native
Cottam's milkvetch	<i>Astragalus cottamii</i>	Native
Desert paintbrush	<i>Castilleja chromosa</i>	Native
Drummond's pennyroyal	<i>Hedeoma drummondii</i>	Native
Fendler's spurge	<i>Euphorbia fendleri</i>	Native
Filaree	<i>Erodium cicutarium</i>	Exotic
Fineleaf hymenopappus	<i>Hymenopappus filifolius</i>	Native
Groundcover milkvetch	<i>Astragalus humistratus</i>	Native
Gumweed aster	<i>Xanthisma grindelioides</i>	Native
Hairy goldenaster	<i>Heterotheca villosa</i>	Native
Halogeton	<i>Halogeton glomeratus</i>	Exotic
Hayden's gilia	<i>Aliciella haydenii</i>	Native
Heartleaf twistflower	<i>Streptanthus cordatus</i>	Native
Hoary tansyaster	<i>Dieteria canescens</i>	Native
Hoary Townsend daisy	<i>Townsendia incana</i>	Native
James's buckwheat	<i>Eriogonum jamesii</i>	Native
Kochia	<i>Bassia scoparia</i>	Exotic
Lobeleaf grounse	<i>Packera multilobata</i>	Native
Miniature woollystar	<i>Eriastrum diffusum</i>	Native
Narrowleaf beardtongue	<i>Penstemon angustifolius</i>	Native
Narrowleaf four o'clock	<i>Mirabilis linearis</i>	Native
Perky Sue	<i>Tetraneuris ivesiana</i>	Native
Prickly Russian thistle	<i>Salsola tragus</i>	Exotic
Rock cress	<i>Boechera sp.</i>	Native
Rock goldenrod	<i>Petradoria pumila</i>	Native
Rose heath	<i>Chaetopappa ericoides</i>	Native
Rushy milkvetch	<i>Astragalus lonchocarpus</i>	Native
Russian knapweed	<i>Acroptilon repans</i>	Exotic

Common Name	Scientific Name	Native/Non-Native Status
Scarlet globemallow	<i>Sphaeralcea coccinea</i>	Native
Scarlet penstemon	<i>Penstemon barbatus</i>	Native
Sivinski's blasingstar	<i>Mentzelia sivinskii</i>	Native
Spotted milkvetch	<i>Astragalus lentiginosus</i>	Native
Stinking milkvetch	<i>Astragalus praelongus</i>	Native
Streptanthella	<i>Streptanthella longirostris</i>	Native
Thrift mock goldenweed	<i>Stenotus armerioides</i>	Native
Thyme-leaved spurge	<i>Euphorbia serpyllifolia</i>	Native
Tumble mustard	<i>Sisymbrium altissimum</i>	Exotic
Western tansy mustard	<i>Descurainia pinnata</i>	Native
Western tickseed	<i>Lappula occidentalis</i>	Native
Winged buckwheat	<i>Eriogonum alatum</i>	Native
Woolly locoweed	<i>Astragalus mollissimus</i>	Native
Yellow milkvetch	<i>Astragalus flavus</i>	Native
Yellow sweetclover	<i>Melilotus officinalis</i>	Exotic

4.3.1 Plant Communities

Most of the project area is vegetated with common plant associations typical of sedimentary geologic substrates on the Colorado Plateau. Steep slopes at the abandoned mine and along the project area drainages expose outcrops of shale, coal and sandstone strata. These outcrops have a diverse woody plant community of predominantly piñon-juniper woodland with smaller openings of big sagebrush and highly disturbed areas of weedy annuals (Photograph 3 and Photograph 4). The area surrounding the access road is primarily open big sagebrush plain with smaller pockets of piñon-juniper habitat (Photograph 5).

The sandstone outcrops have a variety of woody shrubs including mountain mahogany, Parry's rabbitbrush, Greene's rabbitbrush, antelope bitterbrush, Bigelow's sagebrush, threeleaf sumac, Cutler's jointfir and green ephedra. The clayey channery soils along the access road Common shrubs on the sandy shale outcrops and alkaline alluvial soils in the drainages are fourwing saltbush, greasewood, snakeweed and rubber rabbitbrush. No obligate or facultative plant species were observed in the drainage bottoms. Common grasses are galleta, Indian ricegrass, blue grama, purple threeawn and needle and thread. The nearly barren soil understory of the lower access road on BLM land is notable for its seleniferous channery soil with the seleniphytic rushy milkvetch and yellow milkvetch as the dominant herbaceous species. See Table 4 for a full list of plant species observed in the project area.



Photograph 3. Piñon-juniper habitat with big sagebrush in lower elevation areas.



Photograph 4. Open piñon-juniper woodland on rolling hill landscape.



Photograph 5. Sagebrush plain near access road.

4.3.2 Special Status Plants

There are several rare or endangered plant species that could potentially occur in the project area. Three have federal or state statutory protection. Mancos milkvetch (*Astragalus humillimus*) is listed as an endangered species by the USFWS and is also listed as endangered by the State of New Mexico. It occurs on Cretaceous-age sandstone that is part of the larger Mesa Verde stratigraphic series in San Juan County, New Mexico and adjacent Colorado. It was not found on any of the sandstone outcrops within the Jones Mine project area. Aztec gilia (*Aliciella formosa*) and Clover's cactus (*Sclerocactus cloverae*) are both State of New Mexico endangered plants species that occur near the La Plata Valley. Aztec gilia occurs on the pale sandy clay of the Nacimiento formation and suitable habitat does not occur in the project area. Clover's cactus occupies a variety of substrates and the cobble covered ridge and slope in the southeast part of the project area appears to be suitable habitat. A search of that area did not find any Clover's cactus. Sivinski's blazingstar is endemic to sandy shale and coal outcrops in northeastern San Juan County, New Mexico and southern La Plata County, Colorado. This plant is listed as BLM Sensitive. There are several plants scattered around the coal waste areas of the Jones Mine and a few on the steep slopes on the coal seam outcrops (Figure 5). This plant could be impacted by project operations, but this plant readily grows disturbed soils and will likely reoccupy any new area of disturbance.

One other rare species, Cottam's milkvetch, was observed during the survey. This species is listed as rare by the New Mexico Rare Plant Technical Council for the purpose of acknowledging their rarity and encouraging avoidance or mitigation of impacts. However, this plant has no legal protections. Cottam's milkvetch is endemic to sandstone outcrops in the Four Corners Region in scattered populations that can be locally abundant. A few scattered individuals occur on the tan sandstone bench around in the southwest corner of the project area (Figure 5).

Additionally, Antelope horns milkweed (*Asclepias asperula*) was documented within the Jones Mine biological survey area (Figure 5, Photograph 6). Milkweed species have no legal protection but are the sole larval food plants for the monarch butterfly. Fewer than 10 widely scattered plants were seen and do not provide a significant resource for the migrating butterflies. See Chapters 5 and 7 for more information on the monarch butterfly and recommendations for the species.



Photograph 6. Antelope horns milkweed in project area

4.3.3 Noxious Weeds

The State of New Mexico, under the administration of the Department of Agriculture, lists certain weed species as noxious (New Mexico Department of Agriculture [NMDA] 2020; see Appendix A). For the context of this report, “noxious” is defined as plants which are not native to New Mexico that have negative impacts on the environment or economy. These noxious weeds may be targeted for management and control depending on the classification of the weed. Three classes of noxious weeds exist and are defined by the NMDA (2020):

- Class A noxious weeds have limited distributions within the state, making the prevention of new infestations and eliminating existing infestations a priority.
- Class B noxious weeds are considered common, but not yet widespread within certain regions of the state. Prevention of new populations and containment of existing populations of Class B noxious weeds is essential.
- Class C noxious weeds are common, and widespread species within the state. Management and suppression of Class C noxious weeds is left to the local land manager’s discretion.

Three noxious weeds were observed in the Jones Mine area and the northern section of the access road. These include halogeton, cheatgrass, and Russian knapweed. Cheatgrass (*Bromus tectorum*) and Russian knapweed (*Acroptilon repans*) are Class C noxious weeds, which means they are widespread in New Mexico and their management should be determined at the local level, based on feasibility of control and level of infestation. Halogeton (*Halogeton glomeratus*) is a common annual weed on clayey, alkaline soils in San Juan County and is a Class B noxious weed. This classification recommends management actions designed to contain the infestation and stop any further spread. This plant was observed in the excavation area, and there is potential for the infestation to spread if not controlled appropriate before and after mitigation.



Figure 5. Locations of special status plant species and noxious weeds within project area

4.4 Fauna

A total of two reptile, 12 bird, and three mammal species were observed during the biological survey (Table 5). No amphibians or fish were identified during the pedestrian survey. Fauna were documented by noting either live animals, tracks, scat, carcasses, calls, or trails. All observed species or evidence of species were typical of the region.

The project area can be classified as an open piñon-juniper woodland with some areas dominated by big sagebrush such as the areas on BLM lands. Terrain consists of rolling hills of eroded sandstone and shale. Several sandstone outcrops exist throughout the project area. These areas are biologically important as their craggy surface provides cover for some species. They could be used for raptor nesting. However, nests were not observed in this area, or in any other area within the project boundary.

Table 5. Observed Fauna

Common Name	Scientific Name
Mammals	
Black-tailed jack rabbit	<i>Lepus californicus</i>
Coyote	<i>Canis latrans</i>
Mule deer	<i>Odocoileus hemionus</i>
Birds	
American kestrel	<i>Falco sparverius sparverius</i>
Common nighthawk	<i>Chordeiles minor</i>
Common raven	<i>Corvus corax sinuatus</i>
Black-billed magpie	<i>Pica hudsonia</i>
Mourning dove	<i>Zenaida macroura</i>
Northern mockingbird	<i>Mimus polyglottos leucopterus</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Kingbird species	<i>Tyrannus sp.</i>
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Western bluebird	<i>Sialia mexicana bairdi</i>
Scaled quail	<i>Callipepla squamata pallida</i>
Reptiles	
New Mexico whiptail	<i>Aspidoscelis neomexicana</i>
Common side-blotched lizard	<i>Uta stansburiana</i>

5. Listed Species and Critical Habitat Analysis

This section considers species listed by the USFWS as Threatened, Endangered, and Proposed, as well as those classified as candidates for federal listing that may occur in the project area (USFWS 2025a) and that could potentially be affected by the proposed project. State-listed Threatened or

Endangered species and BLM Sensitive species were also evaluated (NMDGF 2025a; EMNRD 2025; NMRPTC 1999).

5.1 Critical Habitat Analysis

The USFWS defines critical habitat as the specific area occupied by a Threatened or Endangered species at the time it was listed, or that contains physical or biological features essential to the conservation of the species (USFWS 2015). Critical habitat may also include areas that were not occupied by the species at the time of listing but are essential to its conservation. Many species listed as Endangered or Threatened by USFWS may not have critical habitats.

A total of seven federally listed Threatened, Endangered, Candidate, or Proposed species were considered during the critical habitat analysis for this project. These species are listed in Table 6 below. No proposed or final critical habitat intersects the project area. Therefore, the project will have no effect to these species critical habitats.

Table 6. Critical Habitat Distances from the Project Area

Common Name	Scientific name	Critical Habitat within Proposed Project Area
Birds		
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	No
Mammals		
New Mexico meadow jumping mouse	<i>Zapus hudsonius luteus</i>	No
Fish		
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	No
Razorback sucker	<i>Xyrauchen texanus</i>	No
Arthropods		
Monarch Butterfly	<i>Danaus plexippus</i>	No
Suckley's cuckoo bumble bee	<i>Bombus suckleyi</i>	Critical habitat is not designated for this species
Plants		
Mesa Verde cactus	<i>Sclerocactus mesae-verdae</i>	Critical habitat is not designated for this species

5.2 Listed-Species Analysis

The following table (Table 7) lists each USFWS-Listed, BLM Sensitive, and State-Listed species for the project area and their general habitat requirements. It includes a brief discussion on available habitat in the project area and an assessment of potential impact or effect determination.

Table 7. Listed Species for the Project Area and Effects Determination

Common Name	Scientific Name	Status	Habitat Association	Habitat Within Project Area?	Impact/Effects Determination
Mammals*					
Hoary bat	<i>Lasiurus cinereus</i>	BLM Sensitive	The hoary bat is a widespread, solitary, and migratory species found throughout North America. Unlike many other bat species, hoary bats do not roost in caves but instead rely on trees for shelter (NatureServe 2022). Hoary bats primarily inhabit forested environments, where they roost in dense tree foliage. They prefer coniferous and mixed forests, especially those with tall trees that provide protection from predators and extreme weather. Riparian woodlands often support high insect populations, making them ideal foraging areas. In addition to forests and riparian zones, hoary bats also utilize open woodlands and scrublands during migration and foraging, taking advantage of available tree cover while searching for insect prey. This species migrates through New Mexico in the spring (April-May) and fall (August-October).	Yes	May impact the species during migration. See Chapter 7 for recommendations for bats.
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	BLM Sensitive	Gunnison's prairie dog can inhabit a variety of habitats, including desert grassland and scrub communities in lower elevations to high elevation montane meadows. Gunnison's prairie dog is the dominant prairie dog species in the northwestern portion of New Mexico. The species breeds in the spring (March-April), and pups emerge from the den about a month after birth. In general, they are most active in the spring and summer months. In the fall and winter (September to mid-March), the species enters a phase of true hibernation (BISON-M 2025; NMDGF 2008).	Yes	No impact. Species was not observed. However, species should be avoided if found.
New Mexico Meadow jumping mouse	<i>Zapus hudsonius luteus</i>	Federal Endangered	The New Mexico meadow jumping mouse prefers sedge-dominant riparian areas with a permanent water source. Although sedges are dominant in their habitat, they may also be associated with mixed herbaceous habitats that include coyote willow, grasses, cottonwood, and other common riparian vegetation. The New Mexico jumping mouse prefers herbaceous vegetation that is at least two feet tall with surrounding intact uplands (USFS 2025).	No	No effect. Habitat not present

Common Name	Scientific Name	Status	Habitat Association	Habitat Within Project Area?	Impact/Effects Determination
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM Sensitive	Townsend's big-eared bat inhabits a wide range of habitats, including piñon-juniper and sagebrush habitats. Typically, this species is considered a subterranean-obligate, roosting primarily in caves and abandoned mines. However, it has been found in man-made structures such as diversion tunnels and bridges. This species does not typically travel far from its roosts to its foraging area.	No	No impact. project area mines have collapsed and are actively burning making them uninhabitable to bats.
Spotted bat	<i>Euderma maculatum</i>	State Threatened, BLM Sensitive	Spotted bats can live in a variety of different habitats, from high elevation pine forests to desert scrub. They roost in the crevices and cracks of cliffs and canyons rather than caves. However, maternal roosting sites occur in caves. All roosting habitat is almost always found near a permanent water source. Very seldomly this bat can be found in abandoned buildings and manmade structures.	Yes	May impact. The project area features craggy surfaces and cliffs that may provide roosting habitat for the species.
Birds**					
Bald eagle	<i>Haliaeetus leucocephalus</i>	State Threatened	Bald eagles prefer timbered forest near large, perennial bodies of water that provide plenty of fish. Fish are their primary food source, but they are also known to take waterfowl, carrion, and small mammals. The species typically nests in snags or upon cliffs. Nesting typically occurs in the winter and may continue into the summer months.	Yes	May impact. The project area may provide limited nesting habitat, and the species is frequently spotted in the La Plata area. See Chapter 7 for recommendations on nesting birds
Bendire's thrasher	<i>Toxostoma bendirei</i>	BLM Sensitive	Bendire's thrasher occurs in desert scrublands and grasslands often associated with creosote, mesquite, cholla, yucca, and other large succulents, it is most prevalent in the Sonoran Desert. This species is occasionally found in dense hedges and shrubs next to open short grass prairies and agricultural areas. The summer range of the species includes central and the far northwest portions of the state. Migrants occupy shrublands and woodlands, which could provide them with suitable nesting habitat. Bendire's thrasher breeds between March and August.	Yes	May impact. See Chapter 7 for recommendations on nesting birds
Chestnut-collared longspur	<i>Calcarius ornatus</i>	BLM Sensitive	This species is often associated with open grassland habitats that are dominated by desert saltgrass, and fourwing saltbush. They typically breed in the mixed grass prairies of southern Canada.	No	No impact. Project area lacks summer habitat.

