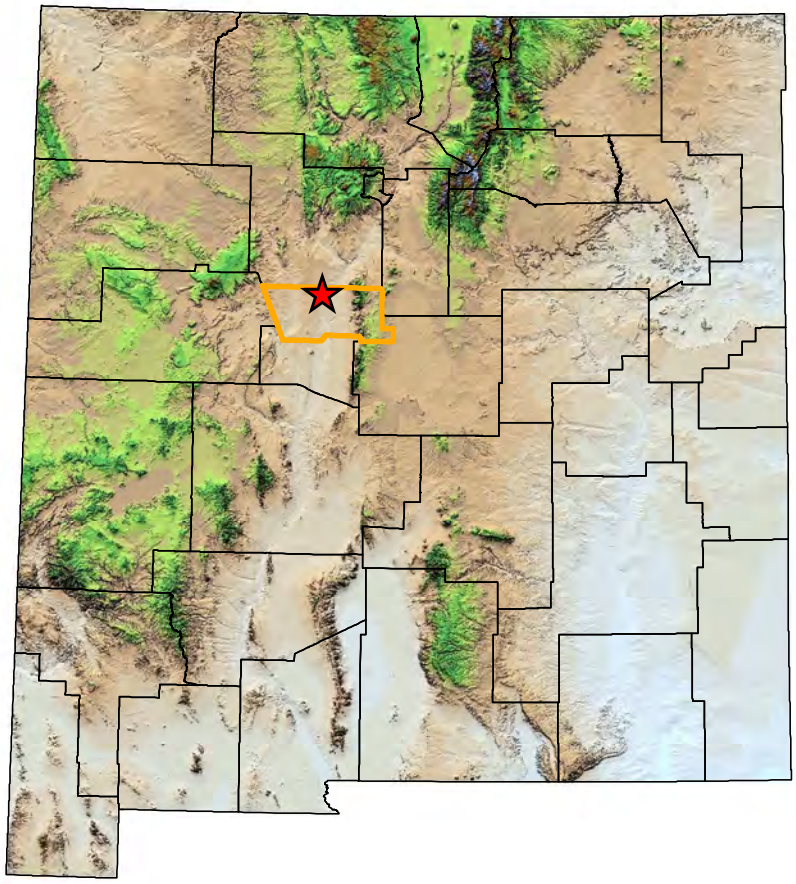
Biological Evaluation for the Unser Widening Project, Bernalillo County, New Mexico, CNs A300304, A300305, and C3193294



Prepared for the New Mexico Department of Transportation by Jessica Alden with Contributions from Jeff Fredine and Tyler Pennington

Biological Evaluation for the Unser Widening Project, Bernalillo County, New Mexico, CNs A300304, A300305, and C3193294

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August 2022 | 564-4354-030

CITATION

Parametrix, 2022. Biological Evaluation for the Unser Widening Project, Bernalillo County, New Mexico, CNs A300304, A300305, and C3193294. Prepared by Parametrix, Albuquerque, New Mexico. August 2022.

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1. INTRODUCTION

The purposes of this Biological Evaluation (BE) are to:

1) document biological resources of the project area, including in areas that will be affected directly or indirectly by the undertaking;
2) describe wildlife and plant species and other natural resources observed in the field;
3) provide analysis of effects to these resources resulting from the proposed project; and
4) recommend measures to avoid, minimize, and/or mitigate effects to natural resources and species consistent with federal, state, and local laws.

1.1 Project Description

The City of Albuquerque (City) has proposed corridor improvements to a 2.8-mile section of Unser Boulevard located between Rainbow Boulevard and Paradise Boulevard on the northwest side of Albuquerque, New Mexico (Figure 1). The proposed project includes completing the four-lane expansion of Unser Boulevard and multi-modal improvements along with storm water infrastructure. The project will be funded through local, state, and federal funds. The project has been assigned New Mexico Department of Transportation (NMDOT) Control Number (CN) A300304 and CN A300305 for design and construction, while capital outlay funds are programmed under CN C3193294 to provide the local matching funds.

This section of Unser Boulevard serves as an important commuter route providing access to area residential neighborhoods, schools, and businesses. Unser is one of the few north-south roadways in the growing northwestern portion of Albuquerque that connects Interstate 40, the Petroglyph National Monument, Rio Rancho, and US 550. However, this section of Unser has inadequate infrastructure to meet public needs. Through most of the project area, from Kimmick Drive to Paradise Boulevard, Unser Boulevard is a two-lane roadway that lacks multimodal amenities, including sidewalks, bike lanes, landscaping, and lighting. Unser Boulevard is a four-lane roadway with a median and shared shoulder/bike lane between Rainbow Boulevard and Kimmick Drive. North of Paradise Boulevard, Unser is also a four-lane roadway with a median and sidewalks on both sides. As a result, the two-lane section of Unser between Kimmick Drive and Paradise Boulevard is a traffic choke point for local and regional traffic traveling to or through northwest Albuquerque.

With the project, Unser Boulevard would be modified to have two driving lanes in each direction, a central median that could be used for future transit lanes, bike lanes, and multi-use trails in each direction. This would provide the desired two lanes in each direction and multimodal elements, while preserving flexibility for future utilities to be constructed in the corridor with minimal disturbance of roadway elements. Constructing this typical section would require widening to both the east and west of the current roadway. An additional 52 feet would be needed from properties located west of the existing Unser right-of-way (ROW) and 26 feet would be needed from those located on the east side of the existing Unser ROW. Additionally, the pedestrian path from Rainbow to Kimmick Drive would be extended northward toward Paradise Boulevard, and a storm drain system would be constructed to tie into the existing systems including the pond near Blue Feather Avenue and the Boca Negra Pond. The pond near Blue Feather Avenue would be enlarged along the south end of the Sundance Estates subdivision east of Unser Boulevard and a new detention pond would be added just south of the Boulders Subdivision, west of Unser Boulevard.

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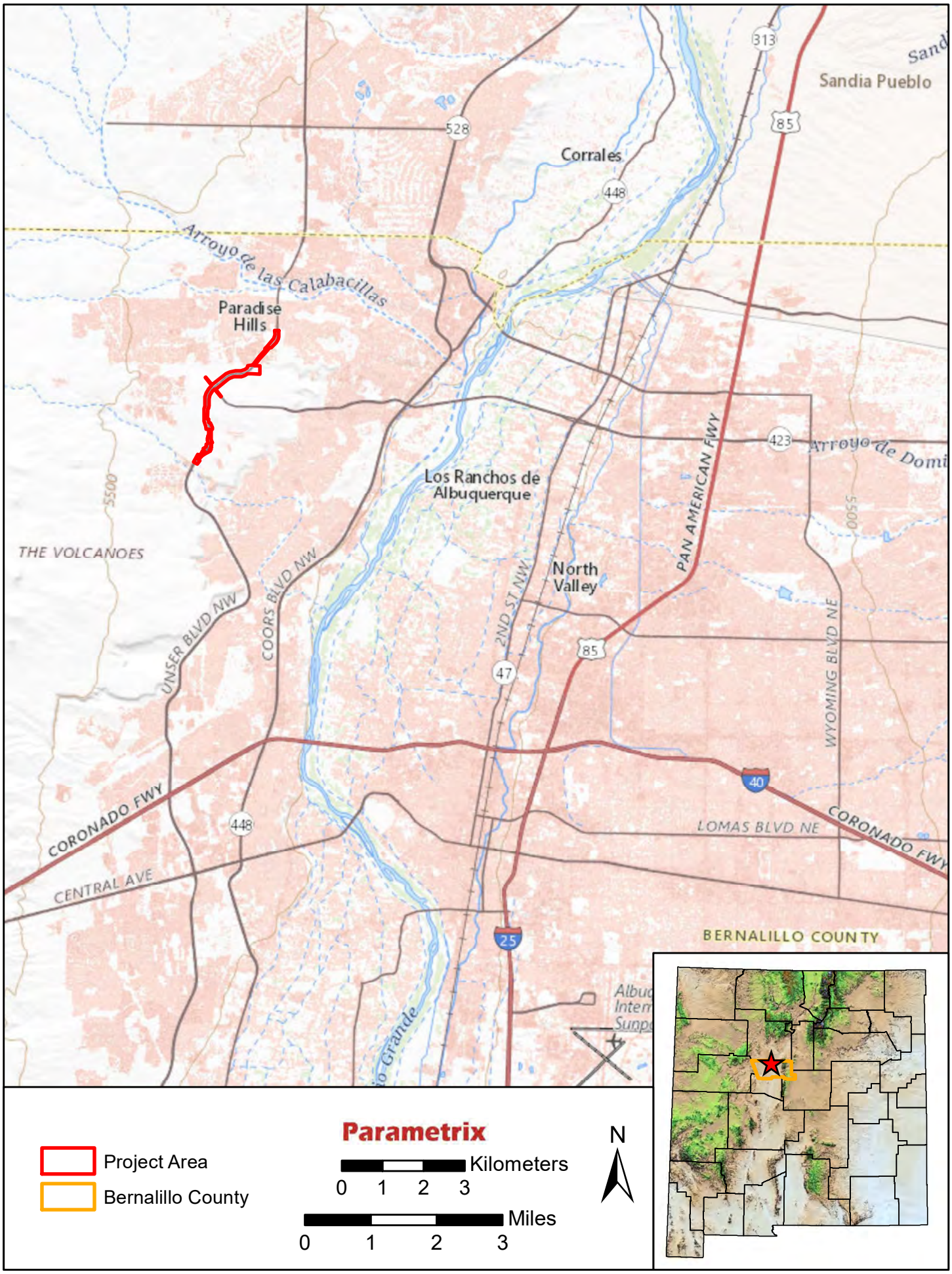

Figure 1: Project vicinity

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1.2 Purpose and Need

The purpose of this project is to reduce congestion, accommodate current and future travel demands, improve safety, improve transportation system connections for all travel modes, and accommodate future planned development.

1.3 Project Location

The construction will take place within the City of Albuquerque along a 2.8-mile section of Unser Blvd. The Beginning of Project (BOP) would be at the intersection of Unser Blvd. and Rainbow Blvd/Compass Drive (Photograph 1) , and the End of Project is set at the intersection of Unser and Paradise Blvd (Photograph 2). The project footprint is located within the Los Griegos (35106-B6) USGS Quadrangle (Figure 2). The coordinates of the BOP and EOP are located in Table 1 below.

Table 1. Project Coordinates

Location	UTMs (Easting, Northing)	Longitude, Latitude
BOP	342941, 3892951	-106.725, 35.167
EOP	344923, 3896181	-106.703, 35.197

Photograph 1. Project BOP, taken from the intersection of Unser Blvd. and Rainbow Blvd., view to the northeast Project EOP, the intersection of Unser Blvd. and Paradise Blvd., view to the south

Photograph 2. Project EOP, the intersection of Unser Blvd. and Paradise Blvd., view to the south

1.4 Measures to Minimize Impacts

Potential impacts to natural resources would be minimized through the implementation of Best Management Practices (BMPs) such as:

- Use of mulch socks and silt fences to prevent stormwater pollution during construction. These measures would be defined in the Stormwater Pollution Prevention Plan (SWPPP) which is prepared in compliance with the Construction General Permit issued by the U.S. Environmental Protection Agency (EPA) for this project.
- 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 using the NMDOT Seed List for Zone 1 (New Mexico Plateaus and Mesas) for areas southwest of the Sun Dancer Drive neighborhood and Zone 5 (Southern Desertic Basins, Plains, and Mountains) for areas northeast of Sun Dancer Drive to Paradise Blvd. (NMDOT 2017).
- To minimize the chance of introducing or spreading noxious weeds, the construction contractor shall use a high-pressure washer to thoroughly clean all equipment prior to entering and exiting the project site.
- If construction takes place during the bird and bat breeding season (March 15 and September 15), the construction contractor shall have a pre-construction bat and bird nest survey completed to verify no active nests are present within the project area.