Common Name	Scientific Name	Status	Habitat Association	Habitat Within Project Area?	Impact/Effects Determination
Gray vireo	<i>Vireo vicinior</i>	State Threatened,	Breeding habitat is generally open woodlands/ shrublands featuring evergreen trees and shrubs of various kinds. Junipers are the dominant element in most areas of occurrence in New Mexico, although oaks are also frequent in the southern part of the range. It breeds in New Mexico in the warmer months (April-September) but does not appear to winter in the state (NMDGF 2007a).	Yes	May impact. See Chapter 7 for recommendations on nesting birds.
Loggerhead shrike	<i>Lanius ludovicianus</i>	BLM Sensitive	The loggerhead shrike is a year-round resident throughout many areas of New Mexico, including grasslands, shrublands and desert scrub. Although widespread, it is uncommon, and its populations are declining throughout its vast range due to consumption of contaminated prey, loss of nesting sites, and loss of foraging habitat. The species tends to nest in trees, shrubs, and thorny vegetation to deter predators. Their breeding season typically occurs between May and July.	Yes	May impact. See Chapter 7 for recommendations on nesting birds.
Mexican whip-poor-will	<i>Antrostomus arizonae</i>	BLM Sensitive	The Mexican whip-poor-will typically occurs in areas with forest cover including areas such as ponderosa pine forests, desert riparian deciduous woodlands, and mixed conifer forests. However, Mexican whip-poor-will can use open habitats for foraging.	Yes	No impact. The species could be foraging or transient in project area, but unlikely to nest there.
Mountain plover	<i>Charadrius montanus</i>	BLM Sensitive	Despite its name, the mountain plover is associated with lowland shortgrass prairies and playas with low density scrubby vegetation.	No	No impact. Project area lacks suitable habitat.
Peregrine falcon	<i>Falco peregrinus</i>	State Threatened	The peregrine falcon is known to inhabit a wide range of habitat types in New Mexico, including intermountain sagebrush shrublands and piñon-juniper woodlands. Peregrine falcon will roost, rest, and forage in many different environments, but this species prefers to nest in wooded areas. Nesting habitat typically consists of cliffs, ledges, caves, snags, or abandoned nests from other species (NMDFG 2025; Udvarty 1994).	Yes	May impact. See Chapter 7 for recommendations on nesting birds.
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	BLM Sensitive	Pinyon jays are typically associated with piñon-juniper woodlands, but they occasionally breed in sagebrush shrubland, scrub-oak chaparral, and ponderosa pine. This species' diet primarily consists of pine seeds, juniper berries, acorns, and other tree seeds. Pinyon jays may start breeding as early as February and can continue until August.	Yes	May impact. See Chapter 7 for recommendations on nesting birds.

Common Name	Scientific Name	Status	Habitat Association	Habitat Within Project Area?	Impact/Effects Determination
Virginia's warbler	<i>Leiothlypis virginiae</i>	BLM Sensitive	In the summer, Virginia's warbler can be found in many regions across New Mexico, but it is closely associated with montane habitats. This is largely because the species prefers to nest near steeply incised drainages, canyons, and other steeply sloped areas with shrubby vegetation. It is transient in piñon-juniper woodlands and mixed conifer forests.	Yes	May impact. See Chapter 7 for recommendations on nesting birds.
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Federal Threatened	The yellow-billed cuckoo inhabits riparian habitats with cottonwood mixed with smaller native trees, especially Goodding's willow. They prefer nesting sites that have mostly closed canopies and are of relatively large size.	No	No effect. Project lacks suitable habitat.
Amphibians*					
Northern leopard frog	<i>Lithobates (Rana) pipens</i>	BLM Sensitive	Generally found in various aquatic habitats such as marshes, ponds, streams, reservoirs, and ditches. The species has been observed along the Rio Grande, San Juan River, Rio Puerco, and other major perennial streams (Degenhardt et al. 1996).	No	No impact. However, this species may exist in La Plata River. See Chapter 7 for recommendations standard BMPs for waterways, aquatic, and semi-aquatic species.
Western Toad	<i>Anaxyrus boreas</i>	State Endangered	The western toad occurs in pine forest or alpine meadows between 7,400–12,300 ft. Their breeding sites are often beaver ponds and complexes.	No	No impact. Project area lacks suitable habitat.
Fish*					
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	Federal Endangered	The Colorado pikeminnow is endemic to large warm-water rivers of the Colorado River basin, including the San Juan River. They became endangered due to the construction of dams and diversions which radically changed the nature of the stream systems they inhabit.	No	No effect. See Chapter 7 for recommendations standard BMPs for waterways and aquatic/semi-aquatic species.
Razorback sucker	<i>Xyrauchen texanus</i>	Federal Endangered	The razorback sucker is native to the warm-water portions of the Colorado River basin. The species is found throughout the basin in both lake and river habitats but are most common in backwaters, floodplains, flatwater river sections and reservoirs where they use a variety of habitat types, including mainstem river channels, reservoirs, turbid inflow areas, and floodplain wetlands.	No	No effect. See Chapter 7 for recommendations standard BMPs for waterways and aquatic/semi-aquatic species.
Roundtailed chub	<i>Gila robusta</i>	State Endangered; BLM Sensitive	Roundtail chub occur in cool to warm water in pools up to 2.0 meters deep. They use cover provided by large boulders, tree roots, and undercuts. (BISON-M 2024).	No	No effect. See Chapter 7 for recommendations standard BMPs for waterways and aquatic/semi-aquatic species.

Common Name	Scientific Name	Status	Habitat Association	Habitat Within Project Area?	Impact/Effects Determination
Insects*					
American bumble bee	<i>Bombus pensylvanicus</i>	BLM Sensitive	This species primarily inhabits grasslands, prairies, and open meadows, where it can find an abundance of flowering plants to forage for nectar and pollen. It also thrives in agricultural lands, roadsides, and urban gardens, provided there are sufficient flowering resources. Nesting sites are typically located underground in abandoned rodent burrows or within tall grasses, though some colonies may be found in hollowed-out logs or other sheltered cavities. The American Bumblebee is active from spring through fall, with peak foraging occurring during the warm months when floral resources are most abundant (USFS n.d.).	Yes	May impact. See Chapter 7 for recommendations to pollinators.
Monarch butterfly	<i>Danaus plexippus</i>	Proposed Federal Threatened, BLM Sensitive	The monarch butterfly is known to occur throughout New Mexico during seasonal migration and breeding season, typically the warmer months of April to October. It is not known to overwinter in the state (Cary and DeLay 2016). Adult monarchs require access to a variety of blooming nectar plants while in their breeding and migratory phase. Milkweed is the reproductive substrate for monarch butterflies as well as the primary food source for caterpillars, but it may also serve as an important nectar resource in arid regions (USFWS 2024a). However, other nectar resources are also important to the species. In the Southwest, these plants may include common species such as rubber rabbitbrush, desert globemallow, desert willow, and common (Xerces Society 2025a).	Yes	May affect, not likely to adversely affect. See Chapter 7 for recommendations to pollinators.
Suckley's cuckoo bumble bee	<i>Bombus suckleyi</i>	Proposed Federal Endangered	This species requires a host colony to reproduce and survive, primarily western and Nevada bumble bees. Bumble bees of all kinds typically nest in pre-existing cavities, including rodent holes, bunch grasses, bird houses, man-made structures and insulation, and other hollow/permeable substrates (Xerces 2025b). Because host bumble bees have large ranges in North America, Suckley's cuckoo bumble bee has a large range. A significant portion of Suckley's cuckoo bumble bee's true range is still unknown. This uncertainty is partially due to species misidentification, natural scarcity, and difficulty in detection. According to the USFWS species status	Yes	May affect, not likely to adversely affect. See Chapter 7 for recommendations to pollinators.

Common Name	Scientific Name	Status	Habitat Association	Habitat Within Project Area?	Impact/Effects Determination
Western bumble bee	<i>Bombus occidentalis</i>	BLM Sensitive	assessment, Suckley's cuckoo bumble bee has never been positively identified in New Mexico (USFWS 2024b). Western bumble bee inhabits the western United States from the Dakotas to the west coast and western Canada. It may occur in grasslands, croplands, forests, woodlands, and urban settings, if nectar and pollen are available. It is a colonial breeding species that nests underground, particularly in abandoned rodent burrows (NatureServe 2018; Defenders of Wildlife 2015).	Yes	May impact. See Chapter 7 for recommendations to pollinators.
Plants***					
Acoma fleabane	<i>Erigeron acomanus</i>	BLM Sensitive	Acoma fleabane is a narrow endemic noted within McKinley and Cibola Counties on the Entrada Sandstone Formation. It occurs in piñon-juniper woodlands between elevations of 6,900–7,100 ft.	No	No impact. Project area lacks suitable habitat.
Aztec gilia	<i>Aliciella formosa</i>	State Endangered; BLM Sensitive	Loose, eroded soils of the Nacimiento formation from 5,500-6,360 feet.	No	No impact. Project area lacks suitable habitat.
Clipped wild buckwheat	<i>Eriogonum lachnogynum</i> var. <i>colobum</i>	BLM Sensitive	Clipped wild buckwheat is only known to occur on the Todilto formation between Prewitt and Thoreau, McKinley County and on the rim of the Rio Grande Gorge in Taos County. It requires sandy or gypseous limestone soils, and it is primarily found on ridges or mesa edges within piñon-juniper woodlands.	No	No impact. Project area lacks suitable habitat.
Clover's cactus	<i>Sclerocactus cloverae</i>	State Endangered; BLM Sensitive	Clover's cactus can be found only on the Nacimiento Formation but in a variety of substrates and environments, including shadscale scrub, desert grasslands, sagebrush flats, pinon-juniper woodlands, in washes, clay hills and mesas.	Yes	No impact. This species could theoretically occur in the project area and was detectable/flowering at the time of survey. However, it was not observed during the survey.
Golden lady's slipper	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	State Endangered	Golden lady's slipper is found in many areas of the continental United States and Canada, but its occurrence is sporadic in New Mexico. It occurs in coniferous forests between 5,750 and 11,000 ft.	No	No impact. Project area lacks suitable habitat.
Goodding's onion	<i>Allium gooddingii</i>	State Endangered	Goodding's onion occurs in mature forests along north-facing drainages near stream courses, from 7,000-9,400 ft.	No	No impact. Project area lacks suitable habitat.

Common Name	Scientific Name	Status	Habitat Association	Habitat Within Project Area?	Impact/Effects Determination
Knowlton's cactus	<i>Pediocactus knowltonii</i>	State Endangered	Alluvial deposits on the San Jose Formation, rolling, gravelly hills with piñon-juniper, sage. This species is only known to occur along the Los Pinos River in San Juan County.	No	No impact. Project area lacks suitable habitat.
Mancos milkvetch	<i>Astragalus humillimus</i>	Federal Endangered; State Endangered	Mancos milkvetch is a narrow endemic in the Four Corners Region. It grows upon sandstone rimrock ledges and mesas. This species is imperiled due to the extraction industry encroaching upon its limited habitat.	Yes	No impact. This species could theoretically occur in the project area and was detectable at the time of survey. However, it was not observed during the survey.
Mancos saltbush	<i>Proatriplex pleiantha</i>	BLM Sensitive	Occurs in northwestern San Juan County, New Mexico in desert badlands of the Colorado Plateau on saline clay soils of the Mancos and Fruitland shale formations at elevations ranging from 5,000 – 5,500 ft.	No	No impact. Project area lacks suitable habitat.
Mesa Verde cactus	<i>Sclerocactus mesae-verdae</i>	Federal Threatened	The Mesa Verde cactus is a species endemic to northwest New Mexico and southwest Colorado. It grows on low clay hills with sparse vegetation at elevations of between 4,900-5,500 ft. It is often found with mat saltbush, shadscale, Frankenia, and prickly pear. It occurs within very specific soil compositions derived from Mancos or Fruitland shale. Soils must be alkaline, gypsiferous, and have shrink-swell potential. Its populations severely declined due to drought and insect outbreak in the early 2000s and have not recovered. Although the project area is within the range of Mesa Verde cactus, it was not sighted during the field survey.	No	No effect. Project area lacks suitable habitat.
Navajo bladderpod	<i>Physaria navajoensis</i>	BLM Sensitive	Mesa rims of Todilto formation in sparse piñon-juniper at between 7,200-7,600 ft. Within New Mexico, this species is known to occur in south-central and northwestern McKinley County.	No	No impact. The project area does not intersect the known range of the species.
Parish's alkali grass	<i>Puccinellia parishii</i>	State Endangered	Parish's alkali grass typically grows in alkaline springs, seeps and seasonally wet areas occurring at the heads of drainages. Damp soils are required during its growing season from late winter to spring.	No	No impact. The project area does not intersect the known range of the species.
San Juan milkweed	<i>Asclepias sanjuanensis</i>	BLM Sensitive	Disturbed sandy loam soils, juniper savanna and desert scrub at between 5,000-5,500 ft.	Yes	No impact. This species could theoretically occur in the project area and was detectable at the time of

Common Name	Scientific Name	Status	Habitat Association	Habitat Within Project Area?	Impact/Effects Determination
Sivinski's blazingstar	<i>Mentzelia sivinskii</i>	BLM Sensitive	Sivinski's blazingstar is endemic to sandy shale and coal outcrops in northeastern San Juan County, New Mexico and southern La Plata County, Colorado.	Yes	survey. However, it was not observed during the survey. May impact. This species was identified in the survey area and could be removed during project efforts. However, this species readily grows on disturbed soils and will likely reoccupy any new area of disturbance. Avoidance is recommended, if feasible.
Threadleaf blazingstar	<i>Mentzelia filifolia</i>	BLM Sensitive	Threadleaf blazingstar is typically found on roadcuts and sloped areas with shale substrates of the upper Chile Formation. It exists in piñon-juniper environments from 6,400–7,500 ft. Within New Mexico, it is currently known to occur within McKinley County.	No	No impact. The project area does not intersect the known range of the species.
Zuni fleabane	<i>Erigeron rhizomatus</i>	State Endangered; Federal Threatened	Zuni fleabane occurs in nearly barren hillsides of clay derived from the Baca or Chinle Formations. It can be found in piñon-juniper and ponderosa pine forest communities between 7,300–8,300 ft. Zuni fleabane is known to occur in the Zuni, Sawtooth, Datil, and Chuska Mountain ranges.	No	No impact. The project area does not intersect the known range of the species.

* Habitat association data collected from NMDGF's BISON-M Database (NMDGF 2025b) unless otherwise noted.

** Habitat association data collected from NMDGF's BISON-M Database (NMDGF 2025b) and Cornell Lab of Ornithology eBird database (Cornell 2025) unless otherwise noted.

*** Habitat association data collected from NMRPTC Rare Plant Database (NMRPTC 1999) unless otherwise noted.

6. Effects Analysis

This section will discuss permanent and temporary direct, indirect, and cumulative effects of the proposed project to all species (listed or non-listed), if observed or relevant, that are residing, nesting, have dens, year-round maternal colonies, etc. within or adjacent to the project area. The Council on Environmental Quality defines direct effects as those caused by the action and occur at the same time and place, while indirect effects are those that occur later in time or are farther removed in distance but are still reasonably foreseeable. Cumulative effects are incremental impacts from past, present, and future actions and are reasonably foreseeable regardless of the agency or person that makes them.

Project effects are based on the following:

- Fire mitigation will include mass excavation of 36,300 cubic yards of coal waste piles
- Mixing and blending coal waste with insert material
- Replacing newly mixed sediment into the 36,300 cubic yard excavated area
- Contouring and reseeded post-mitigation
- Access road improvements include blading and grading the current two-track dirt access road into an easily passable footprint.
- Travel of large equipment such as bulldozers, excavators, water trucks, drilling rigs, and ancillary support vehicles to and from the mine site.

6.1 Direct Effects

6.1.1 Temporary

Temporary direct impacts within the project area include short-term loss of shelter, food resources, increased noise disturbance, increased air pollution, and increased human activity.

Throughout construction, animals will temporarily be unable to use parts of the project area for daily activities and nesting, they may lose the shelter of vegetation or burrows, and foraging in the project area may become impossible. These impacts will only occur during the construction period. Animal activity should resume post-construction and when plants have the opportunity to re-establish themselves.

Additionally, noise disturbance and human activity will increase during construction, which will most likely alter animal behavior and movement, including reproduction. Some animals may be discouraged from using ideal reproductive sites in the project area, forcing them to find other areas, or may not reproduce at all. This is a temporary impact that would not outlast the construction period, and it is not expected to have an impact to the overall animal population. However, if feasible, it is recommended that the reproductive season of protected species be avoided all together, particularly for migratory birds. See Section 7.1.2 for recommendations for migratory birds.

The project area is in an undeveloped setting, and it does not experience pollution from vehicles and construction equipment. During the construction period, air pollution from heavy machinery and vehicle traffic is expected to increase. There may be pollution occurring from the underground coal

fires themselves, and the vehicular emissions may add to the current pollution. Like noise and human presence, increased air pollution can discourage animals from using the general project vicinity.

6.1.2 Permanent

Direct effects to natural and biological resources in the project area include permanent impacts such as mortality and decreased residual heat and air pollution from the underground fires.

Mortality could result from contact with heavy machinery, vegetation removal, groundbreaking activities, and other modes of disturbance taking place as a result of construction. Biota most likely to be at risk for mortality include flora within construction zone, and smaller fauna, such as invertebrates, amphibians, and small mammals, that may not have the ability to escape construction equipment. Larger mammals, birds, and winged invertebrates have a greater ability to avoid equipment and move into areas where there is less disturbance and, thus, experience lower mortality.

With fire mitigation, any residual heat and air pollution being caused by the fire will cease. This provides a net benefit to plants and animals in the area, as it is an attempt to restore the environment to pre-fire conditions as much as possible.

Both permanent and temporary direct effects to the project are considered negligible. Although there are biological resources in this corridor, the loss of a few individuals will not impact overall plant and animal populations. There are some undeveloped areas outside of the project corridor that provide habitat for displaced species. The fire mitigation measures will not substantially impact overall habitat availability, and habitat is expected to return to pre-mitigation conditions over time.

6.2 Indirect Effects

Indirect project effect could include temporary increased competition among individuals, changes in drainage patterns, and increased risk for erosion and sedimentation.

Displacement of animals in the project area due to temporary habitat loss could change the distribution of species and increase competition in areas outside of the project area. Some competition could result in mortality for a few individuals, but this is not expected to affect overall population trends. Suitable habitat is available outside the project area, and species are expected to disperse overtime. With dispersal, competition will recede.

With construction of a wider, bladed and graded roadway, drainage patterns and vegetation composition may change along the road. Changing the road footprint and impacting any existing ephemeral streams and low flow channels could result in how water is draining in the area and where it is collecting. This could change erosion and sedimentation in the area and the density and composition of plant and animal species occur there. Additionally, the new roadway disturbance could attract plant and animal species that prefer disturbed areas.

Fire mitigation activities could also alter drainage patterns, erosion and sedimentation, and plant and animal competition. It is recommended that the project area is reseeded with a weed-free native plant seed mix, noxious weed introduction is prevented, and measures in the National Pollutant Discharge Elimination System (NPDES) permit implemented to prevent erosion and sedimentation to the greatest extent possible.

6.3 Cumulative Effects

Project area cumulative effects include increase recreational use of the area, population growth and settlement of La Plata, and oil and gas production.

The project area is partially within and surrounded by the Thomas Canyon Recreational Area. Recreational use includes hiking, off-road vehicle traffic, biking, and camping. Recreation within the Thomas Canyon Recreational Area and in proximity to the project area is expected to increase over time as the area population grows and expands.

There are a few, dispersed residential homes and agricultural lands within proximity of the project area. Continued growth of the local population is expected and will result in additional home construction, modification to vegetation, crop cultivation, and utility installation.

Oil and gas extraction is present throughout the greater La Plata area. Extraction industries continuing to expand in the area is reasonably foreseeable and could contribute to cumulative impacts in the area.

Existing projects and activities in this area have potential for effects on the natural environment. Some aspects of the proposed project, such as the road improvements, may cumulatively increase disturbance effects when combined with other projects/activities. However, other aspects, such as fire mitigation, may have an overall positive benefit. The proposed action would not be expected to cumulatively contribute to overall environmental degradation.

7. Avoidance, Minimization, and Mitigation Measures

7.1 Wildlife

7.1.1 USFWS Consultation

The project area has available habitat for the monarch butterfly and Suckley's cuckoo bumble bee. These species are both proposed for listing to the ESA. It is unlikely that project activities will threaten the continued survival and persistence of either species, but project activities could impact foraging habitat in the local area. Parametrix has determined that the project **"may affect but is not likely to adversely affect"** the monarch butterfly and Suckley's cuckoo bumble bee. **"May affect, not likely to adversely affect"** determinations involve informal consultation with the USFWS, in which the USFWS may issue a concurrence letter with the determinations made in this BA/BE or provide additional mitigation measures (50 CFR 402.13).

7.1.2 Migratory Birds

All aspects of this project should be conducted outside the bird nesting season if feasible. Efforts should be made in accordance with the MBTA of 1918 (16 USC 703, et seq.), which protects against the "taking" of migratory birds, their nests, and their eggs, except as permitted by the USFWS. To avoid direct impacts to migratory birds protected by the MBTA, a migratory bird nesting survey should be conducted prior to construction if work will occur during the avian breeding and nesting period (March 15 through September 15), as defined by the USFWS New Mexico Ecological Services Field

Office. Any located active nests should be flagged for avoidance. If vegetation removal is performed outside the nesting season, little or no impacts to migratory bird species are anticipated. A permit from the USFWS should be obtained as required by MBTA if active bird nests require removal. Failure by the Contractor to timely request the migratory bird survey may impact the Contractor's construction schedule.

7.1.3 Downstream Measure for Aquatic and Semi-Aquatic Species

The project does not include any perennial or intermittent waterways. However, downstream impacts could occur to aquatic and semi-aquatic species living in and around the La Plata River because of project activity. The following are recommendations to minimize downstream impacts:

- Develop temporary erosion and sediment control measures (e.g., silt fences, hay bales, mulch socks) as the project design advances and ensure they are implemented before construction and in accordance with a Storm Water Pollution Prevention Plan (SWPPP) required by the provisions of the NPDES) construction general permitting.
- Require the contractor to develop a spill prevention, control, and countermeasure plan, implement the plan, employ workers trained in spill containment, and notify the EMNRD immediately in the event of a spill. The EMNRD will then inform the USFWS, USACE, New Mexico Environmental Department (NMED), and NMDGF as appropriate.
- Define a work zone boundary for the contractor and prohibit construction or equipment storage/fueling outside of this zone. Require refueling and maintenance to occur outside the waterway floodplains and inspect equipment daily for leaks.

7.1.4 Prairie Dogs and Burrowing Owls

No prairie dogs or their burrows were observed during field survey. However, the proposed project has suitable habitat for this species to occur. If active prairie dog burrows or colonies are found a 0.25-mile buffer should be placed around them throughout the duration of construction, or the prairie dogs may be relocated. Relocation should be considered a last resort option.

Prairie dogs and burrowing owls are often closely connected species. Burrowing owls use empty fossorial burrows for nesting. Burrowing owls are protected by the MBTA, and construction should be planned around any potential nesting in the project area. Prior to construction, Parametrix recommends that the absence of burrowing owl nesting habitat is confirmed. This may take place concurrently with pre-construction migratory bird surveys or as an independent effort.

7.1.5 Bats

Two listed bat species, hoary bat and spotted bat, could occur in the project area. The hoary bat is a migratory species that sometimes uses woodland trees during its spring (April–May) and fall (August–October) migration periods. If feasible, it is recommended that these periods are avoid, or that vegetation removal does not intersect these times, as it could disturb, distress, or harm the species.

Spotted bats use crevices and cracks for day roosting. There are available day roost locations in the project area. It is recommended that these areas are avoided during project construction, if feasible. If day roosting habitat will be impacted, it is recommended that the area be inspected for bats by a trained specialist, and bat exclusion devices are placed in the area to prevent further roosting.

7.1.6 Pollinators

To minimize potential impacts on pollinator species, construction activities should be planned to avoid large-scale disturbance to native flowering plants, particularly during peak blooming seasons from late spring to early fall. If temporary vegetation clearing is necessary, efforts should be made to restore native flowering plants post-construction to maintain available foraging habitat. It is recommended that vegetation clearing occur before the blooming season to limit bumble bee contact with construction zones. Additionally, limiting the use of pesticides, especially insecticides, in the project area can further support pollinator health, and retaining undisturbed areas with tall grasses or natural ground cover can help preserve potential nesting sites for bees. Preserving areas with milkweed can help preserve reproductive and feeding habitat for monarch butterflies.

7.1.7 Trenching Procedures

It is recommended that all roadside trenches be backfilled or covered by sturdy material before the contractor leaves the construction site for the day. This prevents animals falling in or injuring themselves on open trenches. If trenches cannot be covered, it is recommended that escape ramps be constructed every 30 to 90 meters. Trenches left overnight must be inspected before work starts each day by a qualified biological monitor (NMDGF 2022).

7.2 Vegetation

7.2.1 Revegetation

Following completion of the proposed project, areas disturbed by construction shall be revegetated using seed from native species that approximate pre-disturbance plant community composition.

7.2.2 Special Status Plants

Two special status plant species, Siviniski's blazingstar and Cottam's milkvetch, were identified during the natural resources survey. Siviniski's blazingstar is a BLM Sensitive species. The observed individuals are not located on BLM managed lands, but avoidance is recommended, if feasible. However, this plant readily grows disturbed soils and will likely reoccupy any new area of disturbance. Cottam's milkvetch is listed as a rare plant on the NMRPTC but has no legal protection. Avoidance of this species is recommended, if feasible.

7.2.3 Noxious Weeds

A total of three noxious weed species were documented within the project area. Appropriate BMPs should be used for noxious weeds. The Class B noxious weeds (halogeton) shall be treated by the contractor with appropriate herbicides. The herbicide shall be applied by personnel trained in the appropriate herbicide application procedures. Because the halogeton is located within the fire mitigation area, it is important to control this weed before and after mitigation to prevent further spread. The existing Class C noxious weeds may be removed or treated at the landowner's discretion.

To minimize the introduction and spread of additional noxious weeds in areas where vegetation occurs, the construction contractor shall use BMPs, including using a high-pressure washer to thoroughly clean all equipment prior to entering and exiting the project site. Materials transported

into or out of the project area shall be carefully inspected to avoid the introduction of additional noxious weed species.

7.3 Waterways

Numerous ephemeral streams were observed during the natural resources investigation. Ephemeral streams are no longer considered WOTUS, and therefore, no Section 404/401 permitting will be required. Although Jones Arroyo is depicted as an intermittent stream on the NHD, no SDAM indicators for intermittent or perennial stream were observed in the field. Therefore, the reach of Jones Arroyo that intersects with the survey area is classified as ephemeral, and no CWA permitting is needed for this stream,

The project is not anticipated to have any adverse impacts on ground water quality in the project area; however, implementation of the project may involve the use of heavy equipment, thereby leading to a possibility of contaminant spills and leaks (e.g., fuel, hydraulic fluid, etc.) associated with construction equipment. Standard controls that protect groundwater are recommended to be implemented as part the construction contracting requirements. If evidence of soil or groundwater contamination is identified during construction, it is recommended that work cease at the affected area and the construction contractor contact NMED for instructions on how to proceed.

The EPA requires NPDES Construction General Permit (CGP) coverage for stormwater discharges from construction projects (including common plans of development, construction support or staging areas) that would result in the disturbance (or re-disturbance) of ≥ 1 acre (0.4 hectares). It is recommended to carry out the project during non-rainy seasons. Typically, this includes all time frames except the summer monsoon season, loosely defined as July through early September. However, if construction must occur during the summer monsoon season, it is recommended that construction activities cease during heavy rain events. It is also recommended that the contractor use the best management practices outlined in the CGP to protect waterways from inadvertent pollutants, including mulch socks, silt fences, etc.

7.4 Floodplains

Jones Arroyo is classified as Zone A, or areas within the 100-year floodplain (FEMA, DHS 2021) [See Appendix A for FIRM panels]. Impacts to floodplains are considered anything that raised the base-flood elevation by one foot. The proposed project intersects the 100-year flood zone. Consultation with FEMA and continued floodplain analysis may be necessary to determine if project activities constitute a floodplain impact.

7.5 Soils

It is recommended that the contractor develop and implement a SWPPP to accomplish erosion control, per the NPDES CGP.

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Appendix A

Pre-field Resources

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

San Juan County, New Mexico



Local office

New Mexico Ecological Services Field Office

☎ (505) 346-2525

📅 (505) 346-2542

2105 Osuna Road Ne

Albuquerque, NM 87113-1001

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
 2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Colorado Pikeminnow <i>Ptychocheilus lucius</i> This species only needs to be considered if the following condition applies: Water depletions in the upper Colorado River basin adversely affect this species and its critical habitat. Effects of water depletions must be considered even outside of occupied range. There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3531	Endangered
Razorback Sucker <i>Xyrauchen texanus</i> Wherever found This species only needs to be considered if the following condition applies: Water depletions in the upper Colorado River basin adversely affect this species and its critical habitat. Effects of water depletions must be considered even outside of occupied range. There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/530	Endangered

Insects

NAME	STATUS
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Monarch Butterfly *Danaus plexippus*

Proposed Threatened

Wherever found

There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/9743>

Suckley's Cuckoo Bumble Bee *Bombus suckleyi*

Proposed Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/10885>

Flowering Plants

NAME

STATUS

Mesa Verde Cactus *Sclerocactus mesae-verdae*

Threatened

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/6005>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The [data](#) in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey.

Please review the 'Steps to Take When No Results Are Returned' section of the [Supplemental](#)

[Information on Migratory Birds and Eagles document](#) to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases [birds of concern](#), including [Birds of Conservation Concern \(BCC\)](#), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the [Nationwide avoidance and minimization measures for birds](#) document, and any other project-specific avoidance and minimization measures suggested at the link [Measures for avoiding and minimizing impacts to birds](#) for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles document](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Broad-tailed Hummingbird <i>Selasphorus platycercus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 25 to Aug 21
Pinyon Jay <i>Gymnorhinus cyanocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read ["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

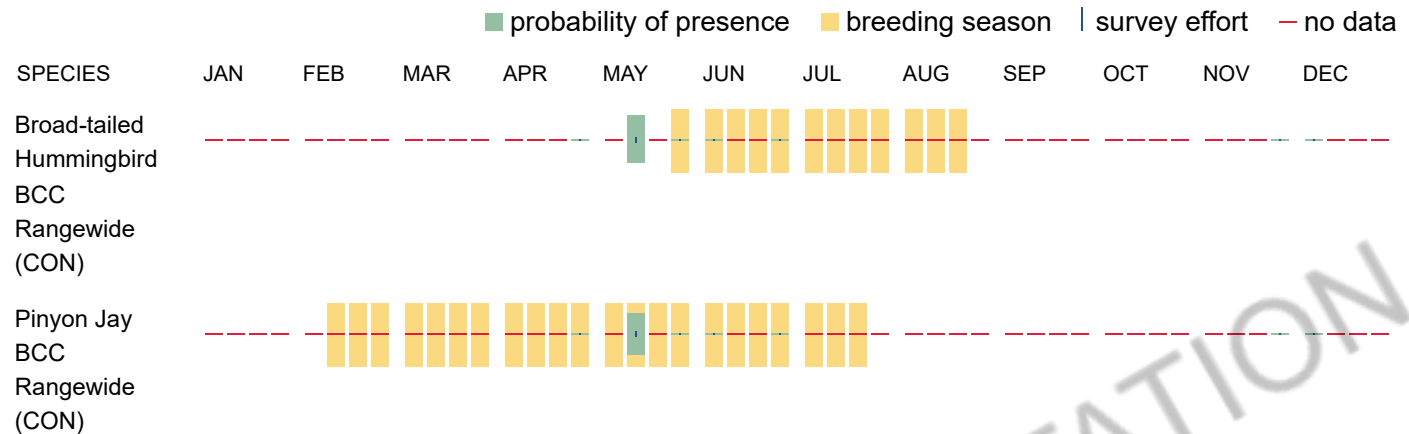
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Avoidance & Minimization Measures for Birds](#) describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the [Bald and Golden Eagle Protection Act](#) and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the [Rapid Avian Information](#)

[Locator \(RAIL\) Tool](#).

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Bald and Golden Eagle Protection Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

[R4SBC](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



PROJECT INFORMATION

Project Title: Jones Coal Min Fire Mitigation
Project Type: (NO PROJECT REVIEW) SPECIES LIST ONLY
Latitude/Longitude (DMS): 36.966446 / -108.207597
County(s): SAN JUAN
Project Description: NR Surveys and Reporting (BABE) for fire mitigation work at the Jones Coal Mine Coal Seam Fire.

REQUESTOR INFORMATION

Project Organization:
Contact Name: Evan Crawford
Email Address: ecrawford@parametrix.com
Organization: Parametrix
Address: 4041 Jefferson Plaza NE Suite 210, Albuquerque NM 87109
Phone: 9185572360

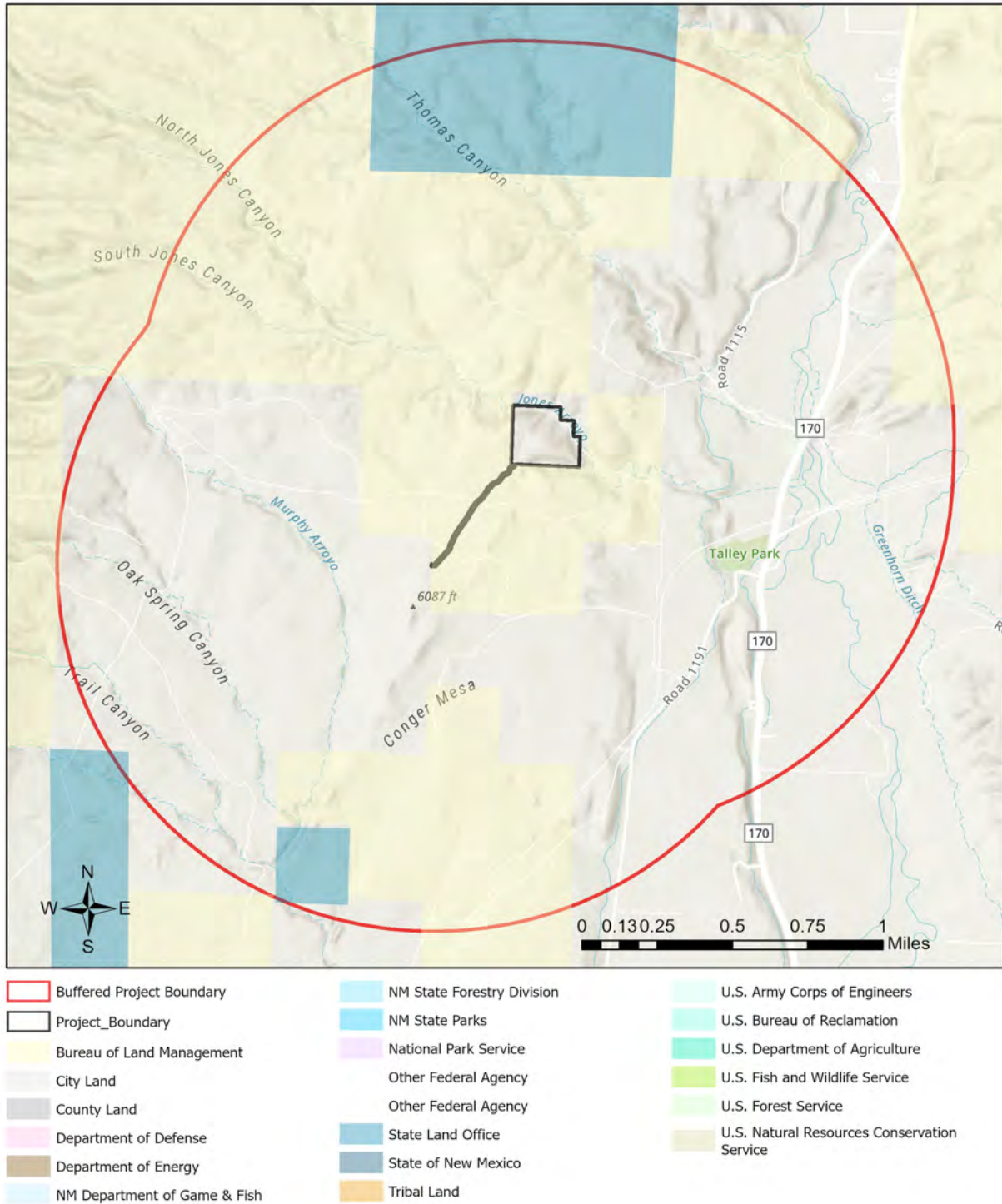
OVERALL STATUS

The information contained within this report comprises the recommendations of the New Mexico Department of Game and Fish (Department) for management and mitigation of proposed project impacts to wildlife and habitat resources; see the Project Recommendations section below for further details. No further consultation with the Department is required based on the project's location and, with implementation of mitigation measures described in the Project Recommendations section below, no adverse effects to wildlife or important habitats are anticipated. However, a Department biologist may be in touch within 30 days if they determine that further review is required.