Additional information on these measures is provided in the Recommendations section (Chapter 12) of this report

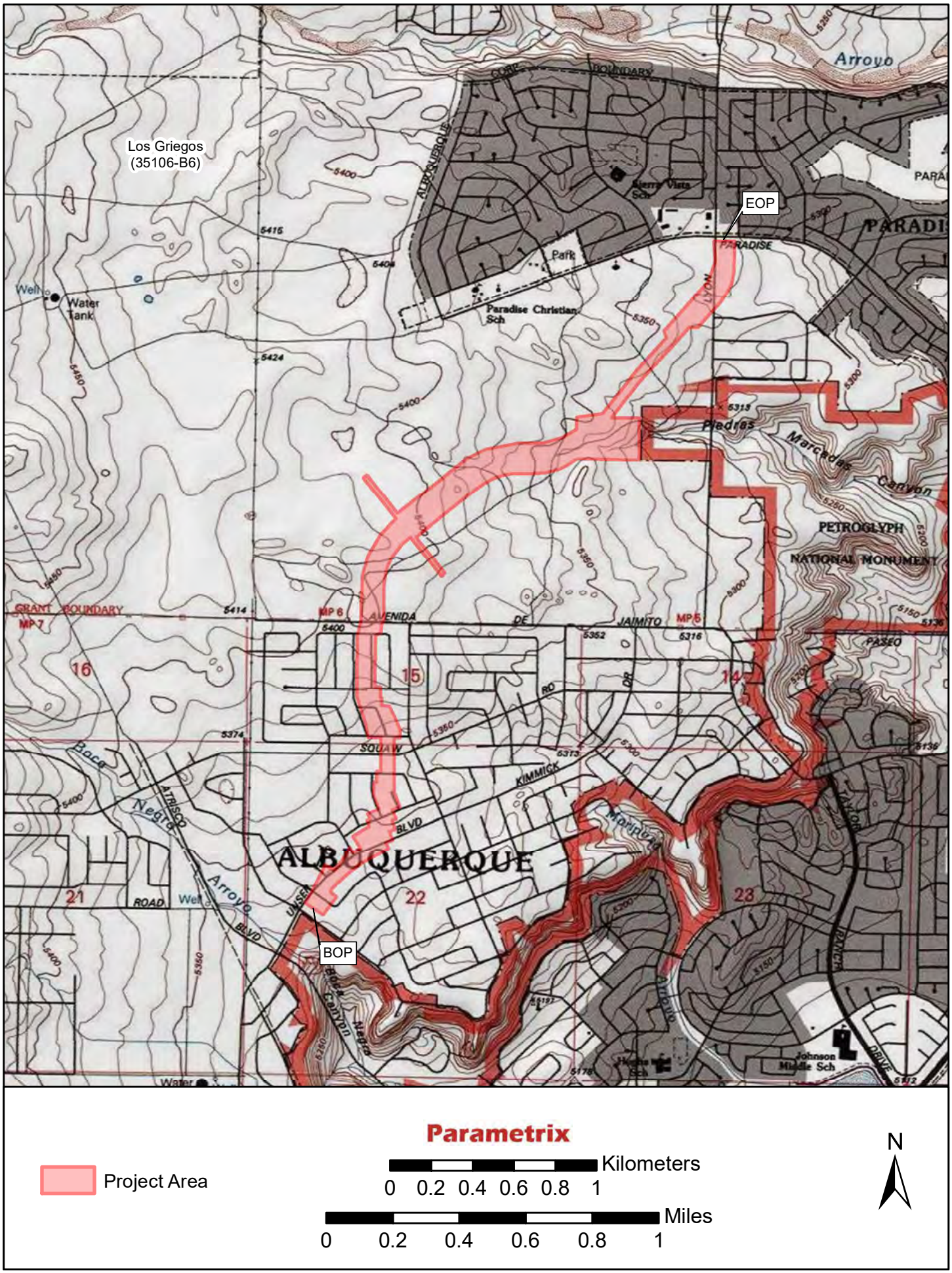

Figure 2: USGS 7.5-minute (1:24, 000) depicting the project area

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2. PROJECT HISTORY

This project is located in a growing portion of the City, and this area has multiple documents and studies that serve as guides for its future development. These documents and studies include multiple studies by the Mid-Regional Council of Governments and the City of Albuquerque. The *Albuquerque and Bernalillo County Comprehensive Plan* identifies a portion of the study area located north and south of the intersection of Paseo del Norte as a developing Urban Center. This Urban Center is planned to incorporate a mix of employment, service, and residential uses to create a vibrant, walkable center (City of Albuquerque and Bernalillo County 2017). Areas north and south of the designated Urban Center are also planned for residential development, with mixed residential and commercial development focused near Kimmick on the east side of Unser and on both sides of Unser near Paradise.

3. ACTION AREA

The action area refers to all areas that will be affected directly or indirectly by the undertaking and is determined by the geographical extent of environmental effects of the action. The action area may include downstream effects that may result from the proposed project, either directly or indirectly. In summary, the action area is a buffer zone around the project area in which biological impacts are considered.

Due to the lack of drainage, its urban setting, and disturbed nature of the ROW, Parametrix identified a 500-foot action area on both sides of the project area (Figure 3). This action area is sufficient to consider issues such as habitat availability to support potentially displaced wildlife, the suitability of bird nesting sites, and the potential impacts on resident wildlife.

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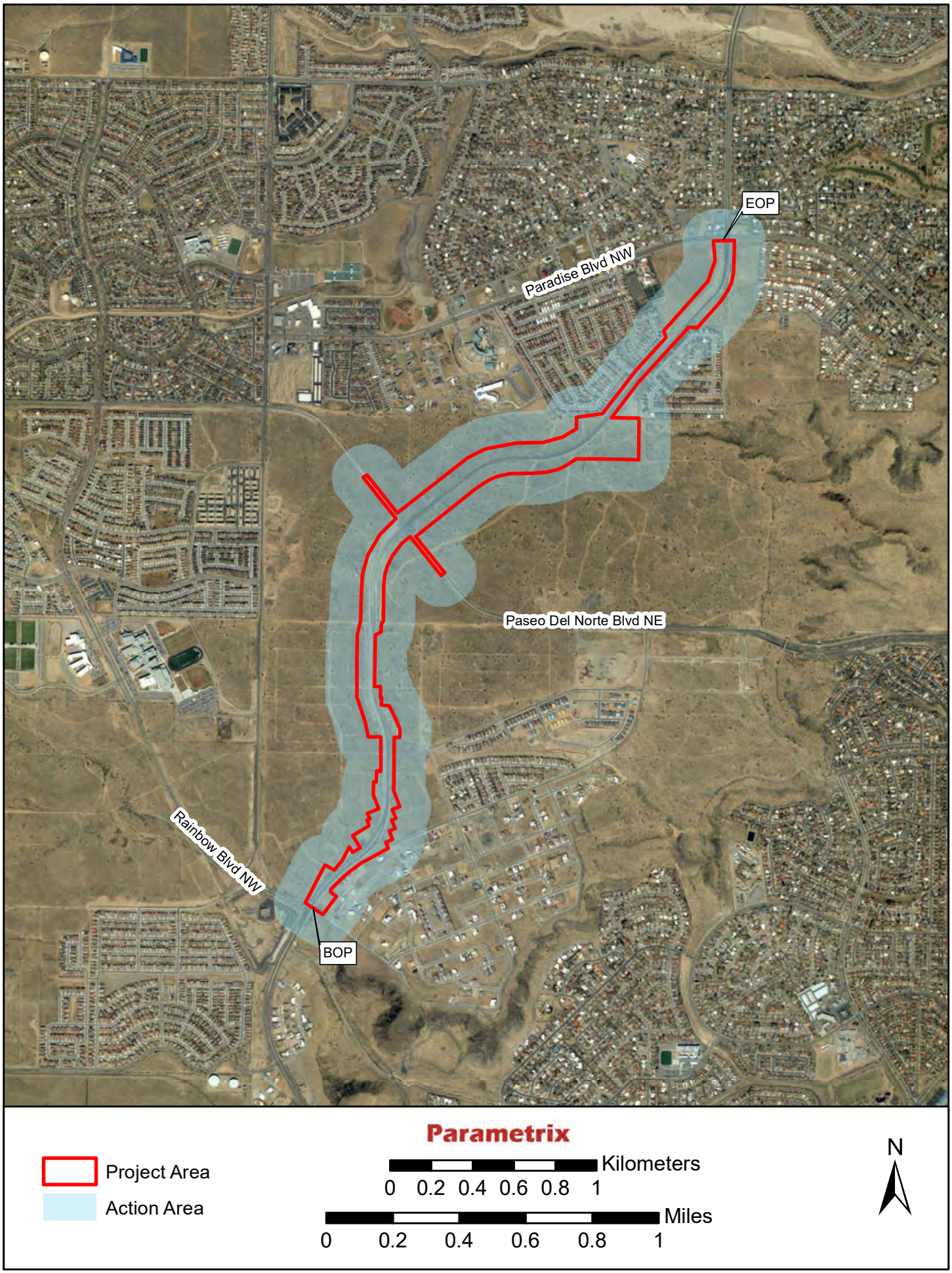

Figure 3: Aerial map with the project and action area

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4. METHODS

4.1 Pre-Field Methods

Prior to the field survey, the following information/databases were reviewed:

- U.S. Fish and Wildlife Service's *Information, Planning, and Conservation System (IPaC), Listed Species in Grant and Luna Counties* (USFWS 2020)
- New Mexico Department of Game and Fish's Biota Information System of New Mexico *Threatened, Endangered, and Sensitive Species in Grant and Luna Counties* (NMDGF BISON-M 2020)
- New Mexico Rare Plant Technical Council (NMRPTC 1999, revised 2020)
- New Mexico Energy, Minerals, and Natural Resources Department Endangered Plant Program (NMEMNRD 2021)
- New Mexico Department of Agriculture Noxious Weed List (NMDA 2020)
- Natural Resources Conservation Service's Web Soil Survey online map (NRCS 2021)
- National Hydrography Dataset (NHD) (USGS 2021)
- National Wetland Inventory (NWI) (USFWS 2020b)
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panels (FEMA 2021)

Each of these resources was consulted to examine the known federal- and state-listed species and species of special concern that could occur within the project and action areas, as well as biotic and abiotic components of the local environment, including soils, waterways, wetlands, and floodplains. See Appendix A for copies of consulted lists and graphics.

After reviewing the known and potential resources in the project area, the action area was defined as a 500-foot buffer around the project area. See Chapter 3 for details on the action area.

4.2 Field Methods

A biological survey was conducted from the BOP to EOP to inventory and assess potential impacts to biological and natural resources. This effort consisted of a pedestrian survey of ROW on both sides of Unser Blvd. NW from Paradise Blvd. NW to Rainbow Blvd. NW. Recorded resources included any observed special status species, migratory birds, nests, waterways and their ordinary high-water marks (OHWM), wetlands and other relevant biological and natural resources within the project area. Field biologists were also tasked with compiling general species lists regardless of their special status. This task assesses which types of flora and fauna are actively using the project area and establishes a better depiction of the ecosystem. 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 a carcass, or documenting sign such as scat, tracks, feathers, rubs, burrows, etc. Species were inventoried based on their relative abundance during the time of survey.

Apple iPad tablets linked to Trimble R1 Global Positioning System (GPS) receivers set up with the ESRI Collector App were used to record locations of pertinent field data (e.g., special status species habitat

and noxious weeds). Data on the GPS unit was collected using the North American Datum (NAD) 83 Universal Transverse Mercator (UTM) coordinates.

The survey was conducted by Parametrix biologists Tyler Pennington and Jessica Alden on October 14, 2021.

5. REGULATORY CONTEXT

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

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

6. GENERAL ENVIRONMENTAL SETTING

This section of the report introduces a generalized depiction of existing environmental conditions surrounding the project area to provide context for the proceeding chapter. The discussion includes information on elevation and climate, topography, physiography, geology, ecoregions and vegetation communities, soils, water resources, land use, and known human and natural disturbance. All of these topics are essential to understanding the natural resources and habitats occurring within the project and action areas as well as the flora and fauna found within them.

6.1 Elevation and Climate

The project area is relatively flat with only a modest elevation change. Elevation ranges from 5,300 to 5,400 feet above mean sea level. The highest point in the project area is a gradually rising hilltop located near Unser's intersection with Paseo del Norte, and the lowest points are at the BOP and EOP.

The region around Unser Blvd. is hot and dry, as is typically of most regions of New Mexico. Historical climate data from the Western Regional Climate Center (WRCC) was referenced for the project area. The data was collected between 1994 to 20 16 from a weather station at Petroglyph National Monument, New Mexico. During this period, mean annual maximum temperature was 73.9 degrees Fahrenheit (F) and mean annual minimum temperature was 43.1 degrees F, with the hottest months occurring in June, July, and August, and the coolest months occurring in December, January, and February. Average precipitation was 9.43 inches, with most rainfall occurring in August (WRCC 2020).

6.2 Topography, Physiography, and Geology

The project area is located atop Albuquerque's West Mesa, a flat and expansive landform located at the far western extent of Albuquerque. This landform part of the much larger Colorado Plateau, which spans

the majority of the Four Corners region. The West Mesa is located within the Rio Grande Subsection of the Mexican Highlands, which itself is a division of the Basin and Range physiographic province. Defined by its high-elevation mountain uplifts separated by vast alluvial basins, the Basin and Range province is the largest in New Mexico, spanning most of the central and extreme southwest regions of the state. The Basin and Range province is divided into two sections – the Sacramento Section to the east of the Manzano Mountains and the Mexican Highlands to the west. Mountains in the Mexican Highlands Section are mostly block-faulted with Precambrian cores overlain with Paleozoic sedimentary rock. The basins have thick deposits of quaternary alluvial, riverine, lacustrine, and aeolian deposits. The Rio Grande and Gila Rivers have carved deep canyons and valleys though the basins between mountains ranges in the province. The Rio Grande River valley is significant enough to be given its own physiographic subsection. The river is the largest drainage in New Mexico and has carved a substantial rift through the central portion of the state (Hawley 1986; Griffith et al. 2006).

6.3 Ecoregions and Vegetation

In North America, ecoregions are divided into four levels, with Level I being the broadest and Level IV being the most detailed. For brevity, only Level IV will be discussed in detail. The project area is situated in the Albuquerque Basin ecoregion (Griffith et al. 2006). The Albuquerque Basin is one of the deeper portions of the Rio Grande rift valley and is significantly lower elevation than the mountainous surrounding areas. It is a warm and dry region with scrubby and grassy vegetation. Sparse junipers may be present in the northern reaches of the ecoregion. The basin is the location of large urban areas, including Albuquerque, Rio Rancho, Bernalillo, and Los Lunas. These urban areas have impacted the natural water, vegetation, and wildlife regimes of the area.

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 seven distinct vegetation communities within the project and action areas (USGS 2005; Lowry et al. 2005):

- Apacherian-Chihuahuan Mesquite Upland Scrub
- Inter-Mountain Basins Semi-Desert Grassland
- Developed, Open Space – Low Intensity
- Developed, Medium-High Intensity
- Rocky Mountain Lower Montane Riparian Woodland and Shrubland
- Inter-Mountain Basins Semi-Desert Shrub Steppe
- Western Great Palins Riparian Woodland and Shrubland

A figure showing the distribution of these communities throughout the project and action can be found in Appendix A.

6.3.1 Apacherian-Chihuahuan Mesquite Upland Scrub

The Apacherian-Chihuahuan Mesquite Upland Scrub community is usually found in the transition zone between grasslands and shrubland ecosystems in the Chihuahuan Desert. Mesquite (*Prosopis spp.*) is the predominant shrub in the community, but it can be intermixed with acacias (*Acacia spp.*) and juniper (*Juniperus spp.*). In recent decades this vegetation community has been overtaken by desert grasslands.