About this report:

- This environmental review is based on the project description and location that was entered. The report must be updated if the project type, area, or operational components are modified.
- This is a preliminary environmental screening assessment and report. It is not a substitute for the potential wildlife knowledge gained by having a biologist conduct a field survey of the project area. Federal status and plant data are provided as a courtesy to users. The review is also not intended to replace consultation required under the federal Endangered Species Act (ESA), including impact analyses for federal resources from the U.S. Fish and Wildlife Service (USFWS) using their [Information for Planning and Consultation tool](#).
- This report contains information on wildlife species protected under the ESA and the [Wildlife Conservation Act \(WCA\)](#), [Species of Greatest Conservation Need \(SGCN\)](#), and Species of Economic and Recreational Importance (SERI). Species listed under the ESA are protected from take at the federal level and under the WCA are protected from take at the state level. SGCN are identified in the [State Wildlife Action Plan \(SWAP\) for New Mexico](#); all of these species are considered to be of conservation concern but not all of them are protected from take at the state or federal level. The harvest of all SERI is regulated at the state level. The Department has no authority to designate critical habitat for species listed under the WCA; only the USFWS can designate critical habitat for species listed under the ESA.
- The New Mexico Environmental Review Tool (ERT) utilizes species observation locations and species habitat suitability models, both of which are subject to ongoing change and refinement. Inclusion or omission of a species within a report cannot guarantee species presence or absence within your project area. To determine occurrence of any species listed in this report, or other wildlife that may be present within your project area, onsite surveys conducted by a qualified biologist during appropriate, species-specific survey timelines may be necessary.
- The Department encourages use of the ERT to modify proposed projects for avoidance, minimization, or mitigation of wildlife impacts. However, the ERT is not intended to be used in a repeatedly iterative fashion to adjust project attributes until a previously determined recommendation is generated. The ERT serves to assess impacts once project details are developed. The [New Mexico Crucial Habitat Assessment Tool](#), the data layers from which are included in the ERT, is the appropriate system for advising early-stage project planning and design to avoid areas of anticipated wildlife concerns and associated regulatory requirements.

Jones Coal Min Fire Mitigation



NHNM, USGS, USFS, US Census Bureau, NMDGF
San Juan County, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS
Esri, NASA, NGA, USGS, FEMA

Special Status Animal Species Potentially within 2000 Meters of Project Area

Common Name	Scientific Name	USFWS (ESA)	NMDGF (WCA)	NMDGF SGCN/SERI	USFS	USFS SCC	BLM
Boreal Chorus Frog	Pseudacris maculata			SGCN			
Northern Leopard Frog	Lithobates pipiens			SGCN	Sensitive Species	USFS R3 SCC	BLM SENSITIVE
Eared Grebe	Podiceps nigricollis			SGCN			
Clark's Grebe	Aechmophorus clarkii			SGCN			
American Bittern	Botaurus lentiginosus			SGCN			BLM WATCH
Bald Eagle	Haliaeetus leucocephalus		T	SGCN	Sensitive Species		BLM SENSITIVE
Peregrine Falcon	Falco peregrinus		T	SGCN			BLM WATCH
Western Burrowing Owl	Athene cunicularia hypugaea			SGCN	Sensitive Species	USFS R3 SCC	BLM SENSITIVE
Common Nighthawk	Chordeiles minor			SGCN			
Williamson's Sapsucker	Sphyrapicus thyroideus			SGCN			
Olive-Sided Flycatcher	Contopus cooperi			SGCN			
Bank Swallow	Riparia riparia			SGCN			
Pinyon Jay	Gymnorhinus cyanocephalus			SGCN		USFS R3 SCC	BLM SENSITIVE
Clark's Nutcracker	Nucifraga columbiana			SGCN			
Juniper Titmouse	Baeolophus ridgwayi			SGCN		USFS R3 SCC	BLM WATCH
Pygmy Nuthatch	Sitta pygmaea			SGCN			
Western Bluebird	Sialia mexicana			SGCN			
Mountain Bluebird	Sialia currucoides			SGCN			
Bendire's Thrasher	Toxostoma bendirei			SGCN		USFS R3 SCC	BLM SENSITIVE
Loggerhead Shrike	Lanius ludovicianus			SGCN		USFS R3 SCC	BLM WATCH
Gray Vireo	Vireo vicinior		T	SGCN	Sensitive Species	USFS R3 SCC	BLM WATCH
Virginia's Warbler	Leiothlypis virginiae			SGCN			BLM SENSITIVE
Black-Throated Gray Warbler	Setophaga nigrescens			SGCN			BLM WATCH

Special Status Animal Species Potentially within 2000 Meters of Project Area

Common Name	Scientific Name	USFWS (ESA)	NMDGF (WCA)	NMDGF SGCN/SERI	USFS	USFS SCC	BLM
Grace's Warbler	Setophaga graciae			SGCN		USFS R3 SCC	BLM WATCH
Vesper Sparrow	Poocetes gramineus			SGCN			
Cassin's Finch	Haemorhous cassinii			SGCN			BLM WATCH
Evening Grosbeak	Coccothraustes vespertinus			SGCN			
Roundtail Chub	Gila robusta		E	SGCN	Sensitive Species	USFS R3 SCC	BLM SENSITIVE
Spotted Bat	Euderma maculatum		T	SGCN	Sensitive Species	USFS R3 SCC	BLM SENSITIVE
Pale Townsend's Big-Eared Bat	Corynorhinus townsendii pallescens			SGCN	Sensitive Species	USFS R3 SCC	BLM SENSITIVE
Gunnison's Prairie Dog	Cynomys gunnisoni			SGCN	Sensitive Species		BLM SENSITIVE
Elk	Cervus canadensis			SGCN			
Mule Deer	Odocoileus hemionus			SGCN			
Pronghorn	Antilocapra americana			SGCN			
California Kingsnake	Lampropeltis californiae			SGCN			

Common Name hyperlink takes you to species account in [bison-m.org](https://www.bison-m.org/); Scientific Name hyperlink takes you to information in [NatureServe Explorer](#); ESA = Endangered Species Act, C = Candidate, LE = Listed Endangered, LT = Listed Threatened, XN = Non-essential Experimental Population, for other ESA codes see this [website](#); WCA = Wildlife Conservation Act, E = Endangered, T = Threatened; SERI = Species of Economic and Recreational Importance; SGCN = Species of Greatest Conservation Need; USFS = U.S. Forest Service, Sensitive Species = A species likely to occur on USFS lands that is of concern for a potential reduction in population viability; SCC = Species of Conservation Concern; BLM = Bureau of Land Management, BLM SENSITIVE = A species that occurs on BLM lands and whose viability is at risk, BLM WATCH = Species that may be added to the sensitive species list in future pending new information regarding species status.

Special Status Plant Species Potentially within 2000 Meters of Project Area

Common Name	Scientific Name	USFWS (ESA)	NMAC	NMRPCS	USFS	USFS SCC	BLM
Clover's cactus	Sclerocactus cloverae		E	SS			BLM SENSITIVE

NMAC = New Mexico Administrative Code, E = Endangered; NMRPCS = [New Mexico Rare Plant Conservation Strategy](#), SS = NM Rare Plant Conservation Strategy Species; USFS = U.S. Forest Service, Sensitive Species = A species likely to occur on USFS lands that is of concern for a potential reduction in population viability; SCC = Species of Conservation Concern; BLM = Bureau of Land Management, BLM SENSITIVE = A species that occurs on BLM lands and whose viability is at risk, BLM WATCH = Species that may be added to the sensitive species list in future pending

new information regarding species status.

Project Recommendations

This report includes a preliminary species list that may be used during early stages of project or conservation planning. Even if this report indicates that your proposed project location would require a custom review from a biologist, **no review will be returned** until additional project details are provided. **To obtain a project review**, please submit additional details regarding the **type** of project, project **objectives**, anticipated project **duration**, **timing** of project construction, the composition and dimensions/quantities of **materials** that will be utilized for project implementation, any **equipment** that will be used, anticipated **ground disturbance** that will occur, wildlife surveys or observations that have occurred on or near the project site, and **any other relevant details** regarding potential effects of project activities on wildlife or wildlife habitat. **Photographs** of the project site are especially useful.

Although this project report may include management recommendations based on the project location, additional conservation measures may be needed. The Department can not fully assess potential effects and associated management recommendations until a **project type and description** have been submitted and an appropriate **impact buffer** for that project type has been applied. Also, the species list within this report represents an estimation of special status species that could be present at the site of a small-scale project. Species lists for projects that occur across **broader geographic scales** (e.g., one or more counties, multiple habitat types) are more appropriately obtained from the **Department's Biota Information System of New Mexico (BISON-M) database**. Species lists generated by the ERT may contain modeled species distributions in order to predict species occurrences within areas that lack previous wildlife inventories or surveys. This list can be refined using occurrence-based information within BISON-M regarding wildlife-habitat relationships and biological needs for species that might be present within the project footprint.

Burrowing owl (*Athene cunicularia*) may occur within your project area. Burrowing owls are protected from take by the Migratory Bird Treaty Act and under New Mexico state statute. Before any ground disturbing activities occur, the Department recommends that a preliminary burrowing owl survey be conducted by a qualified biologist using the Department's [Burrowing Owl Survey Protocol](#). Should burrowing owls be documented in the project area, please contact the Department or USFWS for further recommendations regarding relocation or avoidance of impacts.

Your project area intersects an Important Plant Area (IPA) that contains one or more species of plants listed as threatened or endangered by the New Mexico Energy, Minerals and Natural Resources Department (EMNRD) under New Mexico Statutes Annotated (NMSA) 75-6-1 or by the USFWS under the federal ESA. Although IPAs have no legal designation, they have been identified as areas that support either a high diversity of sensitive plant species or contain the last remaining locations of New Mexico's most endangered plants. The Department recommends that you consult with EMNRD's [Endangered Plant Program Coordinator](#) regarding any state-listed plants and the USFWS's [Information for Planning and Consultation \(IPAC\)](#) system for any federally-listed plants and reaching out to the appropriate federal species lead(s) with the [New Mexico Ecological Services Office of USFWS](#). The Department does not have any authority to designate or advise on state- or federally-listed plants.

Prairie dog colonies may occur within the vicinity of your project area. Both black-tailed prairie dogs (*Cynomys ludovicianus*) and Gunnison's prairie dogs (*Cynomys gunnisoni*) are designated as New Mexico SGCN, and their colonies provide important habitat for other grassland wildlife. Wherever possible, occupied prairie dog colonies should be left undisturbed, and all project activities should be directed off the colony. Any burrows that are located on the project site should be surveyed by a qualified biologist to determine whether burrows are active or inactive and whether burrowing owls may be utilizing the site. Colonies within the range of the black-tailed prairie dog can be surveyed by a qualified biologist diurnally, year-round using binoculars. Colonies within the range of the Gunnison's prairie dog can be surveyed by a qualified biologist diurnally, using binoculars during the warmer months from April through October and by searching for fairly fresh scat and lack of cobwebs or debris at the mouths of burrows during the cold months (November through March). If ground-disturbing activities cannot be relocated off the prairie dog colony, or if project activities involve control of prairie dogs, the Department recommends live-trapping and relocation of prairie dogs. The Department can provide recommendations regarding suitability of potential translocation areas and procedures.

The proposed project occurs within or near a riparian area. Because riparian areas are important wildlife habitats, the project footprint should avoid removing any riparian vegetation or creating ground disturbance either directly within or affecting the riparian area, unless the project is intended to restore riparian habitat through non-native plant removal and replanting with native species. If your project involves removal of non-native riparian trees or planting of native riparian vegetation, please refer to the Department's habitat handbook guideline for [Restoration and Management of Native and Non-native Trees in Southwestern Riparian Ecosystems](#). The [New Mexico Riparian Habitat Map \(NMRipMap\)](#) may also provide useful information on local riparian habitat composition and structure.

Disclaimers regarding recommendations:

- The Department provides technical guidance to support the persistence of all protected species of native fish and wildlife, including game and nongame wildlife species. Species listed within this report include those that have been documented to occur within the project area, and others that may not have been documented but are projected to occur within the project vicinity.
- Recommendations are provided by the Department under the authority of § 17-1-5.1 New Mexico Statutes Annotated 1978, to provide "communication and consultation with federal and other state agencies, local governments and communities, private organizations and affected interests responsible for habitat, wilderness, recreation, water quality and environmental protection to ensure comprehensive conservation services for hunters, anglers and nonconsumptive wildlife users".
- The Department has no authority for management of plants or Important Plant Areas. The [New Mexico Endangered Plant Program](#), under the Energy, Minerals, and Natural Resources Department's Forestry Division, identifies and develops conservation measures necessary to ensure the survival of plant species within New Mexico. Plant status information is provided within this report as a courtesy to users. Recommendations provided within the ERT may not be sufficient to preclude impacts to rare or sensitive plants, unless conservation measures are identified in coordination with the Endangered Plant Program.
- Additional coordination and/or consultation may also be necessary under the federal ESA or National Environmental Policy Act (NEPA). Further site-specific mitigation recommendations may be proposed during ESA consultation and/or NEPA analyses or through coordination with affected federal agencies.

2024 BLM NM Sensitive Species Update: amphibians, birds, clams, crustaceans, fish, insects, mammals, mollusks, and reptiles

Species	Common Name	Farmington	Taos	Rio Puerco	Socorro	Las Cruces	Roswell	Carlsbad	OK, TX or KS	Natureserve Global rank	NHNM State rank	FWS Status	NM Status	BLM Status
Amphibians														
<i>Anaxyrus (Bufo) microscaphus</i>	Southwestern (Arizona) toad	None	None	Potential	Verified	Verified	None	None	None	G3G4	S3	Under Review	SGCN	BLM Sensitive
<i>Lithobates (Rana) pipiens</i>	Northern leopard frog	Verified	Verified	Verified	Verified	None	None	None	TX & OK	G5	S3	None	SGCN	BLM Sensitive
Amphibians - Watch														
<i>Craugastor (Eleutherodactylus) augusti latrans</i>	Eastern barking frog	None	None	None	None	Verified	Verified	Verified	TX	G5T4	S2	None	SGCN	Watch
<i>Gastrophryne olivacea</i>	Western narrowmouth toad	None	Verified	None	None	Verified	None	Verified	All	G5	S1	None	Endangered SGCN	Watch
<i>Incilius (Bufo) alvarius</i>	Sonoran desert toad	None	None	None	None	Potential	None	None	None	G5	S2	None	Threatened SGCN	**Watch
<i>Lithobates (Rana) blairi</i>	Plains leopard frog	Verified	Verified	None	None	Verified	Verified	Verified	All	G5	S4	Former FWS Species of Concern	SGCN	Watch
Birds														
<i>Ammodramus savannarum ammolegus</i>	Arizona Grasshopper Sparrow	None	None	None	None	Verified	None	None	None	G5TU	S2B,S2N	None	Endangered SGCN	BLM Sensitive
<i>Anthus spragueii</i>	Sprague's Pipit	None	None	None	Potential	Verified	Verified	Verified	All	G3G4	S2N	None	SGCN	BLM Sensitive
<i>Antrostomus arizonae</i>	Mexican Whip-poor-will	Potential	Verified	Verified	Verified	Verified	Potential	Potential	West TX	G4G5	SNR	None	SGCN	BLM Sensitive
<i>Calcarius ornatus</i>	Chestnut-collared Longspur	Potential	Verified	None	Verified	Verified	Verified	Verified	TX	G5	S3N	None	SGCN	BLM Sensitive
<i>Centronyx bairdii</i>	Baird's Sparrow	None	None	None	None	Verified	None	None	TX	G4	S1N	None	Threatened SGCN	BLM Sensitive
<i>Charadrius montanus</i>	Mountain Plover	Verified	Verified	Verified	Verified	None	None	None	All	G3	S2B,S4N	None	SGCN	**BLM Sensitive
<i>Gymnorhinus cyanocephalus</i>	Pinyon Jay	Verified	Verified	Verified	Verified	Verified	Verified	Potential	OK	G3	S2S3	Under Review	SGCN	BLM Sensitive
<i>Lanius ludovicianus</i>	Loggerhead Shrike	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G4	S3	None	SGCN	**BLM Sensitive
<i>Leiothlypis virginiae</i>	Virginia's Warbler	Verified	Verified	Verified	Verified	Verified	Verified	Verified	None	G5	S3B,S4M	None	SGCN	BLM Sensitive
<i>Peucaea botterii</i>	Botteri's Sparrow	None	None	None	None	Verified	None	None	TX	G4	S1B,S1N	None	SGCN	BLM Sensitive
<i>Rhynchophanes mccownii</i>	Thick-billed Longspur	None	Potential	None	Potential	Verified	Verified	Verified	All	G4	S3N	None	SGCN	BLM Sensitive
<i>Spizella atrogularis evura</i>	Black-chinned Sparrow	None	None	Verified	Verified	Verified	Verified	Verified	west TX	G5	S3B,S3N	None	SGCN	**BLM Sensitive
<i>Toxostoma bendirei</i>	Bendire's Thrasher	Verified	Potential	Verified	Verified	Verified	Potential	None	None	G4	S3B,S3N	None	SGCN	BLM Sensitive
Birds - Watch														
<i>Aquila chrysaetos</i>	Golden Eagle	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G4	SB3, S4N	None	None	Watch
<i>Aphelocoma woodhouseii</i>	Woodhouse's Scrub-Jay	Verified	Verified	Verified	Verified	Verified	Verified	Verified	Western edge of all	G5	S3	None	None	Watch
<i>Athene cunicularia hypugaea</i>	Western Burrowing Owl	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G4T4	S3	None	SGCN	Watch
<i>Baeolophus ridgwayi</i>	Juniper Titmouse	Verified	Verified	Verified	Verified	Verified	Potential	Potential	Western edge of OK	G5	S4B	None	SGCN	Watch
<i>Botaurus lentiginosus</i>	American Bittern	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G4	S2	None	SGCN	Watch
<i>Buteogallus anthracinus</i>	Common Black-Hawk	Potential	Potential	Verified	Verified	Verified	Verified	Verified	None	G4G5	S2B,S3N	None	Threatened SGCN	Watch
<i>Calamospiza melanocorys</i>	lark bunting	Verified	Verified	Potential	Verified	Verified	Verified	Verified	TX & OK	G5	S3B, S5N	None	None	**Watch
<i>Callipepla squamata</i>	Scaled Quail	Verified	Verified	Verified	Verified	Verified	Verified	Verified	West TX, OK, & KS	G5	S3	None	None	Watch
<i>Carpodacus cassinii</i>	Cassin's Finch	Verified	Verified	Verified	Verified	Verified	Verified	Verified	West TX	G5	S3B,S5N	None	SGCN	Watch
<i>Camptostoma imberbe</i>	Northern Beardless-Tyrannulet	None	None	None	None	Verified	None	None	Southern tip of TX	G5	S1B,S1N	None	Endangered SGCN	Watch
<i>Columbina passerina</i>	Common Ground Dove	None	None	None	Potential	Verified	Potential	Verified	TX	G5	S1B,S1N	None	Endangered SGCN	Watch
<i>Falco peregrinus</i>	Peregrine Falcon	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G4	S2B, S3N	Delisted 1999	Threatened SGCN	Watch
<i>Meleagris gallopavo mexicana</i>	Gould's Wild Turkey	None	None	None	None	Verified	None	None	None	G5T3	S2B S2N	None	SGCN	Watch
<i>Melanerpes lewis</i>	Lewis's Woodpecker	Verified	Verified	Verified	Verified	Verified	Verified	Verified	None	G4	S3B,S3N	None	SGCN	Watch
<i>Micrathene whitneyi</i>	Elf Owl	None	None	Verified	Verified	Verified	None	None	TX	G5	S3B,S3N	None	SGCN	Watch
<i>Numenius americanus</i>	Long- billed Curlew	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G4	S3B, S4M	None	SGCN	Watch
<i>Oreoscoptes montanus</i>	Sage Thrasher	Verified	Verified	Verified	Verified	Verified	Verified	Verified	Western edge of all	G4	S3B,S4N	None	None	Watch
<i>Passerina ciris</i>	Painted Bunting	None	None	None	None	Verified	Potential	Verified	TX	G5	S4B,S4N	None	None	Watch
<i>Psiloscoops flammeolus</i>	Flammulated Owl	Verified	Verified	Verified	Verified	Verified	Verified	Verified	TX	G4	S3B, S3N	None	SGCN	Watch
<i>Setophaga graciae</i>	Grace's Warbler	Verified	Verified	Verified	Verified	Verified	Verified	None	TX	G5	S3B, S4N	None	SGCN	Watch
<i>Setophaga nigrescens</i>	Black-throated Gray Warbler	Verified	Verified	Verified	Verified	Verified	Verified	None	TX	G5	S3B,S4N	None	SGCN	Watch
<i>Spizella breweri</i>	Brewer's sparrow	Verified	Verified	Verified	Verified	Verified	Verified	Verified	west TX	G5	S3B	None	None	**Watch
<i>Sternula antillarum athalassos</i>	Least Tern	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G4T3Q	S1	Delisted 2021	SGCN	**Watch
<i>Sturnella lilianae</i>	Chihuahuan meadowlark	Potential	Verified	Verified	Verified	Verified	Verified	Verified	TX & OK	GNR	S4	None	None	**Watch
<i>Tyrannus crassirostris</i>	Thick-billed Kingbird	None	None	None	Verified	Verified	None	Verified	None	G5	S1	None	Endangered SGCN	**Watch
<i>Vermivora luciae</i>	Lucy's Warbler	None	None	None	Verified	Verified	None	None	west TX	G5	S3B,S4N	None	SGCN	Watch
<i>Vireo bellii arizonae</i>	Bell's Vireo	None	Verified	None	Verified	Verified	Verified	Verified	All	G5	S2B,S3N	None	Threatened SGCN	Watch
<i>Vireo vicinior</i>	Gray Vireo	Verified	Verified	Verified	Verified	Verified	Verified	Verified	west TX	G5	S4B S3N	None	Threatened SGCN	Watch

2024 BLM NM Sensitive Species Update: amphibians, birds, clams, crustaceans, fish, insects, mammals, mollusks, and reptiles

Crustaceans														
<i>Eulimnadia follisimilis</i>	Clam Shrimp	None	None	None	Verified	None	Verified	None	None	G3G4	SNR	None	SGCN	BLM Sensitive
<i>Phallocryptus sublettei</i>	Salt Playa (Sublette's) Fairy Shrimp	None	None	None	None	Verified	None	None	None	G2	SNR	None	SGCN	BLM Sensitive
<i>Streptocephalus moorei</i>	Moore's Fairy Shrimp	None	None	None	None	Verified	None	None	None	G1	SNR	None	SGCN	BLM Sensitive
<i>Streptocephalus thomasbowmani</i>	Bowman's Fairy Shrimp	None	None	None	None	Verified	None	None	None	G1	SNR	None	SGCN	BLM Sensitive
Crustaceans - Watch														
<i>Eocycticus concavus</i>	Sway-backed Clam Shrimp	None	None	None	None	None	Potential	None	TX	G1G3Q	SNR	None	SGCN	Watch
<i>Lepidurus lemmoni</i>	Lynch's Tadpole Shrimp	None	None	None	None	Verified	None	None		G4	SNR	None	SGCN	Watch
<i>Thamnocephalus mexicanus</i>	Mexican Beavertail Fairy Shrimp	None	None	None	None	Potential	None	None	TX	G3	SNR	None	SGCN	Watch
Fish														
<i>Astyanax mexicanus</i>	Mexican Tetra	None	None	None	None	None	Verified	Verified	OK & TX	G5	S2	None	SGCN	BLM Sensitive
<i>Catostomus clarkii</i>	Desert Sucker	None	None	None	Potential	Verified	None	None	None	G3G4	S2	Former FWS Species of Concern	SGCN	BLM Sensitive
<i>Catostomus insignis</i>	Sonora Sucker	None	None	None	Potential	Verified	None	None	None	G3G4	S2	Former FWS Species of Concern	SGCN	BLM Sensitive
<i>Catostomus plebeius</i>	Rio Grande Sucker	None	Verified	Potential	Potential	Verified	Potential	Potential	None	G3G4	S2	None	SGCN	BLM Sensitive
<i>Cycleptus elongatus</i>	Blue Sucker	None	None	None	None	None	Potential	Verified	All	G3G4	S1	None	Endangered SGCN	BLM Sensitive
<i>Cyprinodon pecosensis</i>	Pecos Pupfish	None	None	None	None	None	Verified	Verified	TX	G2	S1	Former FWS Species of Concern	SGCN	BLM Sensitive
<i>Etheostoma lepidum</i>	Greenthroat Darter	None	None	None	None	None	Verified	Verified	TX	G3G4	S2	Former FWS Species of Concern	Threatened SGCN	BLM Sensitive
<i>Gila pandora</i>	Rio Grande Chub	None	Verified	Potential	Potential	Potential	Verified	Verified	TX	G3	S3	None	SGCN	BLM Sensitive
<i>Gila robusta</i>	Roundtail Chub	Potential	Potential	Potential	Potential	Verified	None	None	None	G3	S2	None	Endangered SGCN	BLM Sensitive
<i>Macrhybopsis aestivalis</i>	Speckled Chub	None	Potential	None	None	None	Verified	Verified	TX	G3G4	S2	None	None	**BLM Sensitive
<i>Moxostoma congestum</i>	Gray Redhorse	None	None	None	None	None	None	Verified	TX	G4	S1	Former FWS Species of Concern	Endangered SGCN	BLM Sensitive
<i>Percina macrolepida</i>	Bigscale Logperch	None	Introduced	None	None	None	Verified	Verified	OK & TX	G5	S2	None	Threatened SGCN	BLM Sensitive
<i>Phenacobius mirabilis</i>	Suckermouth Minnow	None	Verified	None	None	None	Verified	None	All	G5	S2	None	SGCN	BLM Sensitive
Fish - Watch														
<i>Agosia chrysogaster</i>	Longfin Dace	None	None	None	Potential	Verified	Verified	None	None	G4	S3S4	Former FWS Species of Concern	None	Watch
<i>Catostomus discobolus discobolus</i>	Bluehead Sucker	Verified	None	None	None	None	None	None	None	G4T4	S2	None	None	Watch
<i>Catostomus latipinnis</i>	Flannelmouth Sucker	Verified	Potential	None	None	Potential	None	None	None	G3G4	S1	Former Category 2 Candidate	None	Watch
<i>Ictalurus lupus</i>	Headwater Catfish	None	None	None	None	None	Verified	Verified	TX	G3	S1	Former FWS Species of Concern	Former SGCN	Watch
<i>Ictiobus bubalus</i>	Smallmouth Buffalo	None	None	None	Potential	Verified	Verified	Verified	All	G5	S3	None	None	Watch
<i>Notropis jemezanus</i>	Rio Grande Shiner	None	None	None	Potential	None	Verified	Verified	TX	G3	S2	Under Review	None	Watch
<i>Oncorhynchus clarkii virginalis</i>	Rio Grande Cutthroat Trout	None	Potential	Potential	Potential	Potential	Potential	None	None	G5T3	S2	Candidate	None	Watch
Insects														
<i>Bombus occidentalis</i>	Western Bumble Bee	Verified	Verified	Verified	Verified	Verified	Verified	Verified	None	G3	SNR	Under Review	None	**BLM Sensitive
<i>Bombus pensylvanicus</i>	American Bumble Bee	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G3G4	SNR	Under Review	None	**BLM Sensitive
<i>Danaus plexippus plexippus</i>	Monarch Butterfly	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G4T3	SNR	Candidate	None	BLM Sensitive
<i>Lytta mirifica</i>	Anthony Blister Beetle	None	None	None	None	Verified	None	None	None	G2	SH	Former Category 2 Candidate	Former (2006) SGCN	BLM Sensitive
<i>Ochlodes yuma anasazi</i>	Yuma Skipper	None	Verified	None	None	None	None	None	None	G4T2	SNR	None	None	BLM Sensitive
Insects - Watch														
<i>Agathymus neumoegei carlsbadensis</i>	Carlsbad Agave Borer	None	None	None	None	Potential	Potential	Verified	Potential	T2	SNR	None	None	**Watch
<i>Anthophora chihuahua</i>	a digger bee	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	G2	SNR	None	None	**Watch
<i>Anthophora vallorum</i>	a digger bee	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	G2	SNR	None	None	**Watch
<i>Bombus fraternus</i>	Southern Plains Bumble Bee	Potential	Verified	Potential	Potential	Potential	Verified	Potential	All	G3	SNR	None	None	**Watch
<i>Bombus morrisoni</i>	Morrison's Bumble Bee	Verified	Verified	Verified	Verified	Verified	Potential	Potential	Potential	G3	SNR	Petitioned	None	**Watch
<i>Callophrys henrici solatus</i>	Trans-Pecos Henry's Elfin	None	None	None	Potential	Verified	Potential	Verified	None	T2	SNR	None	None	**Watch
<i>Chrysina woodii</i>	Wood's Jewel Beetle	None	None	None	None	None	Verified	Verified	None	GNR	SNR	None	None	**Watch
<i>Euhyparpax rosea</i>	a notodontid moth	None	None	None	None	Potential	None	None	None	G2	SNR	None	None	**Watch
<i>Megachile fortis</i>	Robust Sunflower Leafcutter Bee	Potential	Potential	Verified	Potential	Potential	Potential	Potential	Potential	G2	SNR	None	None	**Watch
<i>Megachile melanderi</i>	a leafcutter bee	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	G2	SH	None	None	**Watch
<i>Mystonectes (Deronectes) neomexicanus</i>	Bonita Diving Beetle	None	None	None	None	None	Potential	None	TX	G2	SNR	Former Category 2 Candidate	Former (2006) SGCN	Watch
<i>Osmia watsoni</i>	a mason bee	Potential	Potential	Potential	Potential	Potential	Potential	Potential	Potential	G2	SNR	None	None	**Watch
<i>Papilio indra minori</i>	Minor's Swallowtail	Verified	Verified	Potential	None	None	None	None	None	T1	None	None	None	**Watch
<i>Pygarcia lorula</i>	Spiny Sandbur	None	None	None	None	None	Potential	Potential	Potential	G2G3	SNR	None	None	Watch
Mammals														
<i>Choeronycteris mexicana</i>	Mexican long-tongued bat	None	None	None	None	Verified	None	Potential	south TX	G3G4	S2S3	None	SGCN	BLM Sensitive

2024 BLM NM Sensitive Species Update: amphibians, birds, clams, crustaceans, fish, insects, mammals, mollusks, and reptiles