The SWReGAP database shows approximately 458.4 acres of this vegetation community in the project and action area.

6.3.2 Inter-Mountain Basins Semi-Desert Grassland

Inter-Mountain Basins Semi-Desert Grasslands are vegetation communities defined by dwarfed shrubs such as sage (*Artemisia app.*), salt bush (*Atriplex spp.*), Mormon tea (*Ephedra spp.*), and snakeweed (*Guiterrezia spp.*) intermixed with native grasses like blue grama (*Bouteloua gracilis*), muhly grasses (*Muhlenbergia spp.*), and James' galleta (*Pleuraphis jamesii*). This vegetation community can occur in a variety of elevations and landforms, but wherever they are found, the environment tends to be dry with fine textured soils. Approximately 28.5 acres of Inter-Mountain Basins Semi-Desert Grasslands occur in the project and action area.

6.3.3 Developed, Open Space – Low Intensity

The Developed, Open Space – Low Intensity vegetation community can be found in suburban areas and consists of a mixture of the built environment and landscaped vegetation. These areas might include golf course, parks, and single-family housing units. Approximately 14 acres of this community type exists in the project and action area.

6.3.4 Developed, Medium-High Intensity

Developed, Medium – High Intensity areas are characterized by mostly impervious surfaces intermixed with some planned or roadside vegetation. These areas are typically urban and might include single- and multi-family housing units, industrial areas, and roadways. There are approximately 13 acres of Developed, Medium -High Intensity in the project and action area.

6.3.5 Rocky Mountain Lower Montane Riparian Woodland and Shrubland

The Rocky Mountain Lower Montane Riparian Woodland and Shrubland community consists of a mixture of communities and plants that are dependent on occasionally flooding. This community type is typically found near streams. Common species include native species like cottonwood (*Populus spp.*) and willow (*Salix spp.*) as well as exotics such as Russian olive (*Elaeagnus angustifolia*) and salt cedar (*Tamarix spp*.). There are approximately 11.7 acres of this vegetation community in the project and action area.

6.3.6 Inter-Mountain Basins Semi-Desert Shrub Steppe

Inter-Mountain Basins Semi-Desert Shrub Steppe typically occurs on alluvial fans in lower elevation regions. Grasses are the dominant plants in this vegetation community, but they may be patchy. Common species include blue grama, James Galleta, alkali sacaton (*Sporobolus airoides*), and needle and thread grass (*Hesperostipa comata*). Shrubs in this vegetation community can include rubber rabbitbrush (*Ericameria nauseosa*), four-wing saltbush (*Atriplex canescens*), and big sagebrush (*Artemisia tridentata*). Approximately 6.7 acres of Inter-Mountain Basins Semi-Desert Shrub Steppe occur in the project and action area.

6.3.7 Western Great Plains Riparian Woodland and Shrubland

Western Great Plains Riparian Woodland and Shrublands occur next to small or medium-sized rivers, such as the Rio Grande. These waterbodies tend to be flashy and may have variable flows throughout the year. In recent decades agriculture, ranching, fire control, and ground water depletion have changed the structure of the Western Great Plains Riparian Woodland and Shrublands. Community structure can range from very sparse to dense riparian forest. Common species include Rio Grande cottonwood (*Populus deltoides*), willow, salt cedar (*Tamarix spp.*), and grasses like Western wheat grass (*Pascopyrum smithii*). Approximately 3.2 acres of this community type are within the project and action area.

6.4 Soils

Soil information for the project and action area was generated from the Natural Resource Conservation Service (NRCS) Web Soil Survey online map viewer (NRCS 2021). Only three soil types were identified within the project area. The majority of the project and action area are classified as Alemeda sandy loam, 0 to 5 percent slopes while the project termini feature either Blueprint loamy fine sand, 1 to 9 percent slopes and Madurez-Wink Association, gently sloping. These soil types have similar parent materials, drainage classes, and flooding frequencies. However, they vary in their depth and their typical landforms (Table 2). A comprehensive Soil Report is attached in Appendix A.

Table 2. NRCS Soils within the Project and Action Area

Soil Type	Depth to Restrictive Feature	Typical Landform	Parent Material	Drainage Class	Flooding Frequency	Acreage in Project Area
Alemeda sandy loam, 0 to 5 percent slopes	20-40 inches to bedrock	Hillslopes, lava flows	Igneous and sedimentary aeolian deposits	Well drained	None	451.7
Blueprint loamy fine sand, 1 to 9 percent slopes	>80 inches	Stream terraces	Aeolian or alluvial deposits	Somewhat excessively drained	None	1.1
Madurez-Wink association, gently sloping	>80 inches	Piedmonts and alluvial fans	Igneous and sedimentary alluvium	Well drained	None	64.7

6.5 Water Resources

6.5.1 Waterways

The Clean Water Act (CWA) of 1972 regulates activities that have the potential to impact Waters of the United States (WOUS). Section 404 of the CWA regulates discharge of dredged and fill materials within the OHWM of WOUS and is administered by the U.S. Army Corps of Engineers (USACE). Section 401 of the CWA regulates water quality and, for the purposes of the project, is administered by the New Mexico Environment Department (NMED), Surface Water Quality Bureau (SWQB).

The project is within the Rio Grande-Albuquerque watershed, a medium-size watershed covering 823,816.76 hectares of central New Mexico. This watershed contains the Rio Grande, the largest river in the state, and surrounds the City of Albuquerque and the metro area (USGS 2020). Albuquerque is a large consumer of the river's water, making the Rio Grande-Albuquerque watershed one of the most intensively used watersheds in the state. In recent decades the Middle Rio Grande has been the subject of numerous restoration projects (EPA 2021).

The NHD shows only one ephemeral entering the project area. The drainage is part of the Middle Branch Piedras Marcadas Arroyo. There are larger drainage systems to both the north and south of the project termini, but the project areas itself appears that there is very little drainage (USGS 2020). See Appendix A for a map of the NHD resources.

For this project, OHWMs were measured on every applicable waterway during the field survey. The OHWM is used to delineate the lateral limits of non-wetland waters. An OHWM is defined by the presence of clear natural lines on the bank, shelving, changes in sediment texture, changes or destruction of terrestrial vegetation, or the presence of debris and litter deposited when effective discharge events move large portions of sediment over time. Measurements taken of the OHWM were based on stream geomorphology and vegetation response to dominant stream discharge and characterizes the most consistent and repeating patterns associated with "ordinary" events representing ordinary high water. Federal jurisdiction over WOUS extends to the OHWM as defined in 33 VFR Part 328.3 (Lichvar and McColley 2008).

6.5.2 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.

Prior to the biological survey, the USFWS NWI website was accessed to determine potential wetland presence within the project area. According to the database, one riverine wetland crosses the project area along the Middle Branch Piedras Marcadas Arroyo. See Appendix A for a map of NWI resources.

6.5.3 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 effects to drainage conditions of floodplain areas be studied, assessed, and identified

to reduce the risk of flood loss; to minimize the effect of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains.

Review of the FEMA Flood Insurance Rate Map (FIRM) identified the project area as being within Zone X, or within the 500-year floodplain. This zone has moderate to low flood risk, typically with an annual flooding chance of 0.2 percent.

Two additional flood zone intersect with the action area but do not intersect with the project area. The area around the Middle Branch Piedras Marcadas Arroyo is classified as Zone AO. This zone is within the 100-year floodplain and will flood to depths of one to three feet. Areas around the Boca Negra Arroyo, located southeast of the BOP, is classified as Zone AE, or areas within the 100-year floodplain with determined base flood elevations.

For the location of each flood zone within the project area, see the FIRM panels in Appendix A.

6.6 Land Use

The project is located within Albuquerque's west side along Unser Blvd. It is a busy, fast-paced, high-traffic area with multiple subdivisions or planned subdivisions along its corridor. There are adjacent undeveloped areas between subdivisions, including Petroglyph National Monument.

6.7 Human and Natural Disturbances

Human and natural disturbances to the project area are a direct result of urbanization. Significant areas of Albuquerque's west side have become urban sprawl that has overtaken and changed natural vegetation regimes, changed drainage and water usage in this area, disturbed ground, and replaced habitat with impervious surfaces.

7. SURVEY RESULTS

This section presents the natural resources observed within and adjacent to the project area during the field survey by Parametrix biologists on October 14, 2021. Effects to listed species potentially occurring but not necessarily observed within the project area will be addressed in Chapters 9, 10, and 11.

7.1 Fauna Observed

A total of at least one invertebrate, three reptile, three mammal, and five bird species were observed during the biological survey. Live animals, tracks, scat, carcasses, or trails, were typical of the juniper savanna, and semi-desert scrub and grassland habitats throughout New Mexico.

Fauna was documented by noting either live animals, calls, tracks, scat, or trails. The relative abundance of each observed species was noted as either abundant, common, uncommon, or rare. These measurements are qualitative estimates based on field observations at the time of survey. Table 3 presents the methodology used to estimate relative abundance of both flora and fauna observed.

Table 3. Qualitative Estimate of Species Abundance

Category	Plants	Animals
Abundant	Present in large numbers over most or all of the project area	Species or sign seen in great numbers throughout the entire project area
Common	Easily found in most of the project area, or in high numbers in select areas	Species or sign easily found in most of the project area, or in the appropriate habitat
Uncommon	Present in isolated patches or small numbers	Species or sign present occasionally in the appropriate habitat
Few	One or two individuals present	Species sighted only once; is expected to inhabit area only very briefly; or is suspected only in a very limited area

The sections below present the types and relative abundance of observed species and their sign. Potential project impacts to these species as well as any unobserved but potentially occurring species will be addressed in Chapters 9, 10, and 11.

7.1.1 Invertebrates

Two invertebrate species were observed during the field survey (Table 4). The survey was performed in October, and by this time, many invertebrate species are not as abundant or active. It is likely that many other invertebrate species, such as beetles, crickets, and spiders, live and use the project area in the spring and summer months.

Table 4. Invertebrates Documented During Biological Survey

Common Name	Scientific Name	Relative Abundance	Observation Method
Grasshopper	*Unidentified species*	Common	Visual
Two-tailed swallowtail	*Papilio multicaudata*	Few	Visual

7.1.2 Fish

No fish were observed within the project area. There is no permanent water and thus no suitable fish habitat in the project area.

7.1.3 Amphibians

No amphibians were observed during the survey. The project area has very few water resources, and he only drainage in the project area was dry at the time of the survey. Potential for amphibian activity would be dependent on occasions where water is present, primarily following precipitation events. It is unlikely that very many amphibians reside in the project area. They are more likely to live in larger arroyos or closer to the Rio Grande.

7.1.4 Reptiles

Two reptile species were observed during the biology survey (Table 5). Whiptails and other lizards were common throughout project area. However, like invertebrates, many reptiles are less active and abundant by October. It is likely that other species of reptile use the project area during the warmer months.

Table 5. Reptiles Documented During Biological Survey

Common Name	Scientific Name	Relative Abundance	Observation Method
New Mexico Whiptail species	*Aspidoscelis neomexicanus*	Common	Visual
Lizard species	*Unidentified species*	Common	Visual

7.1.5 Birds

Only four bird species were noted during the natural resources survey (Table 6). Bird observations were made visually by seeing a live animal and listening for calls. All of the observed bird species are year-round residents of New Mexico. Many birds have migrated out of the state by the time the survey was performed. However, it is likely that migratory birds use the trees and shrubs in the project area for nesting and shelter.

House finches were the most commonly seen bird in the project area. They were observed in higher density near residential areas with ornamental trees and shrubs.

Table 6. Birds Observed During Biological Survey

Common Name	Scientific Name	Relative Abundance	Observation Method
House Finch	*Haemorhous mexicanus*	Common	Auditory and Visual
Greater Roadrunner	*Geococcyx californianus*	Few	Visual
Say's Phoebe	*Sayornis saya*	Common	Auditory
Mourning Dove	*Zenaida macroura*	Common	Visual

7.1.6 Mammals

A total of three mammal species were observed during the biological survey. Species were identified through visual observations of live animals and carcasses, scat, tracks, and game trails. Observed mammals and their relative abundance are noted below in Table 7.

In addition to the observed mammals, numerous small or medium-sized burrows were observed throughout the project area. Many of these burrows appear to be unoccupied at the time of survey. Unoccupied burrows provide habitat for other species, such as burrowing owls, snakes, and other fauna.

Table 7. Mammals Documented During Biological Survey

Common Name	Scientific Name	Abundance	Observation Method
Black-tailed Jackrabbit	*Lepus californicus*	Uncommon	Live Animal
Desert Cottontail	*Sylvilagus audubonii*	Few	Live Animal
Woodrat spp.	*Neotoma spp.*	Common	Presence of Nests

7.2 Flora Observed

Although the SWReGAP database shows the Apacherian-Chihuahuan Mesquite Upland Scrub as the dominant vegetation community in the project and action area, Parametrix biologists found the area's

vegetation more closely resembles Inter-Mountain Basins Semi-Desert Grassland and Inter-Mountain Basins Semi-Desert Shrub Steppe. Common Chihuahuan Desert plants, such as mesquite, creosote, and cat claw acacia, were not observed in the project or action area. Furthermore, the project area is not within the Chihuahuan Desert but on the Colorado Plateau. Additionally, the Rocky Mountain Lower Montane Riparian Woodland and Shrubland and Western Great Plains Riparian Woodland and Shrubland communities were not observed in this area. There are no intermediate or perennial waterbodies in the project or action area to support these community types (see Section 7.4).

Thirty-two plant species were observed in the project area during the natural resources survey (Table 8). Many of these species are common throughout New Mexico and are often present in ROWs.