<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	Verified	Verified	Verified	Verified	Verified	Verified	Verified	western OK, TX & KS	G4	S3	None	SGCN	BLM Sensitive
<i>Cynomys gunnisoni</i>	Gunnison's prairie dog	Verified	Verified	Verified	Verified	None	None	None	None	G3	S2	None	SGCN	BLM Sensitive
<i>Cynomys ludovicianus</i>	Black-tailed prairie dog	None	Verified	Potential	Potential	Verified	Verified	Verified	All	G4	S2	None	SGCN	BLM Sensitive
<i>Euderma maculatum</i>	Spotted bat	Verified	Verified	Verified	Verified	Verified	Verified	Potential	west TX	G4	S3	None	Threatened SGCN	BLM Sensitive
<i>Lasiurus cinereus</i>	Hoary bat	Verified	Verified	Verified	Verified	Verified	Verified	Verified	All	G3G4	S4	None	None	**BLM Sensitive
<i>Lasiurus xanthinus</i>	Western yellow bat	None	None	None	None	Verified	None	None	TX	G4G5	S1S2	None	Threatened SGCN	BLM Sensitive
<i>Leptonycteris yerbabuenae</i>	Lesser long-nosed bat	None	None	None	None	Verified	None	None	TX	G3	S3	Delisted 2018	Threatened SGCN	BLM Sensitive
<i>Lepus callotis</i>	White-sided jack rabbit	None	None	None	None	Verified	None	None	None	G4	S1	None	Threatened SGCN	BLM Sensitive
<i>Neotamias quadrivittatus australis</i>	Organ Mountains Colorado chipmunk	None	None	None	None	Verified	None	None	None	G5T1	S1	None	Threatened SGCN	**BLM Sensitive
<i>Ovis canadensis mexicana (excluding hunted population in Peloncillos)</i>	Desert bighorn sheep	None	None	None	Verified	Verified	None	None	TX	T3	S3	None	Former SGCN	**BLM Sensitive
<i>Perimyotis subflavus</i>	Tri-colored bat	None	Potential	None	None	None	Verified	Verified	All	G3G4	S3	Proposed Endangered 2022	None	**BLM Sensitive
<i>Sorex arizonae</i>	Arizona shrew	None	None	None	None	Verified	None	None	None	G3	S1	None	Endangered SGCN	BLM Sensitive
Mammals - Watch														
<i>Cratogeomys castanops</i>	Yellow-faced pocket gopher	None	Verified	Verified	Verified	Verified	Verified	Verified	All	G5	S3	None	None	Watch
<i>Cryptotis parva</i>	Least shrew	None	Potential	None	None	None	Verified	Verified	All	G5	S2	None	Threatened SGCN	Watch
<i>Dipodomys spectabilis</i>	banner-tailed kangaroo rat	Verified	None	Verified	Verified	Verified	Verified	Verified	Potential TX	G5	S4	None	None	**Watch
<i>Geomys arenarius</i>	desert pocket gopher	None	None	Potential	Verified	Verified	Verified	Potential	west TX	G3G4	S3	None	None	**Watch
<i>Idionycteris phyllotis</i>	Allen's lappet-browed bat	None	None	Potential	Verified	Verified	None	None	west TX?	G4	S3	None	None	Watch
<i>Lasionycteris noctivagans</i>	silver-haired bat	Verified	Verified	Verified	Verified	Verified	Verified	Verified	west TX	G3G4	S4	None	None	**Watch
<i>Lasiurus borealis</i>	eastern red bat	None	None	None	None	None	Potential	Verified	Potential	G3	S3N	None	None	**Watch
<i>Lasiurus blossevillii</i>	Western red bat	None	None	None	Verified	Verified	Potential	None	west TX	G4	S3	None	None	Watch
<i>Lepus townsendii campanius</i>	White-tailed jack rabbit	Potential	Verified	None	None	None	None	None	northwest KS	G5	S2	None	None	Watch
<i>Nasua narica</i>	White-nosed coati	None	None	Potential	Verified	Verified	None	Potential	None	G5	S2	None	None	Watch
<i>Neogale frenata</i>	long-tailed weasel	Verified	Verified	Verified	Verified	Verified	Verified	Verified	Verified	G5	S4	None	None	**Watch
<i>Neotamias minimus atristriatus</i>	Peñasco least chipmunk	None	None	None	None	Potential	Potential	None	None	G5T1	S1	Proposed Endangered 2021	Endangered SGCN	**Watch
<i>Nyctinomops femorosaccus</i>	Pocketed free-tailed bat	None	None	None	None	Verified	None	Verified	south TX	G5	S1S2	None	None	Watch
<i>Thomomys umbrinus</i>	Southern pocket gopher	None	None	None	Potential	Verified	None	None	None	G5	S1	None	Threatened SGCN	Watch
<i>Reithrodontomys fulvescens canus</i>	Fulvous harvest mouse	None	None	None	None	Verified	None	None	All	G5	S1	None	None	Watch
<i>Sigmodon ochrognathus</i>	Yellow-nosed cotton rat	None	None	None	None	Verified	None	None	Southwest TX	G4G5	S2	None	None	Watch
Mollusks														
<i>Ashmunella hebardii</i>	Hacheta Grande Woodlandsnail	None	None	None	None	Verified	None	None	None	G1	S1	None	Threatened SGCN	BLM Sensitive
<i>Ashmunella macromphala</i>	Cooke's Peak Woodlandsnail	None	None	None	None	Verified	None	None	None	G1	S1	None	Threatened SGCN	BLM Sensitive
<i>Gastrocopta dalliana dalliana</i>	Shortneck Snaggletooth Snail	None	None	None	None	Potential	None	None	None	T2	S1	None	Threatened SGCN	BLM Sensitive
<i>Holospira crossei</i>	Cross Holospira Snail	None	None	None	None	Verified	None	None	None	G2	S1	None	SGCN	BLM Sensitive
<i>Holospira metcalfi</i>	Metcalf Holospira Snail	None	None	None	None	Verified	None	None	None	G1	S1	None	SGCN	BLM Sensitive
<i>Pyrgulopsis pecosensis</i>	Pecos Springsnail	None	None	None	None	None	None	Potential	None	G1	S1	None	Threatened SGCN	BLM Sensitive
<i>Radiocentrum ferrissi</i>	Fringed Mountainsnail	None	None	None	None	Potential	None	None	None	G1	S1	None	SGCN	BLM Sensitive
<i>Sonorella hachitana</i>	New Mexico Talussnail	None	None	None	None	Verified	None	None	None	G2	S2	None	SGCN	BLM Sensitive
<i>Sonorella hachitana flora</i>	New Mexico Talussnail (Florida Mountains)	None	None	None	None	Verified	None	None	None	G2T1	S1	None	SGCN	BLM Sensitive
<i>Sonorella todseni</i>	Doña Ana Talussnail	None	None	None	None	Verified	None	None	None	G1	S1	Former Category 2 Candidate	Threatened SGCN	BLM Sensitive
Mollusks - Watch														
<i>Ashmunella amblya cornudasensis</i>	Woodlandsnail	None	None	None	None	Potential	None	None	None	G3T3	S3	None	SGCN	Watch
<i>Holospira animasensis</i>	Animas Mountains Holospira Snail	None	None	None	None	Potential	None	None	None	G1G2	S1	None	SGCN	Watch
Reptiles														
<i>Aspidoscelis (dixonii) tessellatus</i>	Gray-checkeder Whiptail	None	None	None	None	Verified	None	None	TX	G5	S1	None	Endangered SGCN	BLM Sensitive
<i>Heloderma suspectum</i>	Gila Monster	None	None	None	None	Verified	None	None	None	G4	S2	None	Endangered SGCN	BLM Sensitive
<i>Pseudemys gorzugi</i>	Western River (Rio Grande) Cooter	None	None	None	None	None	Verified	Verified	TX	G3G4	S2	Not Listed 2022	Threatened SGCN	BLM Sensitive
<i>Sceloporus arenicolus</i>	Dunes Sagebrush Lizard	None	None	None	None	None	Verified	Verified	TX	G1	S2	Proposed Endangered 2023	Endangered SGCN	BLM Sensitive
<i>Trachemys gaigeae</i>	Big Bend Slider	None	None	None	Verified	Verified	None	None	TX	G3	S2	None	SGCN	BLM Sensitive
Reptiles- Watch														
<i>Aspidoscelis stictogrammus</i>	Giant Spotted Whiptail	None	None	None	None	Verified	None	None	None	G4	S1	None	Threatened SGCN	Watch
<i>Crotalus lepidus lepidus</i>	Mottled Rock Rattlesnake	None	None	None	None	Verified	Potential	Verified	TX	G5T4T5	S2	None	Threatened SGCN	Watch
<i>Lampropeltis alterna</i>	Gray-banded Kingsnake	None	None	None	None	None	None	Verified	TX	G5	S1	None	Endangered SGCN	Watch

2024 BLM NM Sensitive Species Update: amphibians, birds, clams, crustaceans, fish, insects, mammals, mollusks, and reptiles

<i>Sceloporus sleeveini</i>	Slevin's Bunchgrass Lizard	None	None	None	None	Verified	None	None	None	G4	S1	None	Threatened SGCN	Watch
<i>Sistrurus tergeminus (catenatus) edwardsii</i>	Western massasauga	None	None	Verified	Verified	Verified	Verified	Verified	All	T3	S3	None	SGCN	**Watch

(** denote status change since 2019 revision)

2024 BLM NM - Other Special Status Species: all amphibians, birds, crustaceans, fish, insects, mammals, mollusks, and reptiles listed by the Endangered Species Act

Species	Common Name	FWS Status
Amphibians		
<i>Lithobates (Rana) chiricahuensis</i>	Chiricahua leopard frog	Federally Listed-Threatened
<i>Plethodon neomexicanus</i>	Jemez Mountains Salamander	Federally Listed-Endangered
Birds		
<i>Charadrius melodus</i>	Piping Plover (Atlantic Coast & Northern Great	Federally Listed-Threatened
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo, Western U.S. DPS	Federally Listed-Threatened
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	Federally Listed-Endangered
<i>Falco femoralis septentrionalis</i>	Northern Aplomado Falcon	Federally Listed-Experimental Nonessential
<i>Strix occidentalis lucida</i>	Mexican Spotted Owl	Federally Listed-Threatened
<i>Tympanuchus pallidicinctus</i>	Lesser Prairie-chicken	Federally Listed-Endangered (southern DPS)
Clams		
<i>Popenaias popeii</i>	Texas Hornshell	Federally Listed-Endangered
Crustacean		
<i>Gammarus desperatus</i>	Noel's Amphipod	Federally Listed-Endangered
<i>Gammarus hyalleloides</i>	Diminutive Amphipod	Federally Listed-Endangered
<i>Thermosphaeroma thermophilus</i>	Socorro Isopod	Federally Listed-Endangered
Fish		
<i>Catostomus discobolus yarrowi</i>	Zuni Bluehead Sucker	Federally Listed-Endangered
<i>Cyprinella formosa</i>	Beautiful Shiner	Federally Listed-Threatened
<i>Gambusia nobilis</i>	Pecos Gambusia	Federally Listed-Endangered
<i>Gila intermedia</i>	Gila Chub	Federally Listed-Endangered
<i>Gila nigrescens</i>	Chihuahua Chub	Federally Listed-Threatened
<i>Hybognathus amarus</i>	Rio Grande Silvery Minnow	Federally Listed-Endangered
<i>Macrhybopsis tetranema</i>	Peppered Chub	Federally Listed-Endangered
<i>Meda fulgida</i>	Spikedace	Federally Listed-Endangered
<i>Notropis girardi</i>	Arkansas River Shiner (AR River Basin)	Federally Listed-Threatened
<i>Notropis simus pecosensis</i>	Pecos bluntnose Shiner	Federally Listed-Threatened
<i>Oncorhynchus gilae</i>	Gila Trout	Federally Listed-Threatened
<i>Poeciliopsis occidentalis</i>	Gila Topminnow (incl. Yaqui)	Federally Listed-Endangered
<i>Ptychocheilus lucius</i>	Colorado Pikeminnow (=squawfish)	Federally Listed-Endangered
<i>Tiaroga cobitis</i>	Loach Minnow	Federally Listed-Endangered
<i>Xyrauchen texanus</i>	Razorback Sucker	Federally Listed-Endangered
Insects		
<i>Euphydryas anicia cloudcrofti</i>	Sacramento Mountain Butterfly	Federally Listed-Endangered
<i>Speyeria nokomis nokomis</i>	Silverspot Butterfly	Federally Listed-Threatened
Mammals		
<i>Canis lupus baileyi</i>	Mexican Wolf	Federally Listed-Experimental Nonessential
<i>Leptonycteris nivalis</i>	Mexican long-nosed bat	Federally Listed-Endangered
<i>Lynx canadensis</i>	Canada lynx	Federally Listed-Threatened
<i>Mustela nigripes</i>	Black-footed ferret	Federally Listed-Endangered
<i>Panthera onca</i>	Jaguar	Federally Listed-Endangered
<i>Zapus hudsonius luteus</i>	New Mexico Meadow Jumping Mouse	Federally Listed-Endangered
Mollusks		
<i>Assiminea pecos</i>	Pecos Assiminea Snail	Federally Listed-Endangered
<i>Juturnia kosteri</i>	Koster's Springsnail	Federally Listed-Endangered
<i>Pyrgulopsis chupaderae</i>	Chupadera Springsnail	Federally Listed-Endangered
<i>Pyrgulopsis neomexicana</i>	Socorro Springsnail	Federally Listed-Endangered
<i>Pyrgulopsis roswellensis</i>	Roswell Springsnail	Federally Listed-Endangered
<i>Tryonia alamosae</i>	Alamosa Springsnail	Federally Listed-Endangered
Reptiles		
<i>Crotalus willardi obscurus</i>	New Mexican ridge-nosed rattlesnake	Federally Listed-Threatened
<i>Thamnophis eques megalops</i>	Northern Mexican gartersnake	Federally Listed-Threatened
<i>Thamnophis rufipunctatus</i>	Narrow-headed gartersnake	Federally Listed-Threatened

2024 BLM NM Sensitive Species Update: plants

Species	Common Name	Farmington	Taos	Rio Puerco	Socorro	Las Cruces	Roswell	Carlsbad	Natureserve Global rank	NHNM State rank	FWS Status	NM Status	BLM Status
Plants													
<i>Abronia bigelovii</i>	Galisteo sand verbena	None	Potential	Verified	None	None	None	None	G2	S3	None	Strategy species	BLM Sensitive
<i>Acarospora clauzadeana</i>	small teasel lichen	None	None	None	None	None	Verified	Verified	G1G2	S1	Petitioned / negative 90 day finding	Strategy species	BLM Sensitive
<i>Agastache pringlei</i> var. <i>verticillata</i>	Organ Mountains giant hyssop	None	None	None	None	Verified	None	None	G3G4T2	S2	None	None	BLM Sensitive
<i>Aliciella formosa</i>	Aztec gilia	Verified	None	None	None	None	None	None	G2	S2	Petitioned / negative 90 day finding	Endangered	BLM Sensitive
<i>Amsonia fugatei</i>	Fugate's bluestar	None	None	None	Verified	None	None	None	G2	S1	None	None	BLM Sensitive
<i>Amsonia tharpii</i>	Tharp's bluestar	None	None	None	None	None	None	Verified	G1	S1	Petitioned - positive 90 day finding	Endangered	BLM Sensitive
<i>Anulocaulis leiosolenus</i> var. <i>howardii</i>	Howard's gyp ringstem	None	None	None	None	Verified	None	None	G4T1	S1	None	None	BLM Sensitive
<i>Aquilegia chrysantha</i> var. <i>chaplinei</i>	Chapline's columbine	None	None	None	None	Verified	None	Verified	G4T2	S2	None	None	BLM Sensitive
<i>Asclepias sanjuanensis</i>	San Juan milkweed	Verified	None	None	None	None	None	None	G2G3	S2	None	None	BLM Sensitive
<i>Astragalus gypsodes</i>	gypsum milkvetch	None	None	None	None	None	None	Verified	G3	S2	None	None	BLM Sensitive
<i>Astragalus knightii</i>	Knight's milkvetch	None	None	Verified	None	None	None	None	G2	S2	None	None	BLM Sensitive
<i>Astragalus nutriosensis</i>	Apache milkvetch	None	None	Potential	Verified	None	None	None	G2	S1	None	None	**BLM Sensitive
<i>Astragalus puniceus</i> var. <i>gertrudis</i>	Taos milkvetch	None	Verified	None	None	None	None	None	G4T3?Q	S2	None	None	**BLM Sensitive
<i>Astragalus ripleyi</i>	Ripley's milkvetch	None	Verified	Potential	None	None	None	None	G3	S3	None	None	BLM Sensitive
<i>Atriplex griffithsii</i>	Griffiths's saltbush	None	None	None	None	Verified	None	None	G2G3	S2	None	None	**BLM Sensitive
<i>Boechera zephyra</i>	Wind Mountain rockcress	None	None	None	None	Verified	None	Verified	G1	S1	None	None	BLM Sensitive
<i>Castilleja organorum</i>	Organ Mountains paintbrush	None	None	None	None	Verified	None	None	G1G2	S1	None	None	BLM Sensitive
<i>Coryphantha robustispina</i> subsp. <i>scheeri</i>	Scheer's beehive cactus	None	None	None	None	Verified	None	Verified	G4T3	S3	None	Endangered	BLM Sensitive
<i>Cylindropuntia viridiflora</i>	Santa Fe cholla	None	Verified	None	None	None	None	None	G1Q	S1	None	Endangered	BLM Sensitive
<i>Cymopterus spellenbergii</i>	Taos springparsley	None	Verified	None	None	None	None	None	G2	S2	None	Endangered	BLM Sensitive
<i>Dermatophyllum guadalupense</i>	Guadalupe mescalbean	None	None	None	None	Verified	None	Verified	G2	S1	Petitioned / negative 90 day finding	Species of Concern	BLM Sensitive
<i>Erigeron acomanus</i>	Acoma fleabane	Potential	None	Verified	None	None	None	None	G1G2	S1	None	Species of Concern	BLM Sensitive
<i>Eriogonum lachnogynum</i> var. <i>colobum</i>	clipped wild buckwheat	Potential	Verified	Potential	None	None	None	None	G4?T2	S2	None	Species of Concern	BLM Sensitive
<i>Escobaria duncanii</i>	Duncan's pincushion cactus	None	None	None	None	Verified	None	None	G3T2T3	S1	None	Endangered	BLM Sensitive
<i>Escobaria villardii</i>	Villard's pincushion cactus	None	None	None	None	Verified	None	None	G2Q	S2	None	Endangered	BLM Sensitive
<i>Hymenoxys ambigens</i> var. <i>neomexicana</i>	New Mexico bitterweed	None	None	None	None	Verified	None	None	G3?T2	S2	None	Species of Concern	BLM Sensitive
<i>Ipomopsis wrightii</i>	leafy skyrocket	None	None	None	None	Verified	None	None	G2G3	SNR	None	None	**BLM Sensitive
<i>Justicia wrightii</i>	Wright's water-willow	None	None	None	None	None	None	Verified	G2	S1	None	Species of Concern	BLM Sensitive
<i>Lepidospartum burgessii</i>	gypsum scalebroom	None	None	None	None	Verified	None	None	G2	S1	None	Endangered	BLM Sensitive
<i>Linum allredii</i>	Allred's flax	None	None	None	None	None	None	Verified	G1?	S1	None	Endangered	BLM Sensitive
<i>Mentzelia conspicua</i>	Rio Chama blazingstar	None	Verified	None	None	None	None	None	G2	S2	None	Species of Concern	BLM Sensitive
<i>Mentzelia filifolia</i>	threadleaf blazingstar	Potential	None	None	None	None	None	None	G3	S1?	None	Species of Concern	**BLM Sensitive
<i>Mentzelia humilus</i> var. <i>guadalupensis</i>	Guadalupe stickleaf	None	None	None	None	Verified	None	None	G4T1T2	S1S2	None	Species of Concern	BLM Sensitive
<i>Mentzelia sivinskii</i>	Sivinski's blazingstar	Verified	None	None	None	None	None	None	G3	S3	None	Species of Concern	BLM Sensitive
<i>Mentzelia todiltoensis</i>	Todilto stickleaf	None	Potential	Verified	Verified	None	None	None	G3	S3	None	Species of Concern	BLM Sensitive
<i>Muilla lordsburgana</i>	Lordsburg noino	None	None	None	None	Verified	None	None	GNR	SNR	None	None	**BLM Sensitive
<i>Neoparrya lithophila</i>	Bill's neoparrya	None	Verified	None	None	None	None	None	G3	S1	None	None	**BLM Sensitive
<i>Nerisyrenia hypercorax</i>	Crow Flats fan-mustard	None	None	None	None	Verified	None	None	G1G2	S1S2	None	Species of Concern	BLM Sensitive
<i>Oenothera organensis</i>	Organ Mountains evening primrose	None	None	None	None	Verified	None	None	G2	S2	None	Species of Concern	**BLM Sensitive
<i>Opuntia arenaria</i>	sandy prickly-pear	None	None	None	None	Verified	None	None	G2	S2	None	Endangered	BLM Sensitive
<i>Paronychia "leucocthonica"</i>	Taos nailwort	None	Verified	None	None	None	None	None	GNR	SNR	None	None	**BLM Sensitive
<i>Paronychia wilkinsonii</i>	Wilkinson's nailwort	None	None	None	None	Verified	None	None	G2G3	S1	None	Species of Concern	BLM Sensitive
<i>Pediomelum pentaphyllum</i>	Chihuahua scurfpea	None	None	None	None	Verified	None	None	G1G2	S1	Petitioned - positive 90 day finding	Endangered	BLM Sensitive
<i>Peniocereus greggii</i> var. <i>greggii</i>	night-blooming cereus	None	None	None	None	Verified	None	None	G3G4T3	S3	None	Endangered	BLM Sensitive
<i>Penstemon alamosensis</i>	Alamo beardtongue	None	None	None	None	Verified	None	None	G3	S3	None	Species of Concern	BLM Sensitive
<i>Perityle cernua</i>	Organ Mountain rockdaisy	None	None	None	None	Verified	None	None	G2G3	S2	None	Species of Concern	BLM Sensitive
<i>Phacelia serrata</i>	cinder scorpionweed	None	None	Verified	None	None	None	None	G3	S2	None	Species of Concern	**BLM Sensitive
<i>Physaria navajoensis</i>	Navajo bladderpod	Potential	None	None	None	None	None	None	G2	S1	Petitioned / positive 90 day finding	Species of Concern	**BLM Sensitive
<i>Physaria newberryi</i> var. <i>yesicola</i>	Yeso twinpod	None	None	Verified	Potential	None	None	None	G3G4T2	S1	None	Species of Concern	BLM Sensitive
<i>Proatriplex pleiantha</i>	Mancos saltbush	Verified	None	Verified	None	None	None	None	G3	S3	None	Species of Concern	BLM Sensitive
<i>Puccinellia parishii</i>	Parish's alkaligrass	Potential	None	Verified	Potential	Verified	None	None	G2G3	S1	None	Endangered	BLM Sensitive