Table 8. Flora Observed in Unser Project Area

Common Name (***Scientific Name***)	Relative Abundance
Fescue species (*Agrostis spp*.)	Common
Tree of heaven (*Ailanthus altissima*)	Few
Sand Sage (*Artemisia filifolia*)	Common
Fourwing saltbush (*Atriplex canescens*)	Abundant
Side oats grama (*Bouteloua curtipendula*)	Common
Black grama (*Bouteloua eriopoda*)	Common
Blue grama (*Bouteloua gracilis*)	Abundant
Desert willow (*Chilopsis linearis*)	Common
Field bindweed (*Convolvulus arvensis*)	Uncommon
Tree cholla (*Cylindropuntia imbricata*)	Few
Fluff grass (*Dasyochloa pulchella*)	Common
Jimsonweed (*Datura stramonium*)	Few
Ephedra (*Ephedra spp.*)	Few
Lovegrass (*Eragrostis spp.*)	Uncommon
Rabbitbrush (*Ericameria nauseosa*)	Abundant

Common Name (***Scientific Name***)	Relative Abundance
Annual buckwheat (*Eriogunum annuum*)	Common
Dagger cholla (*Grusonia clavata*)	Uncommon
Broom Snakeweed (*Gutierrezia sarothrae*)	Abundant
One seed Juniper (*Juniperus monosperma*)	Common
Russian thistle (*Kali tragus*)	Common
Winter fat (*Krascheninnikovia lanata*)	Uncommon
Hoary tansyaster (*Machaeranthera canescens*)	Common
Prickly pear (*Opuntia spp.*)	Common
Indian rice grass (*Oryzopsis hymenoides*)	Common
Redwhisker clammyweed (*Polanisia dodecandra*)	Common
Rio Grande cottonwood (*Populus deltoides*)	Uncommon
Silver leaf nightshade (*Solanum elaeagnifolium*)	Abundant
Desert Globe Mallow (*Sphaeralcea ambigua*)	Abundant
Alkali sacaton (*Sporobolus airoides*)	Uncommon
Salt cedar (*Tamarix chinensis*)	Uncommon
Siberian elm (*Ulmus pumila*)	Common
Soap weed yucca (*Yucca glauca*)	Uncommon

7.2.1 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). The noxious weed list for New Mexico can be found in Appendix A. “Noxious” in this context is defined as plants not native to New Mexico that have a negative impact on the economy or environment and are targeted for management and control. There are three classes of noxious weeds 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 species of Class C noxious weeds were observed during the survey, including salt cedar, tree of heaven, and Siberian elm. Only one salt cedar and one tree of heaven were observed. However, several Siberian elms were noted throughout the entire corridor. Because all of these species are Class C, the NMDOT can treat them at their discretion.

7.3 Observed Soils

Soils in the project area consisted of a fine-textured light brown sand. The sediment deposits are formed on top of the basalt West Mesa and likely have at least a few feet of depth. Very little exposed basalt was observed in the project area.

Vegetation has stabilized the area's soils, but minor alluvial erosion is occurring around the Middle Branch Piedras Marcadas Arroyo and in the form of sheet washing. Aeolian erosion is also having a minor impact to the area.

7.4 Water Resources

Pre-field research for the project area showed one drainage, one riverine wetland, and one flood zones located in the corridor. During this resource survey, Parametrix only recorded drainages with OHWMs and made general observations on riverine wetlands and floodplains. The following sections summaries the results from the field survey.

7.4.1 Waterways

The NHD showed one ephemeral drainage intersecting the project area. On the NHD, this drainage is depicted as the headwaters of the Middle Branch Piedras Marcadas Arroyo. A direct connection between the arroyo and the Rio Grande is somewhat ambiguous as substantial amounts of residential development and general urbanization exist between the project area and the river. Any potential connection would be through a series of engineered drainage facilities managed by the Albuquerque Metropolitan Arroyo Flood Control Authority. Additionally, in the field, the drainage manifests as a general swell without typical OHWM indicators (Photograph 3). As such, the drainage within the project area is not considered jurisdictional.

As a result of this project, two detention ponds would be installed in this area, which would impact the drainage. See Chapters 9 and 10 for impacts to this waterway.

Photograph 3. Middle Branch Piedras Marcadas Arroyo within the project area.

7.4.2 Wetlands

No wetlands were identified in the project area during the biological surveys and no formal wetland delineation was conducted.

7.4.3 Floodplains

Parametrix did not identify any difference in the flood zones outlined by FEMA FIRM panels. The entirety of the project area itself is within the 500-year floodplain (Zone X). The overall lack of drainage and water features indicates that there is a very low flood risk in this area.

7.5 Observed Landscape and Land Use

The land surrounding the project contains residential, commercial, and undeveloped areas. There are single family homes or planned developments along the corridor, which contributes to the traffic along Unser. There are a few commercial buildings near the BOP, like an Allsup's Station, as well as a few roadside vendors selling fruit and vegetables. Areas around Unser's intersection with Paseo del Norte are largely undeveloped. However, numerous two-track roads were observed here. It is unclear if these roads are used as short-cuts, recreation, or both.

7.6 Observed Human and Natural Disturbance

Disturbance in the project area is related to traffic, road maintenance, and urban development. This section of Unser has high levels of commuter traffic, causing noise disturbance. It also appears that cars are frequently pulling off on the side of the road or using the ROW to turn around. This has left some places in the project area disturbed and devoid of vegetation. Other areas appear to be bladed. Additionally, general roadway and ROW maintenance has contributed to disturbance. At the time of survey, a large chip seal pile and tire tracks from heavy machinery were observed (Photograph 4). Lastly, the corridor is surrounded by several small subdivisions or planned subdivisions, both of which contribute to changes to natural regimes on Albuquerque's West Side.

Photograph 4. Chip seal pile in the ROW, view to the southeast.

8. 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 in Bernalillo County (USFWS 2020a) that could potentially be impacted by the project (Table 9). State-listed Threatened and Endangered species were also evaluated (NMDGF 2020), including Threatened plant species (NMDGF 2020; New Mexico Energy, Minerals, and Natural Resources, Forestry Division [NMEMNRD] 2020, and New Mexico rare plants (New Mexico Rare Plant Technical Council [NMRPTC 1999]).

Table 9. Listed Species for the Project and Action Area

Common Name	Scientific Name	Listed Status
	Invertebrates	
Monarch Butterfly	*Danaus plexippus*	Federal Candidate
	Fish	
Rio Grande Silvery Minnow	*Hybognathus amarus*	Federal Endangered
	Birds	
Mexican Spotted Owl	*Strix occidentalis lucida*	Federal Threatened
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Federal Endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	Federal Threatened
Broad-billed hummingbird	*Cyanthus latirostris*	State Threatened
Least Tern	*Sternula antillarum*	State Endangered
Neotropic Cormorant	*Phalacrocorax brasillianus*	State Threatened
Bald Eagle	*Hailaeetus leucocephalus*	State Threatened
Common Black Hawk	*Buteogallus anthracinus*	State Threatened
Aplomado Falcon	*Falco femoralis*	State Threatened
Peregrine Falcon	*Falco peregrinus*	State Threatened
Bell's Vireo	*Vireo bellii*	State Threatened
Gray Vireo	*Vireo vicinior*	State Threatened
Baird's Sparrow	*Centronyx bairdii*	State Threatened
	Mammals	
New Mexico Meadow Jumping Mouse	*Zapus hudsonius luteus*	Federal Endangered
Spotted Bat	*Euderma maculatum*	State Threatened
	Plants	
Santa Fe Milkvetch	*Astragalus feensis*	NMRPTC Rare
Sandia Alumroot	*Heuchera pulchella*	NMRPTC Rare
Todilto Stickleaf	*Mentzelia todiltoensis*	NMRPTC Rare
Plank's Catchfly	*Silene plankii*	NMRPTC Rare
Great Plains Lady's Tresses	*Spiranthes magnicamporum*	NMEMNRD Endangered

8.1 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. Federally listed species with and without critical habitats will be discussed in Sections 8.2 and 8.3.

A total of five Threatened, Endangered, or Candidate species with critical habitats were considered during the critical habitat analysis for this project, including New Mexico meadow jumping mouse, Mexican spotted owl, Southwestern willow flycatcher, yellow-billed cuckoo, and Rio Grande silvery minnow (Table 5). However, there was no suitable habitat for any of these species within the project

area or the action area. There is no designated critical habitat for any federally listed species in the project area or the action area. Considering the sizeable geographic distance of their critical habitats from the project and action areas and the nature of this project, it is unlikely that any designated critical habitat would be affected by this undertaking. Table 10 presents each federally listed species and the distance of its designated critical habitat to the action area (Environmental Conservation Online System 2020).

Table 10. Federally Listed Species Considered in the Critical Habitat Designation

Common Name	Scientific Name	Distance of Critical Habitat from Project Area
	Mammals	
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	43 miles
	Birds	
Mexican spotted owl	*Strix occidentalis lucida*	12 miles
Southwestern willow flycatcher	*Empidonax traillii extimus*	22 miles
Yellow-billed cuckoo	*Coccyzus americanus*	3 miles
	Fish	
Rio Grande silvery minnow	*Hybognathus amarus*	3 miles

8.2 Listed Species Eliminated from Further Consideration

Federal- and state-listed species that have been eliminated from further consideration are described in Table 11. The primary criteria for the exclusion of listed species from consideration was the lack of suitable habitat in the project area or the action area.

Table 11. Special-Status Species Eliminated from Further Consideration

Common Name (*Scientific Name*)	Status	Habitat Association	Rationale for Elimination
		Invertebrates*	
Monarch Butterfly (*Danaus plexippus)*	Federal Candidate	Monarch butterflies are known to breed in and migrate through parts of New Mexico. They use milkweed as substrate for laying eggs and food as caterpillars.	No milkweed plants were observed during the survey.
		Fish*	
Rio Grande Silvery Minnow (*Hybognathus amarus)*	Federal Endangered	Rio Grande silvery minnows occupy large streams with sandy or silty bottom and a low gradient. They can exist in a variety of habitats.	There is no permanent water in the project or action area.

Common Name (*Scientific Name*)	Status	Habitat Association	Rationale for Elimination
		Amphibians	
		N/A	
		Reptiles	
		N/A	
		Birds*	
Mexican Spotted Owl (*Strix occidentalis lucida)*	Federal Threatened	Mexican Spotted Owl live in mixed conifer forested areas and mountainous regions.	There are no mountainous or coniferous forest in the project or action area.
Southwestern Willow Flycatcher (*Empidonax traillii extimus)*	Federal Endangered	Southwestern willow flycatchers live in dense riparian areas with cottonwood, coyote willow, and salt cedar.	No dense riparian areas in the project or action area.
Yellow-billed Cuckoo (*Coccyzus americanus)*	Federal Threatened	The yellow billed cuckoo lives in dense riparian areas with cottonwood canopy and sometimes saltcedar.	No dense riparian areas in the project or action area.
Broad-billed hummingbird (*Cyanthus latirostris)*	State Threatened	Species is usually found in mature riparian woodlands with oak and cottonwood. Broad-billed hummingbirds inhabit areas in canyons or streams (Cornell Lab 2021).	No mature riparian woodlands in the project or action area.
Least Tern (*Sternula antillarum)*	State Endangered	Least terns are colonial water birds that depend on fish, crustaceans, and insects for food. They inhabit areas such as beaches, alkali flats, reservoirs, etc.	No beaches, alkali flats, or other bodies of water in the project or action area.
Neotropic Cormorant (*Phalacrocorax brasilianus)*	State Threatened	This species can be found near freshwater lakes, rivers, reservoirs, and other bodies of water with plenty of fish.	No rivers, lakes, or other water bodies in the project or action area.
Bald Eagle (*Hailaeetus leucocephalus)*	State Threatened	Bald eagles prefer coniferous and deciduous mature forests. Bald eagles are normally associated with woodland areas but may be associated with open areas if they have water bodies with fish. The bald eagle primarily subsists on fish (Cornell Lab 2021).	No woodlands or forests in the project or action area.
Common Black Hawk (*Buteogallus anthracinus)*	State Threatened	In the southwest, the common black hawk's habitat is limited to river corridors.	There are no river corridors in the project or action area.

Common Name (*Scientific Name*)	Status	Habitat Association	Rationale for Elimination
Aplomado Falcon (*Falco femoralis)*	State Threatened	In New Mexico, the Aplomado falcon is typically found in yucca grasslands or shrubby habitats. It prefers low elevation habitats, usually ranging between 2800-5500 ft.	Although there are parts of the project area that may be considered grassland, the Aplomado falcon is usually associated with yucca grasslands typical of the Chihuahuan desert.
Peregrine Falcon (*Falco peregrinus)*	State Threatened	Found in various forest associations including mixed coniferous forests, spruce fir, ponderosa pine, aspen, chaparral and piñon/pine. Breeding territories center on cliffs that are in wooded/forested habitats, with large "gulfs" of air nearby in which these predators can forage. This species can be found in open habitats near rivers. (Cornell Lab 2021).	No forests or woodlands in the project or action area.
Bell's Vireo (*Vireo bellii)*	State Threatened	Bell's vireo prefers dense shrub and scrub habitat, which can include riverine scrub, saltcedar stands, and mesquite bosque (Cornell Lab 2021).	Vegetation in the project and action area are not dense enough for Bell's vireo.
Baird's Sparrow (*Centronyx bairdii*)	State Threatened	Baird's sparrow can be found in a wide range of habitats in New Mexico, but it prefers grasslands and prairies as its breeding grounds. In the absence of the latter, it can be found in agricultural fields. This species is mostly found in southern and eastern New Mexico, where it is known to winter. Although it has been found in mountainous regions farther north.	The project and action area are not likely to attract Baird's sparrow because it is not a true grassland, prairie, or agricultural field.
		Mammals*	
New Mexico Meadow Jumping Mouse (*Zapus hudsonius luteus)*	Federal Endangered	The meadow jumping mouse lives in riparian areas dominated by sedges and other herbaceous vegetation.	No riparian habitat in the project or action area.
Spotted Bat (*Euderma maculatum)*	State Threatened	The spotted bat roost on cliff faces or within rock crevices. They are often	There are no cliffs or rock crevices in the project or action area.

Common Name (*Scientific Name*)	Status	Habitat Association	Rationale for Elimination
		found in woodland habitats or montane forest.	
		Plants**	
Santa Fe Milkvetch (*Astragalus feensis)*	NMRPTC Rare	Santa Fe milkvetch can be found on benches or hillsides in piñon-juniper woodlands. It grows in sandy or gravelly substrates.	There is no piñon-juniper woodland habitat in the project or action area.
Sandia Alumroot (*Heuchera pulchella)*	NMRPTC Rare	Sandia alumroot grows in limestone cliffs in conifer forests.	No conifer forest in the project or action area.
Todilto Stickleaf (*Mentzelia todiltoensis)*	NMRPTC Rare	This species grows on gypsum outcrops and is specific to the Todilto geologic formation.	There are no gypsum outcrops in the project or action area, and the project or action area are out of this species range.
Plank's Catchfly (*Silene plankii)*	NMRPTC Rare	Plank's catchfly grows on igneous cliffs and outcrops, but in the Rio Grande region, it is restricted to montane environments.	Neither the project nor action area are in a montane environment.
Great Plains Lady's Tresses *(Spiranthes magnicamporum)*	NMEMNRD Endangered	Grows in continuously wet areas, like streams sides, springs, and wetlands	There are not streams, springs, or wetlands in the project or action area.

*Habitat information taken from NMDGF's BISON-M Species Booklets, unless noted otherwise

**Habitat information taken from NMRPTC species information listed online

8.3 Listed Species Evaluated Further

Based on the current NMDGF state list (NMDGF 2021), some potential habitat for the gray vireo and Baird's sparrow may exist in the action area. These species are identified and evaluated in Table 12.

Table 12. Listed Species Evaluated Further

Common Name (*Scientific Name*)	Status	Habitat Association	Effects Analysis	Effect Determination
		Invertebrates		
		N/A		
		Amphibians		
		N/A		
		Fish		
		N/A		
		Reptiles		
		N/A		

Common Name (*Scientific Name*)	Status	Habitat Association	Effects Analysis	Effect Determination
		Birds*		
Gray Vireo (*Vireo vicinior*)	State Threatened	Breeding habitat for this species is generally mature piñon-juniper habitats. In the Chihuahuan Desert, gray vireo can be found in habitats with creosote, yucca, mesquite.	Although not ideal, the project and action area have areas of open juniper savanna. The gray vireo could breed in the area. If it were to be found in this area, it would most likely be removed from the roadway and away from traffic. Appropriately timed pre-construction nesting surveys will mitigate any potential direct or indirect effects to this species.	No effect
		Mammals		
		N/A		
		Plants		
		N/A		

*Habitat information taken from NMDGF's BISON-M Species Booklets, unless noted otherwise

9. PROJECT AREA DIRECT EFFECTS ANALYSIS

This section will discuss direct permanent and temporary impacts of the proposed project to non-listed species, if observed or relevant, that are residing, nesting, have dens, year-round maternal colonies, etc. within or adjacent to the project area or action area. The Council on Environmental Quality defines direct effects as those caused by the action and occur at the same time and place.

The project would modify Unser Blvd. to have two driving lanes in each direction, a central median that could be used for future bus lanes, bike lanes, and multi-use trails in each direction. This would provide the desired 2-lanes in each direction and multimodal elements, while preserving flexibility for future utilities to be constructed in the corridor with minimal disturbance of roadway elements. Constructing this cross section would require widening to both the east and west of the current roadway. An additional 52 feet would be needed from properties located west of the existing Unser ROW and 26 feet would be needed from those located on the east side of the existing Unser ROW. Additionally, a storm drain system would be constructed to tie into the existing systems at the Blue Feather Avenue and Compass Drive. The storm drain system would require two new detention ponds just south of the Boulders Subdivision.

9.1 Permanent Effects to the Project Area

Direct effects to natural and biological resources in the project area include permanent impacts such as mortality, habitat loss for some species, and changes in hydrology.

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 the project area, 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.

Within the project area, there would be a permanent loss of habitat as the result of adding pavement, extending culverts, and installation other infrastructure, like the detention ponds, to the project corridor. The addition of these features does not allow plants to retake the areas after construction is completed and most fauna are unable use these areas for shelter, foraging, and other activities. Habitat loss may also occur if established trees and shrubs, including noxious species, are removed. Siberian elms and Tree of Heaven were spotted along the corridor, and, although they are considered noxious weeds, these trees provide shelter, places to rest, and food for some species. Habitat loss is expected to impact plants, invertebrates, amphibians, mammals, and birds as a result of project changes because none of them can no longer grow, forage, burrow, etc. in the project area where impervious surfaces are installed.

As a result of this project, detention ponds would be installed at the natural headwaters of Middle Branch Piedras Marcadas. This would be a permanent change made to the drainage that could have positive indirect effects to the project and action area. See Chapters 10 and 11 for a discussion on indirect effects.

9.2 Temporary Effects to the Project Area

Temporary direct impacts within the project area include short-term loss of shelter, food resources, increased noise disturbance, 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 would only occur during the construction period. Animal activity should resume post-construction and when plants have the opportunity to re-establish themselves. However, if the project is to take place during the nesting season (March 15th to September 15th), removal of vegetation and ground disturbance could have negative impact to the reproductive success of migratory birds. Because migratory birds are protected by the Migratory Bird Treaty Act (MBTA), the “take” of these birds, their offspring, or occupied nest is prohibited. It is recommended that pre-construction nesting surveys take place between March 15th and September 15th to minimize effects.

Additionally, noise disturbance and human activity from construction would increase during construction, which would most likely alter animal behavior and movement. This is a temporary impact that should not outlast the construction period.

Both the permanent and temporary direct effects to the project are considered negligible. Although there are natural and biological resources in this corridor, the loss of a few individuals would not impact

overall plant and animal populations. Currently, there is some area surrounding the project corridor that is undeveloped and can provide habitat for displaced species.

10. PROJECT AREA INDIRECT EFFECTS ANALYSIS

This section describes indirect effects to non-listed species, as reasonably foreseeable effects caused by the proposed action but occur later in time or are further removed from the project site than direct effects. Indirect effects to the project area include fauna displacement, changes in hydrology and erosion, and increased noise and human disturbance overtime.

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

Although there would be habitat will be lost as a result of this project, the addition of the detention ponds has the potential to be a beneficial habitat characteristic for some fauna and flora. Although detention ponds do not continuously hold water, intermittent water within them may be enough to attract certain types of plants and fauna like insects and birds. Because there are very few water resources in the project and action area, the detention pond become a very important resource in the long term.

Additionally, the detention pond would feed stormwater runoff into the Middle Branch Piedra Marcadas Arroyo through a controlled outlet system, thereby reducing erosion that might occur in the area by unmitigated, flashy stormwater flows. This feature of the project not only helps the surrounding community, but help prevent any future erosion that will destabilize the landform, uproot vegetation, destroy burrows, etc.

One of the goals of this project is to relieve congestion by adding two additional lanes to this segment of Unser. This addition increases the capacity of the roadway, which will increase noise and human activity in this area. The project also incorporates the construction of a median and acquires new ROW that may be used for multi-modal purposes in the future. If features like bike and bus lanes are added, noise levels and human activity will increase even more. Higher noise and more human presence may have long term effects on animals' movement and usage within the project area in the future.

11. ACTION AREA DIRECT AND INDIRECT EFFECTS ANALYSIS

This section describes both direct and indirect effects to species and other natural resources occurring in the action area.

11.1 Action Area Direct Effects

Similar to the direct effects to the project area, direct effects to the action area include temporary increases in noise disturbance and human activity. This could alter the behavior and movements of animals in the action area as well as the project area.

Within the action area there could be increased competition as a direct result of animals being displaced from the project area. As animals move from the project area to the action area as a result of ground disturbance, noise, loss of shelter, and lack of access to project area plants, resource competition would arise with animal in the action area. This is anticipated to be a temporary impact. With time, species would distribute themselves accordingly and competition will subside.

11.2 Action Area Indirect Effects

Indirect effects to the action area are similar to those in the project area, including potential changes to local hydrology, increased competition, and increased noise disturbance and human presence. These impacts are discussed above in Chapter 10, and that discussion applies to action area as well.

12. RECOMMENDATIONS FOR AVOIDANCE, MINIMIZATION, AND MITIGATION

12.1 Wildlife

No additional mitigation or avoidance measures are needed to minimize impacts to wildlife or habitat, although suitable habitat is available in the action area to support wildlife disturbed or flushed from the project area.

12.2 Migratory Birds

Construction activities should be conducted outside the bird nesting season if feasible. Efforts should be made in accordance with the MBTA of 1918 (16 United States Code [USC] 703, et seq.), which protects against the "taking" of migratory birds, their nests, and their eggs, except as permitted by the USFWS. Project area vegetation may be used for nesting birds, and removal of vegetation could lead to destruction of nests. To avoid direct effects 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 effects 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 affect the Contractor's construction schedule.

As a special consideration, numerous small or medium-sized burrows were observed throughout the project area. Many of these burrows appear to be unoccupied at the time of survey. Unoccupied burrows provide habitat for other species, such as burrowing owls. The burrowing owl is a species of greatest conservation need (SGCN), and empty burrows should be checked during migratory bird surveys to minimize effects.

12.3 Vegetation

Following completion of the proposed project, areas disturbed due to construction activities in the project area would be revegetated using seed from native species that approximate pre-disturbance

plant community composition. The project area shall be revegetated using the NMDOT Seed List described on the NMDOT Revegetation Zones web map (NMDOT 2017).

To minimize the introduction and spread of additional noxious weeds in areas where vegetation occurs, the construction contractor shall use best management practices, 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. Siberian elm, salt cedar, and tree of heaven occur within the project area and may be treated or removed at the discretion of NMDOT.

12.4 Soils

It is recommended that the contractor use erosion control measures as necessary to minimize sediment from leaving the construction site. A native, weed-free seed mix is recommended to be applied to all disturbed soils to further minimize potential erosion and quickly re-establish vegetation to improve soil holding capabilities.

12.5 Waterways

Mitigation measures to reduce storm water pollution are in place in the project area intended to minimize effects to existing drainages.

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 and asphalt products, thereby leading to a possibility of contaminant spills and leaks (e.g., fuel, asphalt, 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 National Pollutant Discharge Elimination System (NPDES) 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). Therefore, NPDES permit coverage for the project would be required.

It is recommended to carry out the project during non-rainy periods. 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.

13. CONCLUSION

The results of the field survey found 32 plants, four bird, three mammal, two reptile, and two invertebrate species. Among the plants were three noxious weed species, all of which were Class C noxious weeds that may be treated at the discretion of the NMDOT. Noxious weed BMPs should be followed to prevent the spread of the infestation in the project area. Among the fauna, abundant bird nests were observed throughout the ROW. Parametrix recommends pre-construction nesting surveys migratory birds, including burrowing owls, during the nesting season. Additionally, one ephemeral drainage was identified in the project area, but it was determined as non-jurisdictional.

No listed species were identified in the project or action area during the field survey. A total of 21 listed species have been identified for the project area by various federal, state, and the BLM. Due to lack of habitat, 20 listed species were eliminated from further consideration. One species was considered further, but it was determined that the project will have no effect to these species. Because no USFWS threatened or endangered species or critical habitats will be impact by this project, no consultation with the USFWS is necessary.

Project impacts include permanent direct effects to natural and biological resources in the project area such as mortality, habitat loss for some species, and changes in hydrology. Temporary direct impacts within the project area include short-term loss of shelter, food resources, increased noise disturbance, and increased human activity. Both the direct and temporary direct effect are considered negligible.

Indirect effects to the project area include fauna displacement, changes in hydrology and erosion, and increased noise and human disturbance overtime. Problems such as runoff can be controlled by the mitigation measures outlined in Chapter 12 of this report. Other BMPs for the contractor are outlined there as well.

14. REPORT PREPARERS AND CERTIFICATION

It is the opinion of Parametrix that the proposed action would not violate any of the provisions of the Endangered Species Act of 1973, as amended. The results and conclusions discussed in this report are based on actual field examination and represent our best professional judgment, based on information provided by the project proponent, applicable agencies, and other sources.

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7/29/2022

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15. REFERENCES

City of Albuquerque and Bernalillo County. 2017. *Albuquerque and Bernalillo County Comprehensive Plan*. March 2017.

Cornell Lab of Ornithology. All About Birds. 2021. https://www.allaboutbirds.org/guide/. Accessed September 21, 2021.

Environmental Protection Agency (EPA). 2021. Urban Waters and the Middle Rio Grande/Albuquerque (New Mexico). Available online at: https://www.epa.gov/urbanwaterspartners/urban-waters-and-middle-rio-grandealbuquerque-new-mexico. Accessed November 9, 2021.

Federal Emergency Management Agency, Department of Homeland Security (FEMA, DHS). 2020. FIRM Panels for the US 180 Project Area. Available online at: https://www.fema.gov/national-flood-hazard-layer-nfhl. Accessed September 21, 2021.

Griffith, G.E., Omernik, J.M., McGraw, M.M., Jacobi, G.Z., Canavan, C.M., Schrader, T.S., Mercer, D., Hill, R., and Moran, B.C., 2006, Ecoregions of New Mexico (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,400,000).

Hawley J. W. 1986. Physiographic Provinces I. In *New Mexico in Maps*, edited by John L. Williams, pp. 23-25. Second Edition, University of New Mexico Press, Albuquerque.