2024 BLM NM Sensitive Species Update: plants

<i>Sclerocactus cloverae</i>	Clover's cactus	Verified	None	Potential	None	None	None	None	G3	S3	None	Endangered	BLM Sensitive
<i>Scrophularia laevis</i>	Organ Mountains figwort	None	None	None	None	Verified	None	None	G2	S2	None	Species of Concern	BLM Sensitive
<i>Scrophularia macrantha</i>	Mimbres figwort	None	None	None	None	Verified	None	None	G2	S2	None	Endangered	BLM Sensitive
<i>Spermolepis organensis</i>	Organ Mountains scaleseed	None	None	None	None	Verified	None	None	G1	S1	None	Species of Concern	BLM Sensitive
<i>Streptanthus sparsiflorus</i>	Guadalupe jewelflower	None	None	None	None	None	None	Verified	G2Q	S2	None	Species of Concern	BLM Sensitive
<i>Townsendia gypsophila</i>	gypsum Townsend's daisy	None	None	Verified	None	None	None	None	G2	S2	None	Endangered	BLM Sensitive
Plants - Watch													
<i>Abronia nealleyi</i>	Nealley's sand verbena	None	None	None	None	Verified	Potential	Verified	GNR	SNR	None	None	Watch
<i>Adenophyllum wrightii</i> var. <i>wrightii</i>	Wright's dogweed	None	None	None	Potential	Verified	None	None	G4T3	SNR	Petitioned / negative 90 day finding	None	Watch
<i>Agalinis calycina</i>	Leoncita false foxglove	None	None	None	None	None	Potential	Potential	G1	S1	Petitioned / negative 90 finding	Endangered	Watch
<i>Agastache cana</i>	grayish-white giant hyssop	None	None	None	None	Verified	None	None	G3	S3	None	None	Watch
<i>Anulocaulis leiosolenus</i> var. <i>gypsogenus</i>	Pecos gyp ringstem	None	None	None	None	None	Verified	Verified	G4T4	S4	None	None	Watch
<i>Arida blepharophylla</i>	gypsum hotspring aster	None	None	None	None	Potential	None	None	G1	SH	Petitioned / negative 90 day finding	None	Watch
<i>Astragalus accumbens</i>	Zuni milkvetch	None	None	Verified	Potential	None	None	None	G3	S3	None	None	Watch
<i>Astragalus castetteri</i>	Castetter's milkvetch	None	None	None	None	Verified	None	None	G3	S3	None	None	Watch
<i>Astragalus cliffordii</i>	Clifford's milkvetch	Potential	None	Verified	None	None	None	None	GNR	S1	None	None	Watch
<i>Astragalus cobrensis</i> var. <i>maguirei</i>	Maguire's milkvetch	None	None	None	None	Verified	None	None	G4T1	S1	None	None	**Watch
<i>Astragalus cottamii</i>	Cottam's milkvetch	Verified	None	None	None	None	None	None	G4T4	S3	None	None	Watch
<i>Astragalus cyaneus</i>	cyanic milkvetch	None	Verified	Potential	None	None	None	None	G4	S4	None	None	Watch
<i>Astragalus feensis</i>	Santa Fe milkvetch	None	None	Verified	None	Verified	None	None	G3	S3	None	None	Watch
<i>Astragalus heilii</i>	Heil's milkvetch	Potential	None	None	None	None	None	None	G1	S1	None	None	Watch
<i>Astragalus humistratus</i> var. <i>crispulus</i>	villous groundcover milkvetch	None	None	None	Potential	None	None	None	G4G5T3?	S2	None	None	Watch
<i>Astragalus kerrii</i>	Kerr's milkvetch	None	None	None	None	None	Potential	None	G2	S2	None	None	Watch
<i>Astragalus micromerius</i>	Chaco milkvetch	Potential	None	Potential	None	None	None	None	G3	S3	None	None	Watch
<i>Astragalus missouriensis</i> var. <i>humistratus</i>	Pagosa milkvetch	Potential	Potential	None	None	None	None	None	G5T2	S1	None	None	Watch
<i>Astragalus naturitensis</i>	Naturita milkvetch	Potential	None	None	None	None	None	None	G3	S1	None	None	Watch
<i>Astragalus neomexicanus</i>	New Mexico milkvetch	None	None	None	None	None	Potential	None	G3	S3	None	None	Watch
<i>Astragalus oocalycis</i>	Arboles milkvetch	Verified	None	None	None	None	None	None	G4	S3	None	None	Watch
<i>Astragalus siliceus</i>	Flint Mountains milkvetch	None	Verified	None	None	None	None	None	G3	S3	None	None	Watch
<i>Astragalus wittmannii</i>	one-flowered milkvetch	None	Potential	None	None	None	None	None	G2G3	S2S3	None	None	Watch
<i>Castilleja ornata</i>	swale paintbrush	None	None	None	None	Potential	None	None	G1	S1	None	Endangered	Watch
<i>Castilleja tomentosa</i>	tomentose paintbrush	None	None	None	None	Potential	None	None	G1Q	S1	None	Endangered	Watch
<i>Chaetopappa hersheyi</i>	Guadalupe least-daisy	None	None	None	None	None	None	Verified	G3	S2	None	None	Watch
<i>Cuscuta warneri</i>	Warner's dodder	None	None	None	None	Potential	Potential	None	G1	S1	None	Species of Concern	Watch
<i>Dalea scariosa</i>	Albuquerque prairie clover	None	None	Potential	Potential	None	None	None	G3	S3	None	Species of Concern	Watch
<i>Delphinium robustum</i>	robust larkspur	None	Potential	None	None	None	None	None	G2G3	S2	None	Species of Concern	Watch
<i>Draba smithii</i>	Smith's whitlowgrass	None	Potential	None	None	None	None	None	G3	S1	None	Species of Concern	Watch
<i>Ephedra coryi</i>	Cory's joint-fir	None	None	None	None	None	Verified	Verified	G3	SNR	None	None	Watch
<i>Ericameria nauseosa</i> var. <i>texensis</i>	Guadalupe rabbitbrush	None	None	None	None	Verified	None	Potential	G5T2T3	S2	None	Species of Concern	Watch
<i>Eriogonum aliquidantum</i>	Cimarron wild buckwheat	None	Potential	None	None	None	None	None	G3	S2	None	Species of Concern	Watch
<i>Eriogonum lachnogynum</i> var. <i>sarahiae</i>	Sarah's wild buckwheat	Potential	None	Potential	Potential	None	None	None	G4?T1	S1	None	Species of Concern	Watch
<i>Escobaria guadalupensis</i>	Guadalupe pincushion cactus	None	None	None	None	None	None	Verified	G1	S1	Petitioned / negative 90 day finding	Species of Concern	Watch
<i>Escobaria organensis</i>	Organ Mountains pincushion cactus	None	None	None	None	Verified	None	None	G2	S2	None	Endangered	Watch
<i>Euphorbia rayturneri</i>	Ray Turner's spurge	None	None	None	None	Potential	None	None	G1	S1	None	None	Watch
<i>Fissidens littlei</i>	Little's fissidens moss	None	None	None	None	Potential	None	None	G1?	S1	Petitioned / negative 90 day finding	None	Watch
<i>Grindelia arizonica</i> var. <i>neomexicana</i>	New Mexico gumweed	None	None	None	None	Potential	None	None	G4T3?	S3	None	Species of Concern	Watch
<i>Hedeoma apiculata</i>	McKittrick pennyroyal	None	None	None	None	None	None	Verified	G3	S3	None	Species of Concern	Watch
<i>Helianthus arizonensis</i>	Arizona sunflower	None	None	None	Potential	None	None	None	G2G4	S1	None	Species of Concern	Watch
<i>Helianthus neglectus</i>	neglected sunflower	None	None	None	None	None	None	Verified	G2Q	SNR	None	None	Watch
<i>Hexalectris arizonica</i>	Arizona coralroot	None	None	None	None	Potential	None	Potential	G5T3	S1	None	Endangered	Watch
<i>Hexalectris nitida</i>	shining coralroot	None	None	None	None	Potential	None	Potential	G3	S1	None	Endangered	Watch
<i>Hexalectris revoluta</i>	Chisos Mountains coralroot	None	None	None	None	Potential	None	Potential	G2	S1	Petitioned - positive 90 day finding	None	Watch
<i>Hymenoxys vaseyi</i>	Vasey's bitterweed	None	None	None	None	Verified	None	None	G2	S2	None	Species of Concern	Watch
<i>Ipomoea gilana</i>	Gila morning-glory	None	None	None	None	Potential	None	None	G1	S1	None	None	Watch

2024 BLM NM Sensitive Species Update: plants

<i>Limosella pubiflora</i>	Chiricahua mudwort	None	None	None	None	Potential	None	None	G1Q	S1	None	Species of Concern	Watch
<i>Mentzelia springeri</i>	Springer's blazingstar	None	Potential	Potential	None	None	None	None	G3	S3	None	Species of Concern	Watch
<i>Nama xylopodum</i>	cliff nama	None	None	None	None	Verified	None	Verified	G4?	S4	None	Species of Concern	Watch
<i>Packera spellenbergii</i>	Spellenberg's groundsel	None	Potential	None	None	None	None	None	G3	S2	None	Species of Concern	Watch
<i>Panicum mohavense</i>	Mojave panicgrass	None	None	None	Potential	Potential	None	None	G2	S1	Petitioned / negative 90 day finding	Species of Concern	Watch
<i>Penstemon cardinalis</i> subsp. <i>regalis</i>	Guadalupe penstemon	None	None	None	None	None	None	Verified	G3T2T3	S2	None	Species of Concern	**Watch
<i>Peritoma multicaulis</i>	slender spiderflower	None	Potential	None	None	Potential	None	None	G2G3	SH	None	Endangered	Watch
<i>Perityle quinqueflora</i>	five-flowered rockdaisy	None	None	None	None	Verified	None	Verified	G4	S3	None	Species of Concern	Watch
<i>Perityle staurophylla</i> var. <i>staurophylla</i>	New Mexico rockdaisy	None	None	None	None	Verified	None	None	G4T3T4	S3	None	Species of Concern	Watch
<i>Phacelia cloudcroftensis</i>	Cloudcroft scorpionweed	None	None	None	None	Potential	None	None	G1	S1	None	Species of Concern	Watch
<i>Phacelia sivinskii</i>	Sivinski's scorpionweed	None	None	Verified	Verified	Verified	None	None	G3	S3	None	Species of Concern	Watch
<i>Phemeranthus brachypodius</i>	Laguna fameflower	None	None	Potential	Potential	None	None	None	GNRQ	S1	None	Species of Concern	Watch
<i>Phemeranthus humilis</i>	Pinos Altos fameflower	None	None	None	None	Potential	None	None	G2	S2	None	Species of Concern	Watch
<i>Phlox caryophylla</i>	Pagosa phlox	Potential	Potential	None	None	None	None	None	G3	S2	None	Species of Concern	Watch
<i>Physaria pruinosa</i>	Pagosa Springs bladderpod	Potential	Potential	None	None	None	None	None	G2	S1	None	Species of Concern	Watch
<i>Polygala rimulicola</i> var. <i>rimulicola</i>	Guadalupe milkwort	None	None	None	None	None	None	Verified	G3T3	S2	None	Species of Concern	Watch
<i>Sclerocactus papyracanthus</i>	grama grass cactus	Potential	Verified	Verified	Verified	Verified	Potential	None	G4	S4	None	None	Watch
<i>Senecio cliffordii</i>	Clifford's groundsel	Potential	None	None	None	None	None	None	GNR	S2	None	Species of Concern	Watch
<i>Senecio warnockii</i>	Warnock's ragwort	None	None	None	None	Verified	None	Verified	G3Q	S2	Species of Concern	Species of Concern	Watch
<i>Sicyos glaber</i>	smooth bur cucumber	None	None	None	None	Verified	None	None	G3	S1S2	None	Species of Concern	Watch
<i>Silene plankii</i>	Plank's catchfly	None	None	None	Verified	Potential	None	None	G2	S2	None	Species of Concern	Watch
<i>Silene thurberi</i>	Thurber's campion	None	None	None	None	Potential	None	None	G4	S2	None	Species of Concern	Watch
<i>Silene wrightii</i>	Wright's catchfly	None	None	None	Potential	Verified	None	None	G2	S3	None	Species of Concern	Watch
<i>Stellaria porsildii</i>	Porsild's starwort	None	None	None	None	Potential	None	None	G1	S1	None	Species of Concern	Watch
<i>Valeriana texana</i>	Guadalupe valerian	None	None	None	None	None	None	Verified	G2	S2	None	Species of Concern	Watch
<i>Viola calcicola</i>	limestone violet	None	None	None	None	Potential	None	Verified	G3	S1	None	Species of Concern	Watch

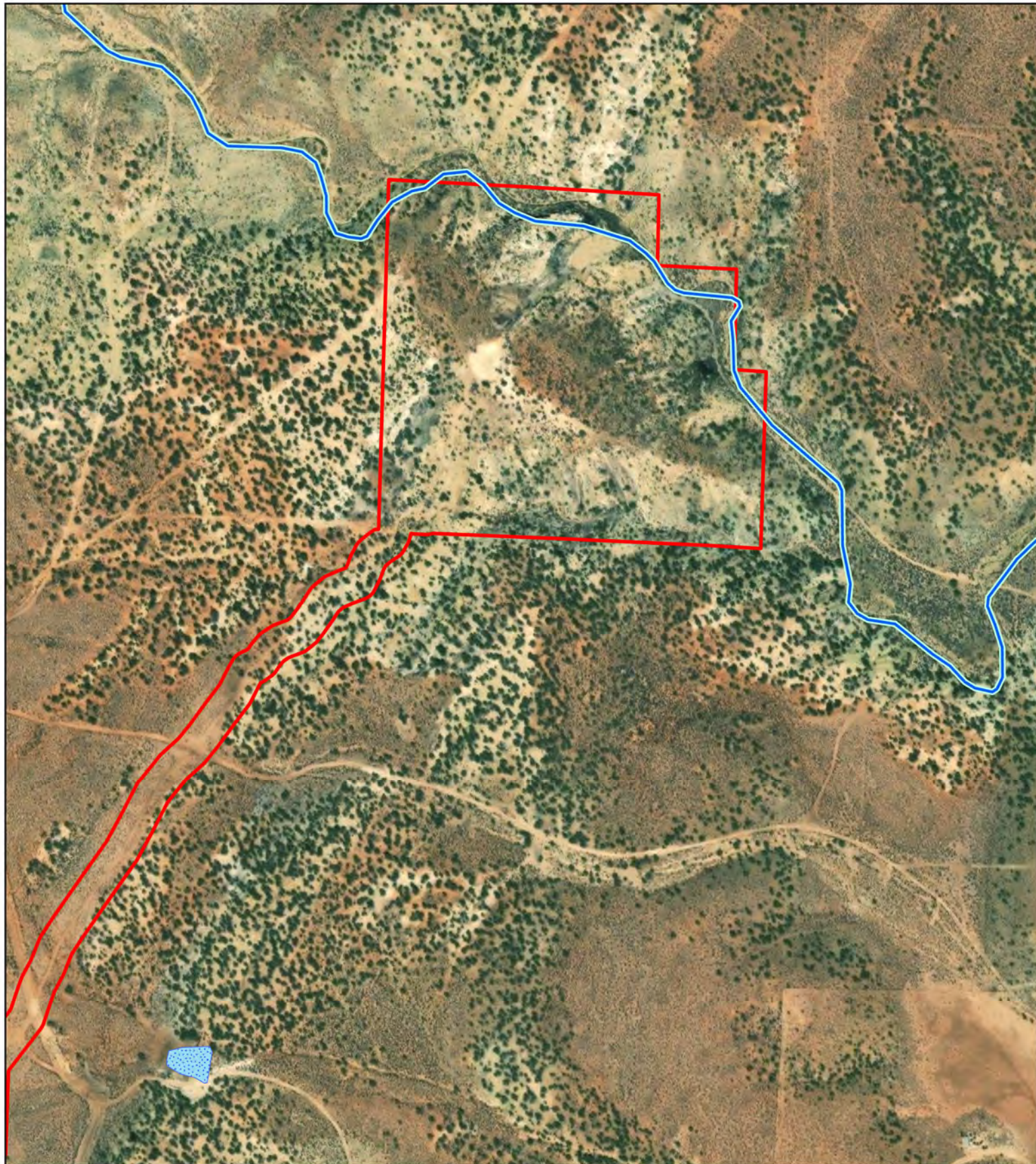
(** denote status change since 2019 revision)

2024 BLM NM - Other Specials Status Species: all plants listed by the Endangered Species Act		
Species	Common Name	FWS Status
Plants		
<i>Argemone pinnatisecta</i>	Sacramento prickly-poppy	Federally Listed-Endangered
<i>Astragalus humillimus</i>	Mancos milkvetch	Federally Listed-Endangered
<i>Cirsium vinaceum</i>	Sacramento Mountains thistle	Federally Listed-Threatened
<i>Cirsium wrightii</i>	Wright's marsh thistle	Federally Listed-Threatened
<i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	Kuenzler's hedgehog cactus	Federally Listed-Threatened
<i>Erigeron rhizomatus</i>	Zuni fleabane	Federally Listed-Threatened
<i>Eriogonum gypsophilum</i>	gypsum wild buckwheat	Federally Listed-Threatened
<i>Escobaria sneedii</i> var. <i>leei</i>	Lee's pincushion cactus	Federally Listed-Threatened
<i>Escobaria sneedii</i> var. <i>sneedii</i>	Sneed's pincushion cactus	Federally Listed-Endangered
<i>Festuca ligulata</i>	Guadalupe fescue	Federally Listed-Endangered
<i>Hedeoma todsenii</i>	Todsen's pennyroyal	Federally Listed-Endangered
<i>Helianthus paradoxus</i>	Pecos sunflower	Federally Listed-Threatened
<i>Pediocactus knowltonii</i>	Knowlton's cactus	Federally Listed-Endangered
<i>Sclerocactus mesae-verdae</i>	Mesa Verde cactus	Federally Listed-Threatened

Table A1. New Mexico Rare Plant Technical Council Plant List for San Juan County

Scientific Name	NMRPTC	FWS	State of NM	USFS	BLM	Navajo Nation	State Rank	Global Rank	Counties
Abronia bigelovii	R			SE N	SE N		S3	G3	Rio Arriba, San Juan, Sandoval, Santa Fe
Aliciella cliffordii	R						S1	G1	San Juan
Aliciella formosa	R		E		SE N	GP 3	S2	G2	San Juan
Allium gooddingii	R		E	SE N		GP 3	S2	G2	Catron, Lincoln, McKinley, San Juan
Asclepias sanjuanensis	R				SE N	GP 4	S2	G2G3	San Juan
Astragalus chuskanus	R						S3	G3	McKinley, San Juan
Astragalus cliffordii	R						S1	GNR	McKinley, San Juan, Sandoval
Astragalus humillimus	R	LE	E			GP 2	S1	G1?	San Juan
Astragalus micromerius	R			SE N			S3	G3	McKinley, Rio Arriba, San Juan
Astragalus monumentalis var. cottamii	R						S3	G4T4	San Juan
Astragalus naturitensis	R					GP 3	S1	G3	McKinley, San Juan
Astragalus oocalycis	R						S3	G4	Rio Arriba, San Juan
Cypripedium parviflorum var. pubescens	D		E	SE N			S2?	G5T5	Catron, Colfax, Grant, Los Alamos, Mora, San Juan, San Miguel, Santa Fe
Erigeron rhizomatus	R	LT	E			GP 2	S1	G2	Catron, McKinley, San Juan
Mentzelia sivinskii					SE N		S3	G3	San Juan
Pediocactus knowltonii	R	LE	E				S1	G1	San Juan
Phlox cluteana	R						SNR	G3	San Juan

Scientific Name	NMRPTC	FWS	State of NM	USFS	BLM	Navajo Nation	State Rank	Global Rank	Counties
Proatriplex pleiantha	R				SE N		S3	G3	SAN JUAN
Puccinellia parishii	R		E	SE N	SE N	GP 4	S1	G2G3	CATRON,CIBOLA,GRANT,HIDALGO,MCKINLEY,SAN JUAN,SANDOVAL
Sclerocactus cloverae	R		E		SE N	GP 3	S3	G3	RIO ARRIBA,SAN JUAN,SANDOVAL
Sclerocactus mesae-verdae	R	LT	E			GP 2	S2	G2	SAN JUAN



- Survey Area
- NWI
- NHD Waterbody
- NHD Flowline

Parametrix

0 200 400 600 800 1,000 Feet



Jones Coal Mine NHD



6/18/2025

Point

- Dam/Weir
- Other

Flow Direction

- ▶ CanalDitch

StreamRiver - Intermittent

- Intermittent

Flowline - Large Scale

- Intermittent

Waterbody - Large Scale

- Lake Pond

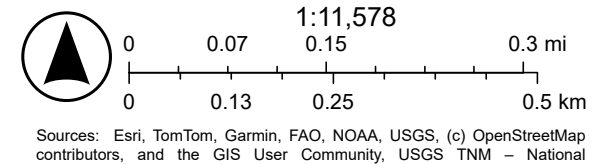
World Imagery

- Low Resolution 15m Imagery
- High Resolution 60cm Imagery

High Resolution 30cm Imagery

Citations

2.4m Resolution Metadata





U.S. Fish and Wildlife Service

National Wetlands Inventory

Jones Coal Mine NWI



June 18, 2025

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **San Juan County, New Mexico, Eastern Part**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
San Juan County, New Mexico, Eastern Part.....	13
DN—Doak-Avalon association, gently sloping.....	13
FA—Farb-Persayo-Rock outcrop complex, moderately steep.....	15
HA—Haplargids-Blackston-Torriorthents complex, very steep.....	17
References	20

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

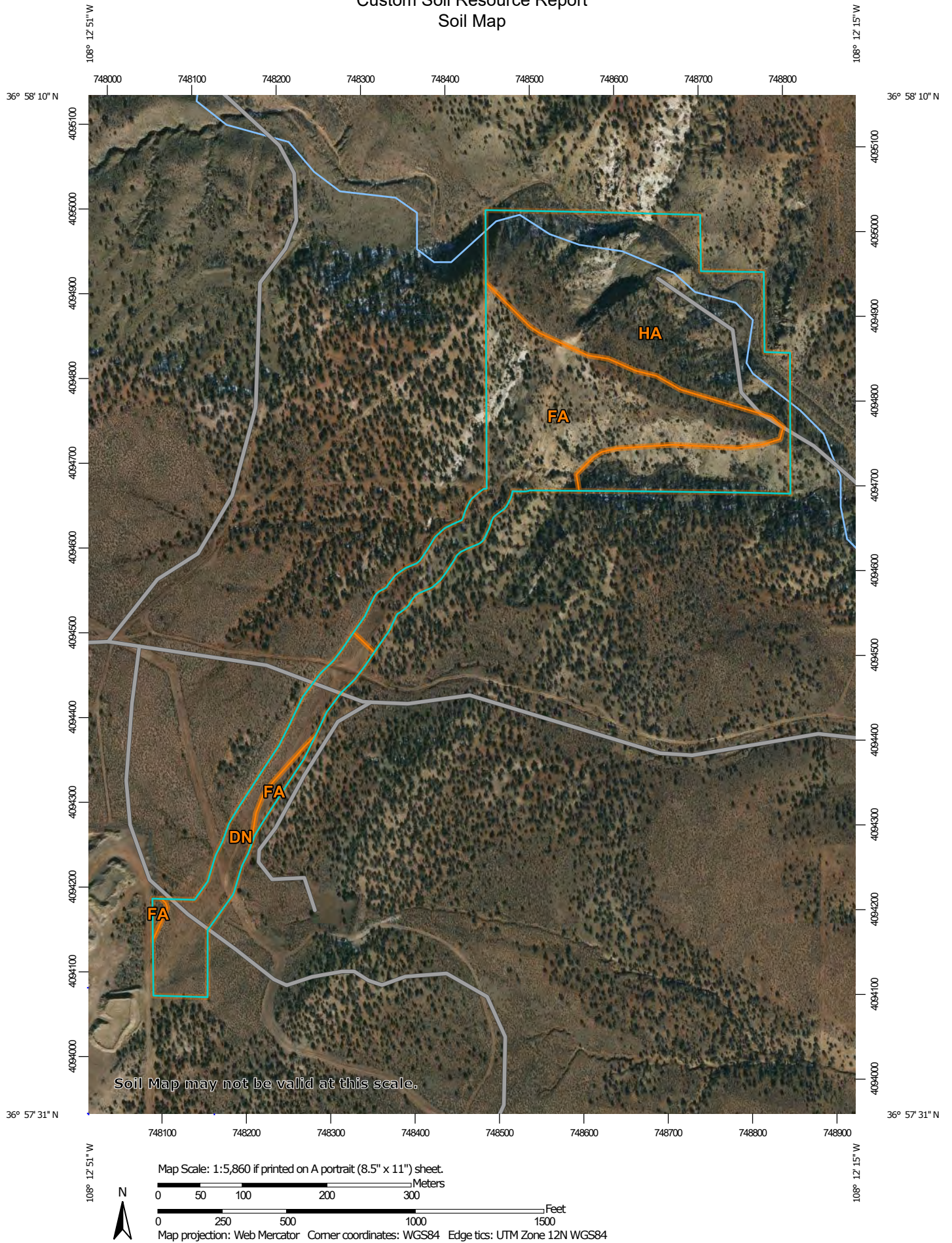
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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:63,400.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Juan County, New Mexico, Eastern Part
Survey Area Data: Version 20, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 25, 2021—Jan 20, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DN	Doak-Avalon association, gently sloping	4.4	13.0%
FA	Farb-Persayo-Rock outcrop complex, moderately steep	12.2	36.2%
HA	Haplargids-Blackston-Torriorthents complex, very steep	17.2	50.8%
Totals for Area of Interest		33.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Juan County, New Mexico, Eastern Part

DN—Doak-Avalon association, gently sloping

Map Unit Setting

National map unit symbol: 1wwd
Elevation: 5,600 to 6,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Doak and similar soils: 50 percent
Avalon and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Doak

Setting

Landform: Stream terraces, mesas, fan remnants
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Alluvium derived from sandstone and shale

Typical profile

A - 0 to 5 inches: loam
Btk - 5 to 43 inches: clay loam
Ck - 43 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R035XB001NM - Loamy
Hydric soil rating: No

Description of Avalon

Setting

Landform: Stream terraces, mesas, fan remnants

Landform position (three-dimensional): Tread, tal

Down-slope shape: Linear, convex

Across-slope shape: Linear, convex

Parent material: Eolian deposits over alluvium derived from sandstone and shale

Typical profile

A - 0 to 14 inches: loam

Bk - 14 to 60 inches: loam

Ck - 60 to 64 inches: gravelly loam

Properties and qualities

Slope: 3 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 20 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Ecological site: R035XB003NM - Limy

Hydric soil rating: No

Minor Components

Sheppard

Percent of map unit: 5 percent

Ecological site: R035XB007NM - Deep Sand

Hydric soil rating: No

Mayqueen

Percent of map unit: 5 percent

Ecological site: R035XB007NM - Deep Sand

Hydric soil rating: No

Shiprock

Percent of map unit: 3 percent

Ecological site: R035XB002NM - Sandy

Hydric soil rating: No

Shiprock variant

Percent of map unit: 2 percent

Ecological site: R035XB002NM - Sandy

Hydric soil rating: No

FA—Farb-Persayo-Rock outcrop complex, moderately steep

Map Unit Setting

National map unit symbol: 1wwp
Elevation: 5,200 to 6,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Farb and similar soils: 40 percent
Persayo and similar soils: 30 percent
Rock outcrop: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Farb

Setting

Landform: Hills, breaks
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

A - 0 to 7 inches: fine sandy loam
Ck - 7 to 10 inches: sandy loam
R - 10 to 20 inches: bedrock

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 5 to 20 inches to lithic bedrock
Drainage class: Excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

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Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R035XB006NM - Shallow
Hydric soil rating: No

Description of Persayo

Setting

Landform: Ridges, hills, breaks
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Side slope, head slope, nose slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from shale

Typical profile

A - 0 to 2 inches: clay loam
C - 2 to 15 inches: clay loam
Cr - 15 to 20 inches: bedrock

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 5 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R035XA130NM - Shale Hills 10-14"p.z.
Hydric soil rating: No

Description of Rock Outcrop

Typical profile

R - 0 to 60 inches: bedrock

Properties and qualities

Slope: 10 to 30 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Stumble

Percent of map unit: 5 percent
Ecological site: R035XB002NM - Sandy
Hydric soil rating: No

Doak

Percent of map unit: 5 percent
Ecological site: R035XB004NM - Clayey
Hydric soil rating: No

HA—Haplargids-Blackston-Torriorthents complex, very steep

Map Unit Setting

National map unit symbol: 1wx2
Elevation: 4,800 to 6,400 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 51 to 55 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Haplargids and similar soils: 45 percent
Blackston and similar soils: 30 percent
Torriorthents and similar soils: 20 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haplargids

Setting

Landform: Escarpments
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

A - 0 to 7 inches: cobbly sandy loam
Bt1 - 7 to 26 inches: cobbly sandy clay loam
Bt2 - 26 to 60 inches: cobbly sandy clay loam

Properties and qualities

Slope: 8 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High

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Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Ecological site: R035XB001NM - Loamy

Hydric soil rating: No

Description of Blackston

Setting

Landform: Escarpments

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Mixed alluvium

Typical profile

A - 0 to 11 inches: gravelly loam

Bk - 11 to 26 inches: very gravelly loam

Ck - 26 to 60 inches: very gravelly sand

Properties and qualities

Slope: 8 to 40 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Ecological site: R035XB003NM - Limy

Hydric soil rating: No

Description of Torriorthents

Setting

Landform: Escarpments

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

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Across-slope shape: Convex
Parent material: Mixed alluvium

Typical profile

C1 - 0 to 3 inches: cobbly loam
C2 - 3 to 15 inches: cobbly clay loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 8 to 50 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R035XC328AZ - Cobbly Slopes 10-14" p.z.
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

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