Lowry, J. H, Jr., R. D. Ramsey, K. Boykin, D. Bradford, P. Comer, S. Falzarano, W. Kepner, J. Kirby, L. Langs, J. Prior-Magee, G. Manis, L. O'Brien, T. Sajwaj, K. A. Thomas, W. Rieth, S. Schrader, D. Schrupp, K. Schulz, B. Thompson, C. Velasquez, C. Wallace, E. Waller and B. Wolk. 2005. Southwest Regional Gap Analysis Project: Final Report on Land Cover Mapping Methods, RS/GIS Laboratory, Utah State University, Logan, Utah. Accessed February 6, 2019. Available at: https://swregap.org/data/landcover/

Lichvar, R.W. and S. W. McColley. 2008. A Field Guide to the Identification of the Ordinary High-Water Mark (OHWM) in the Arid West Region of the Western United States. Cold Regions Research and Engineering Laboratory U.S. Army Engineer Research Center, 72 Lyme Road, Hanover, NM 03755-1290.

New Mexico Department of Agriculture (NMDA). 2020. New Mexico Noxious Weed List Update. Memorandum dated October 19, 2016. New Mexico State University, Las Cruces, NM. Available online at: https://www.nmda.nmsu.edu/wp-content/uploads/2020/07/Weed-List-memo-and-weed-list-2020.pdf Accessed on September 21, 2021.

New Mexico Department of Game and Fish (NMDGF). 2021. Biota Information system of New Mexico (BISON-M). Available online at: http://www.bison-m.org/. Accessed on September 21, 2021.

New Mexico Energy, Minerals, and Natural Resources, Forestry Division (NMEMNRD). 2020. New Mexico State Endangered Plant Species. Available online at: http://www.emnrd.state.nm.us/SFD/ForestMgt/Endangered.html. Accessed on September 21, 2021.

New Mexico Department of Transportation (NMDOT). 2017. Revegetation Zones and Seed Lists web map. Available online at: https://nmdot.maps.arcgis.com/apps/Viewer/index.html?appid=57543133e0d34c3688df5dfd37d738fe. Accessed on September 21, 2021.

New Mexico Rare Plant Technical Council (NMRPTC). 1999. New Mexico Rare Plants. Albuquerque, NM: New Mexico Rare Plants Home Page. Available online at: http://nmrareplants.unm.edu. (Last update: January 31, 2018). Accessed on September 21, 2021.

Natural Resources Conservation Service (NRCS). 2021. Web Soil Survey. Available online at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed on September 21, 2021.

U.S. Geological Survey (USGS). 2005. National Gap Analysis Program. Southwest Regional GAP Analysis Project—Land Cover Description. RS/GIS Laboratory, College of Natural Resources, Utah State University.

_____. Hydrography. 2020. NHD (National Hydrography Dataset). Available at: http://nhd.usgs.gov/ (last modified 19, April 2018). Accessed on September 21, 2021.

United States Fish and Wildlife Service (USFWS). 2020a. IPaC (Information, Planning, and Compliance) Resource Report. Available at: http://ecos.fws.gov/ipac/. Accessed April 15, 2020.

_____. National Wetland Inventory Mapper. 2020b. Available online at: https://www.fws.gov/wetlands/index.html. Accessed on April 15, 2020.

_____. Environmental Conservation System Online: USFWS Threatened & Endangered Species Active Critical Habitat Report. Available online at: https://ecos.fws.gov/ecp/report/critical-habitat. Accessed on October 4, 2021.

Western Regional Climate Center (WRCC). 2020. Cooperative Climatological Data Summaries, NOAA Cooperative Stations -Temperature and Precipitation. Available online: https://wrcc.dri.edu/summary/Climsmnm.html. Accessed April 21, 2020

Appendix A

Pre-Field Resources

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
Phone: (505) 346-2525 Fax: (505) 346-2542
http://www.fws.gov/southwest/es/NewMexico/
http://www.fws.gov/southwest/es/ES_Lists_Main2.html

In Reply Refer To: October 13, 2021
Consultation Code: 02ENNM00-2022-SLI-0046
Event Code: 02ENNM00-2022-E-00105
Project Name: Unser NR Survey

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of New Mexico wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make "no effect" determinations. If you determine that your proposed action will have "no effect" on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

If you determine that your proposed action may affect federally-listed species, consultation with the Service will be necessary. Through the consultation process, we will analyze information contained in a biological assessment that you provide. If your proposed action is associated with

Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a habitat conservation plan) is necessary to harm or harass federally listed threatened or endangered fish or wildlife species. In either case, there is no mechanism for authorizing incidental take "after-the-fact." For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

The scope of federally listed species compliance not only includes direct effects, but also any interrelated or interdependent project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations) and any indirect or cumulative effects that may occur in the action area. The action area includes all areas to be affected, not merely the immediate area involved in the action. Large projects may have effects outside the immediate area to species not listed here that should be addressed. If your action area has suitable habitat for any of the attached species, we recommend that species-specific surveys be conducted during the flowering season for plants and at the appropriate time for wildlife to evaluate any possible project-related impacts.

Candidate Species and Other Sensitive Species

A list of candidate and other sensitive species in your area is also attached. Candidate species and other sensitive species are species that have no legal protection under the ESA, although we recommend that candidate and other sensitive species be included in your surveys and considered for planning purposes. The Service monitors the status of these species. If significant declines occur, these species could potentially be listed. Therefore, actions that may contribute to their decline should be avoided.

Lists of sensitive species including State-listed endangered and threatened species are compiled by New Mexico state agencies. These lists, along with species information, can be found at the following websites:

Biota Information System of New Mexico (BISON-M): www.bison-m.org

New Mexico State Forestry. The New Mexico Endangered Plant Program: www.emnrd.state.nm.us/SFD/ForestMgt/Endangered.html

New Mexico Rare Plant Technical Council, New Mexico Rare Plants: nmrareplants.unm.edu

Natural Heritage New Mexico, online species database: nhnm.unm.edu

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program website, www.fws.gov/wetlands/Data/Mapper.html integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's Migratory Bird Office. To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern at website www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction.

BALD AND GOLDEN EAGLES

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to "disturb" eagles. Under the BGEPA, the Service may issue limited permits to incidentally "take" eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at www.fws.gov/midwest/eagle/guidelines/bgepa.html.

On our web site www.fws.gov/southwest/es/NewMexico/SBC_intro.cfm, we have included conservation measures that can minimize impacts to federally listed and other sensitive species. These include measures for communication towers, power line safety for raptors, road and highway improvements, spring developments and livestock watering facilities, wastewater facilities, and trenching operations.

We also suggest you contact the New Mexico Department of Game and Fish, and the New Mexico Energy, Minerals, and Natural Resources Department, Forestry Division for information regarding State fish, wildlife, and plants.

Thank you for your concern for endangered and threatened species and New Mexico's wildlife habitats. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further consultation on your proposed activity, please call 505-346-2525 or email nmesfo@fws.gov and reference your Service Consultation Tracking Number.

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New Mexico Ecological Services Field Office
2105 Osuna Road Ne
Albuquerque, NM 87113-1001
(505) 346-2525

Project Summary

Consultation Code: 02ENNM00-2022-SLI-0046
Event Code: Some(02ENNM00-2022-E-00105)
Project Name: Unser NR Survey
Project Type: TRANSPORTATION
Project Description: A IPAC list for pre field research on a project
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@35.181823699999995,-106.721694771474,14z

Counties: Bernalillo County, New Mexico

Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
New Mexico Meadow Jumping Mouse *Zapus hudsonius luteus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7965	Endangered

Birds

NAME	STATUS
Mexican Spotted Owl *Strix occidentalis lucida* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8196	Threatened
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Rio Grande Silvery Minnow *Hybognathus amarus*	Endangered

Population: Wherever found, except where listed as an experimental population
There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/1391

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Cassin's Finch *Carpodacus cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15

NAME	BREEDING SEASON
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Grace's Warbler *Dendroica graciae* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 20 to Jul 20
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Pinyon Jay *Gymnorhinus cyanocephalus* 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
Virginia's Warbler *Vermivora virginiae* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9441	Breeds May 1 to Jul 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum

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

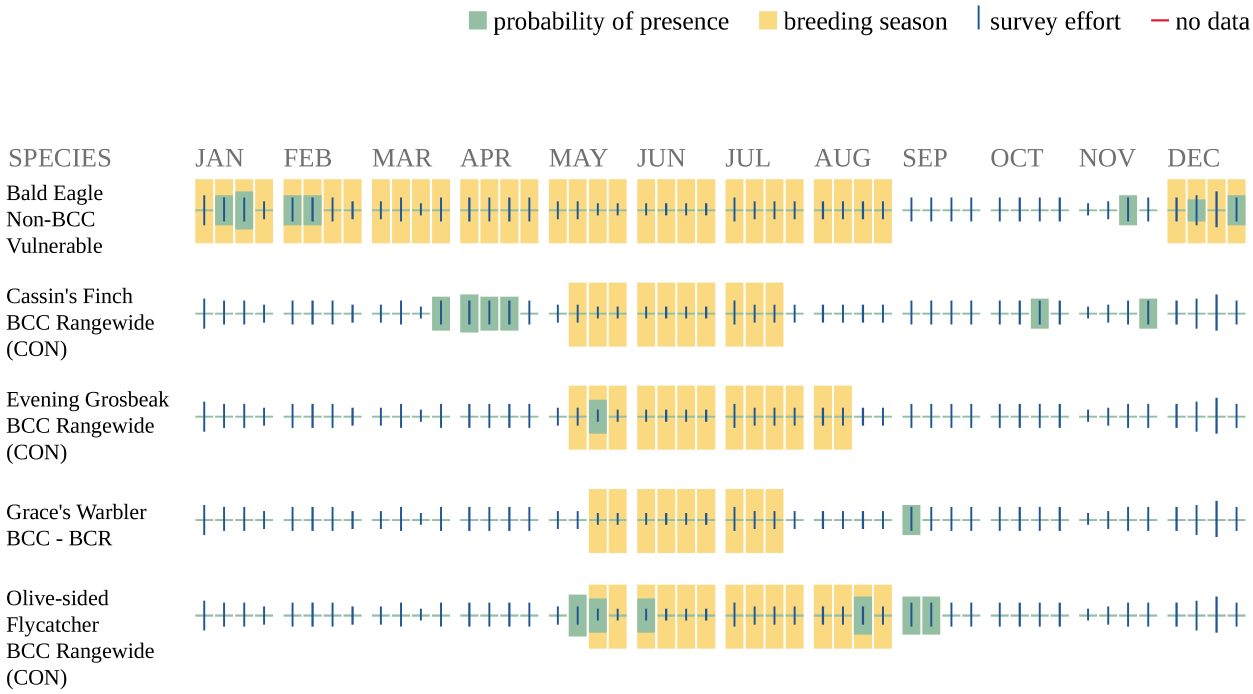
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

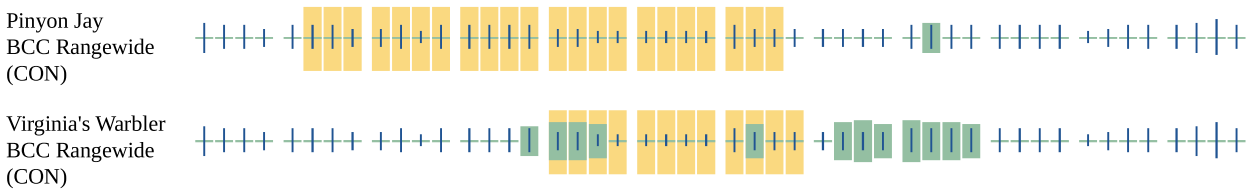
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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

No Data (–)
A week is marked as having no data if there were no survey events for that week.

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





Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

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

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

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

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

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

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical

Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

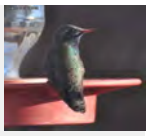
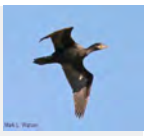
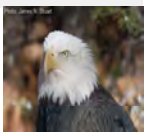
Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project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

Species of Greatest Conservation Need and Federal or State Threatened/Endangered

Bernalillo

Taxonomic Group	# Species	Taxonomic Group	# Species
Birds	13	Fish	1
Mammals	2		

TOTAL SPECIES: 16

Common Name	Scientific Name	NMGF	US FWS	Critical Habitat	SGCN	Photo
Spotted Bat	Euderma maculatum	T			Y	
Meadow Jumping Mouse	Zapus luteus luteus	E	E	Y	Y	
Yellow-billed Cuckoo (western pop)	Coccyzus americanus occidentalis		T	Y	Y	
Broad-billed Hummingbird	Cynanthus latirostris	T			Y	
Least Tern	Sternula antillarum	E			Y	
Neotropic Cormorant	Phalacrocorax brasilianus	T			Y	
Bald Eagle	Haliaeetus leucocephalus	T			Y	
Common Black Hawk	Buteogallus anthracinus	T			Y	
Mexican Spotted Owl	Strix occidentalis lucida		T	Y	Y	
Aplomado Falcon	Falco femoralis	E	E		Y	

Species of Greatest Conservation Need and Federal or State Threatened/Endangered

Bernalillo

Common Name	Scientific Name	NMGF	US FWS	Critical Habitat	SGCN	Photo
Peregrine Falcon	Falco peregrinus	T			Y	
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	E	Y	Y	
Bell's Vireo	Vireo bellii	T			Y	
Gray Vireo	Vireo vicinior	T			Y	
Baird's Sparrow	Centronyx bairdii	T			Y	
Rio Grande Silvery Minnow	Hybognathus amarus	E	E	Y	Y	

Table 1. Rare Plants for Bernalillo County

Scientific Name	NMRPTC	FWS	State of NM	USFS	BLM	Navajo Nation	State Rank	Global Rank	Counties
Astragalus feensis	Rare						S3	G3	Bernalillo, Hidalgo, Sandoval, Santa Fe, Torrance
Dalea scariosa	Dropped						S3	G3	Bernalillo, Sandoval, Socorro, Valencia
Delphinium sapellonis	Dropped						S3	G3	Bernalillo, Colfax, Los Alamos, Mora, San Miguel, Sandoval, Santa Fe, Taos ,Torrance
Heuchera pulchella	Rare			Sensitive			S2	G2	Bernalillo, Sandoval, Torrance
Mentzelia todiltoensis	Rare				Sensitive		S3	G3	Bernalillo, Cibola, Santa Fe, Socorro
Muhlenbergia arsenei	Dropped						S3	G5	Bernalillo, Los Alamos, McKinley, Sandoval, Santa Fe
Physaria iveyana									Bernalillo
Sclerocactus papyracanthus	Dropped						S4	G4	Bernalillo, Cibola, Dona Ana, Grant, Lincoln, Los Alamos, Otero, Rio Arriba, Sandoval, Santa Fe, Sierra, Socorro, Torrance
Silene plankii	Rare						S2	G2	Bernalillo, Dona Ana, Sandoval, Sierra, Socorro, Torrance
Spiranthes magnicamporum	Dropped		Endangered				S2	G3G4	Bernalillo, Guadalupe, Rio Arriba, Santa Fe

NEW MEXICO DEPARTMENT OF AGRICULTURE
Office of the Director/Secretary
MSC 3189
New Mexico State University
P.O. Box 30005
Las Cruces, NM 88003-8005
Phone: (575) 646-3007

July 2, 2020

MEMORANDUM

TO: General Public

FROM: Director/Secretary Jeff Witte

SUBJECT: New Mexico Noxious Weed List Update

Petitions to add new plant species to the state noxious weed list were solicited and received by the New Mexico Department of Agriculture (NMDA) from Cooperative Weed Management Areas, individuals, agencies and organizations. The petitions were reviewed by the New Mexico Weed List Advisory Committee using ecological, distribution, impact, and legal status criteria within the State of New Mexico and adjoining states.

This list does not include every plant species with the potential to negatively impact the state's environment or economy. Landowners and land managers are encouraged to recognize plant species listed on the federal noxious weed list and other western states' noxious weed lists as potentially having negative impacts and to manage them accordingly.

As required by the Noxious Weed Management Act of 1998, the following plant species *(see attached New Mexico Noxious Weed List)* are designated as noxious weeds to be targeted for control or eradication. Thank you to the Cooperative Weed Management Areas, individuals, agencies and organizations who participated in this process.

attachment: New Mexico Noxious Weed List

IMG/jm/jw

New Mexico Noxious Weed List

Updated June 2020

Class A Species

Class A species are currently not present in New Mexico or have limited distribution. Preventing new infestations of these species and eradicating existing infestations is the highest priority.

Common Name	Scientific Name
Black henbane	*Hyoscyamus niger*
Camelthorn	*Alhagi psuedalhagi*
Canada thistle	*Cirsium arvense*
Dalmation toadflax	*Linaria dalmatica*
Diffuse knapweed	*Centaurea diffusa*
Dyer's woad	*Isatis tinctoria*
Giant salvinia	*Salvinia molesta*
Hoary cress	*Cardaria spp.*
Leafy spurge	*Euphorbia esula*
Oxeye daisy	*Leucanthemum vulgare*
Purple loosestrife	*Lythrum salicaria*
Purple starthistle	*Centaurea calcitrapa*
Ravenna grass	*Saccharum ravennae*
Scentless chamomile	*Matricaria perforata*
Scotch thistle	*Onopordum acanthium*
Spotted knapweed	*Centaurea biebersteinii*
Yellow starthistle	*Centaurea solstitialis*
Yellow toadflax	*Linaria vulgaris*

Class B Species

Class B species are limited to portions of the state. In areas with severe infestations, management should be designed to contain the infestation and stop any further spread.

Common Name	Scientific Name
African rue	*Peganum harmala*
Bull thistle	*Cirsium vulgare*
Chicory	*Cichorium intybus*
Halogeton	*Halogeton glomeratus*
Malta starthistle	*Centaurea melitensis*
Perennial pepperweed	*Lepidium latifolium*
Poison hemlock	*Conium maculatum*
Quackgrass	*Elytrigia repens*
Spiny cocklebur	*Xanthium spinosum*
Teasel	*Dipsacus fullonum*

Class C Species

Class C species are widespread in the state. Management decisions for these species should be determined at the local level, based on feasibility of control and level of infestation.

Common Name	Scientific Name
Cheatgrass	*Bromus tectorum*
Curlyleaf pondweed	*Potamogeton crispus*
Eurasian watermilfoil	*Myriophyllum spicatum*
Giant cane	*Arundo donax*
Hydrilla	*Hydrilla verticllata*
Jointed goatgrass	*Aegilops cylindrica*
Musk thistle	*Carduus nutans*
Parrotfeather	*Myriophyllum aquaticum*
Russian knapweed	*Acroptilon repans*
Russian olive	*Elaeagnus angustifolia*
Saltcedar	*Tamarix spp.*
Siberian elm	*Ulmus pumila*
Tree of heaven	*Ailanthus altissima*

Watch List Species

Watch List species are species of concern in the state. These species have the potential to become problematic. More data is needed to determine if these species should be listed. When these species are encountered, please document their location and contact appropriate authorities.

Common Name	Scientific Name
Buffelgrass	*Pennisetum ciliaris*
Crimson fountaingrass	*Pennisetum setaceum*
Meadow knapweed	*Centaurea pratensis*
Myrtle spurge	*Euphorbia myrsinites*
Pampas grass	*Cortaderia sellonana*
Yellow bluestem	*Bothriochloa ischaemum*

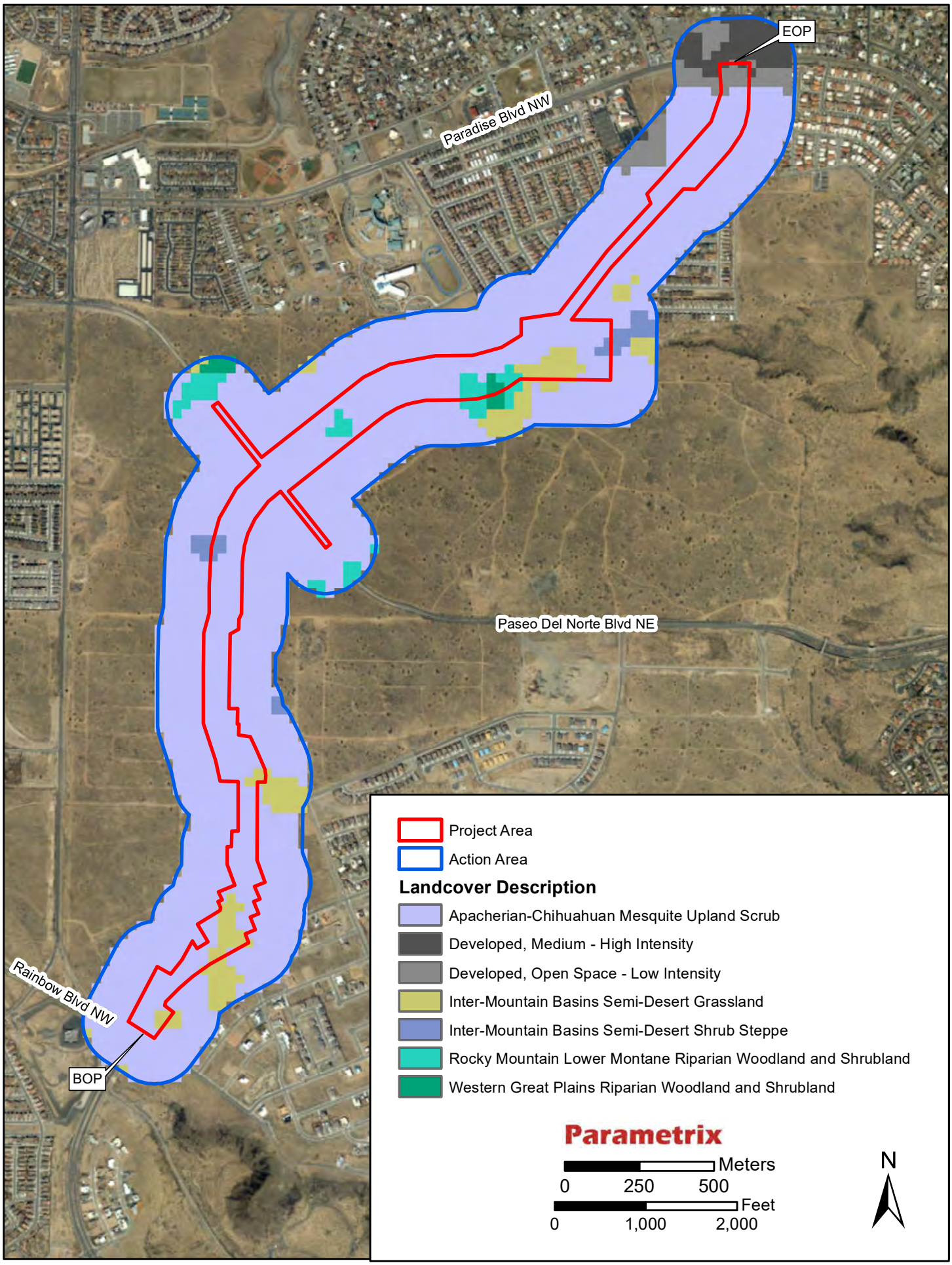


Figure X: SWReGAP Landcover in the Project Area

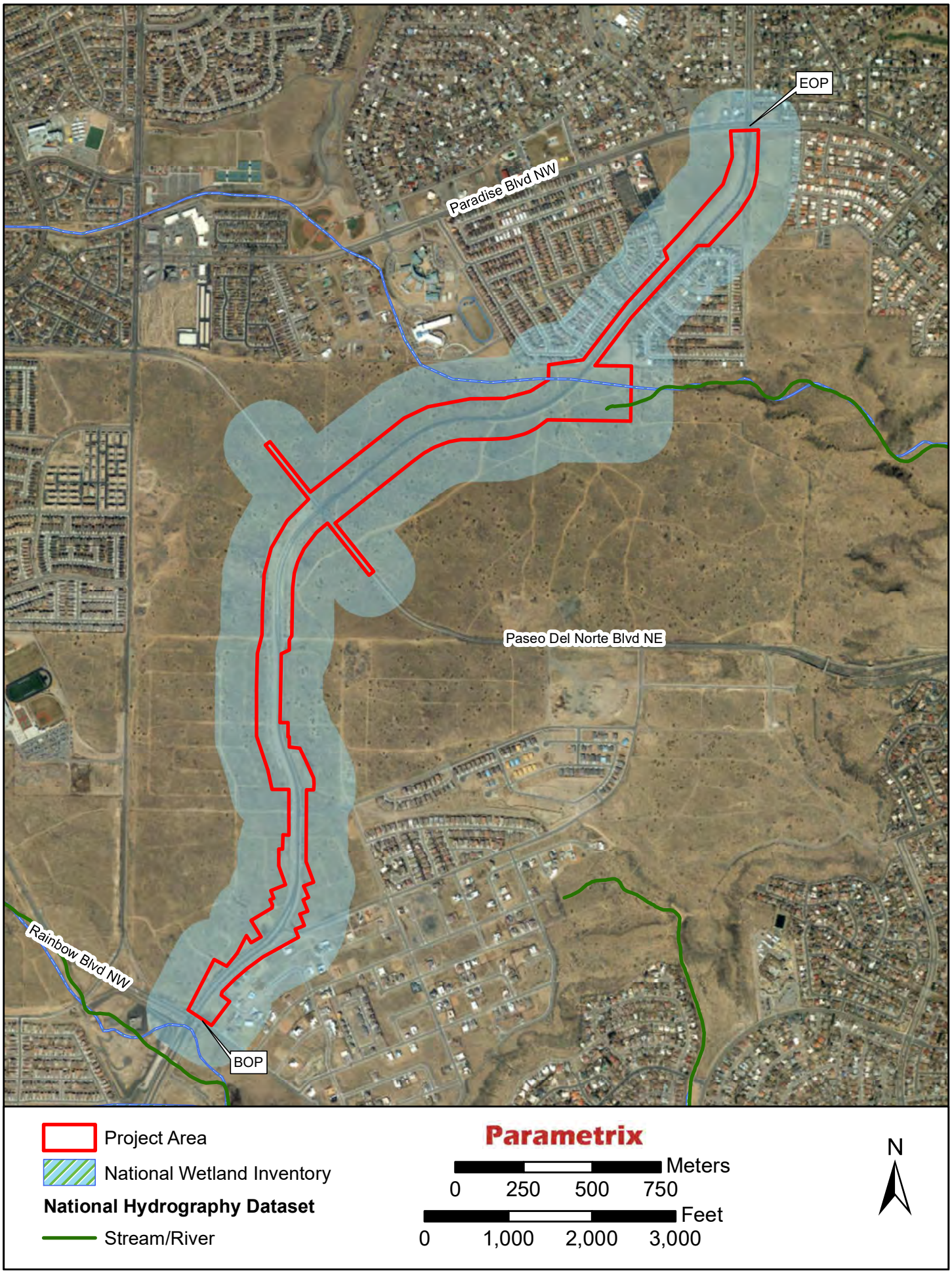


Figure X: Overview of waterways and wetlands in the project and action area

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane, Central Zone (FIPS 3002). The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by City of Albuquerque, 2010, Bernalillo County, 2004, and 2010, Bureau of Land Management, 2003, National Geodetic Survey, 2003, and United States Geological Survey (USGS), 1999. Additional information was photogrammetrically compiled at a scale of 1:12,000 from U.S. Department of Agriculture aerial photography dated 2009.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A: Cross section line
- 23 - - - 23: Transect line
- 97° 07' 30", 32° 22' 30": Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 76^00m E: 1000-meter Universal Transverse Mercator grid values, zone 13
- 600000 FT: 5000-foot grid ticks: New Mexico State Plane coordinate system, Central zone (FIPSZONE 3002), Transverse Mercator
- DX5510: Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5: River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL

SEPTEMBER 20, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

April 2, 2002
November 19, 2003
September 26, 2008
August 16, 2012 - to update corporate limits, to change Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to add roads and road names, to incorporate previously issued Letters of Map Change.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0104H

FIRM
FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY, NEW MEXICO
AND INCORPORATED AREAS

PANEL 104 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0104	H
BERNALILLO COUNTY UNINCORPORATED AREAS	350001	0104	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35001C0104H

MAP REVISED
AUGUST 16, 2012

Federal Emergency Management Agency

NOTES TO USERS

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Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

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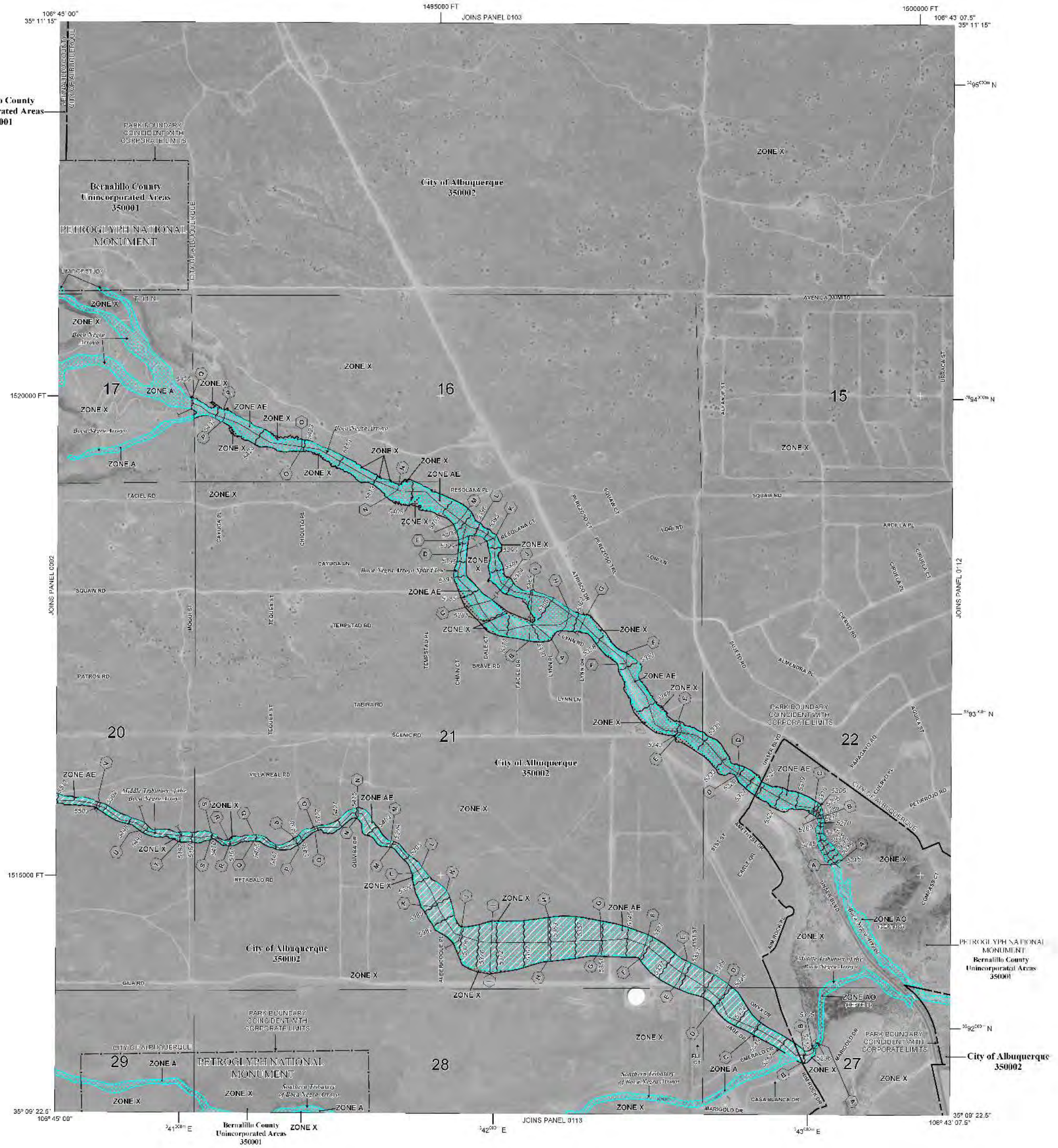

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For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0111G

FIRM
FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 111 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0111	G
BERNALILLO COUNTY UNINCORPORATED AREAS	350001	0111	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35001C0111G

MAP REVISED
SEPTEMBER 26, 2008

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane, Central Zone. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Bernalillo County produced at a scale of 1:12,000 from photography dated 1999 or later.

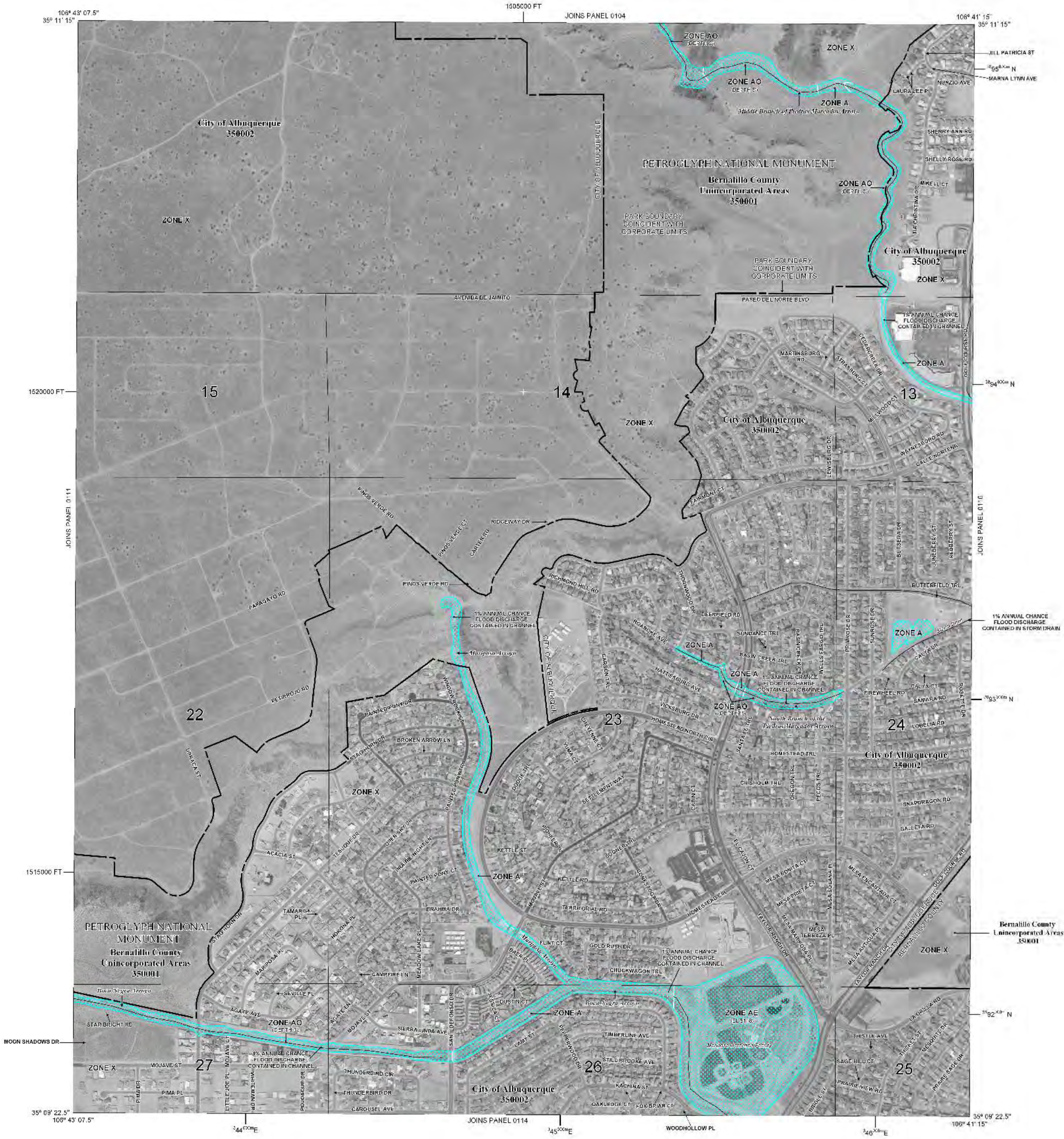
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA Boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 — Base Flood Elevation line and value; elevation in feet*
(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*
*Referenced to the North American Vertical Datum of 1988
A — A: Cross section line
23 - - - - 23: Transect line
97° 07' 30", 32° 22' 30": Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{47}76^{000m}$E: 1000-meter Universal Transverse Mercator grid values, zone 13
600000 FT: 5000-foot grid ticks: New Mexico State Plane coordinate system, Central zone (FIPSZONE 3002), Transverse Mercator
DX5510: Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5: River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL

SEPTEMBER 20, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

April 2, 2002 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to add roads and road names, to reflect updated topographic information, and to incorporate previously issued Letters of Map Revision.

November 19, 2003 - to update corporate limits and to incorporate previously issued Letters of Map Revision.

September 26, 2008 - to update corporate limits, to change Special Flood Hazard Areas, to add roads and road names, to incorporate previously issued Letters of Map Revision, to reflect updated topographic information, to change Base Flood Elevations, to add Base Flood Elevations.

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MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0112G

FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 112 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0112	G
BERNALILLO COUNTY UNINCORPORATED AREAS	350001	0112	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35001C0112G

MAP REVISED
SEPTEMBER 26, 2008

Federal Emergency Management Agency

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 Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico

November 8, 2021

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

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

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

Map Scale: 1:21,100 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 300 600 1200 1800

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

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 1:24,000.

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: Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico
Survey Area Data: Version 16, Sep 12, 2021

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

Date(s) aerial images were photographed: Jun 23, 2018—Sep 9, 2018

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
AmB	Alemeda sandy loam, 0 to 5 percent slopes	451.7	87.3%
BCC	Bluepoint loamy fine sand, 1 to 9 percent slopes	1.1	0.2%
MWA	Madurez-Wink associatin, gently sloping	64.7	12.5%
Totals for Area of Interest		**517.5**	**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.

Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico

AmB—Alemeda sandy loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1vw7
Elevation: 2,200 to 6,000 feet
Mean annual precipitation: 4 to 12 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 170 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Alemeda and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alemeda

Setting

Landform: Hillslopes, lava flows
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank, center third of mountainflank, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits derived from igneous and sedimentary rock

Typical profile

H1 - 0 to 4 inches: sandy loam
H2 - 4 to 13 inches: gravelly sandy loam
H3 - 13 to 26 inches: very cobbly loam
H4 - 26 to 30 inches: bedrock

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 50 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 6.0
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R042XA056NM - Malpais

Hydric soil rating: No

Minor Components

Akela

Percent of map unit: 8 percent
Ecological site: R042XA056NM - Malpais
Hydric soil rating: No

Basalt outcrop

Percent of map unit: 8 percent
Hydric soil rating: No

Madurez

Percent of map unit: 7 percent
Ecological site: R042XA052NM - Loamy
Hydric soil rating: No

Wink

Percent of map unit: 7 percent
Ecological site: R042XA052NM - Loamy
Hydric soil rating: No

BCC—Bluepoint loamy fine sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2sy14
Elevation: 4,460 to 6,000 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 170 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Bluepoint and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bluepoint

Setting

Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium and/or eolian deposits

Typical profile

C1 - 0 to 5 inches: loamy fine sand
C2 - 5 to 28 inches: loamy fine sand
C3 - 28 to 53 inches: loamy fine sand

C4 - 53 to 60 inches: loamy sand

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.04 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 1 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: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: R042XA054NM - Deep Sand
Hydric soil rating: No

Minor Components

Bluepoint family

Percent of map unit: 6 percent
Hydric soil rating: No

Wink

Percent of map unit: 3 percent
Hydric soil rating: No

Pajarito

Percent of map unit: 2 percent
Hydric soil rating: No

Caliza

Percent of map unit: 2 percent
Hydric soil rating: No

Arizo

Percent of map unit: 1 percent
Hydric soil rating: No

Madurez

Percent of map unit: 1 percent
Hydric soil rating: No

MWA—Madurez-Wink associatin, gently sloping

Map Unit Setting

National map unit symbol: 1vxn
Elevation: 1,400 to 6,000 feet
Mean annual precipitation: 4 to 13 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 170 to 290 days
Farmland classification: Not prime farmland

Map Unit Composition

Madurez and similar soils: 55 percent
Wink and similar soils: 25 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Madurez

Setting

Landform: Fan piedmonts, alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous and sedimentary rock

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 21 inches: fine sandy loam
H3 - 21 to 60 inches: sandy loam

Properties and qualities

Slope: 1 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: 7 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R042XA052NM - Loamy

Hydric soil rating: No

Description of Wink

Setting

Landform: Fan piedmonts, alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous and sedimentary rock

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 60 inches: sandy loam

Properties and qualities

Slope: 1 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 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 very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R042XA052NM - Loamy
Hydric soil rating: No

Minor Components

Bluepoint

Percent of map unit: 7 percent
Ecological site: R042XA054NM - Deep Sand
Hydric soil rating: No

Latene

Percent of map unit: 7 percent
Ecological site: R042XA052NM - Loamy
Hydric soil rating: No

Pajarito

Percent of map unit: 6 percent
Ecological site: R042XA051NM - Sandy
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf