# Appendix B

## Environmental Scoping Report

# Appendix B: I-40 Phase I-A/B Corridor Study, Environmental Scoping Report

*Prepared for*
New Mexico Department of Transportation

October 2024

Parametrix

# Appendix B: I-40 Phase I-A/B Corridor Study, Environmental Scoping Report

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## LIST OF EXHIBITS

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## ATTACHMENTS

# Acronyms and Abbreviations

| | |
|---|---|
| BLM | Bureau of Land Management |
| CBCs | concrete box culverts |
| CE | categorical exclusion |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| CWB | concrete wall barrier |
| dBA | A-weighted decibels |
| DOD | Department of Defense |
| EA | environmental assessment |
| EJ | Environmental Justice |
| EMNRD | New Mexico Energy, Minerals, and Natural Resources Department |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| FEMA | Federal Emergency Management Agency |
| FHWA | Federal Highway Administration |
| GHG | greenhouse gas |
| IDD | Infrastructure Design Directive |
| IPAC | Information for Planning and Consultation |
| MP | milepost |
| MRCOG | Mid-Region Council of Governments |
| MRMPO | Mid-Region Metropolitan Planning Organization |
| NAAQS | National Ambient Air Quality Standards |
| NAC | Noise Abatement Criteria |
| NEPA | National Environmental Policy Act |
| NHD | National Hydrography Dataset |
| NHNM | Natural Heritage New Mexico |
| NHPA | National Historic Preservation Act |
| NMCRIS | New Mexico Cultural Resources Information System |
| NMDGF | New Mexico Department of Game and Fish |

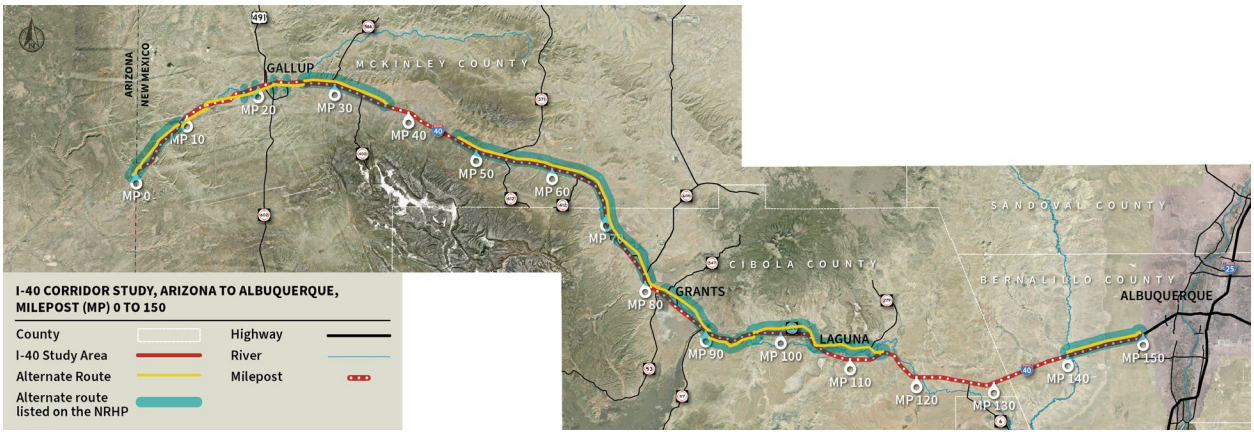
# Acronyms and Abbreviations (Continued)

| | |
|---|---|
| NMDOT | New Mexico Department of Transportation |
| NMED | New Mexico Environment Department |
| NMSLO | New Mexico State Land Office |
| NNDFW | Navajo Nation Department of Fish and Wildlife |
| NNHP | Navajo Natural Heritage Program |
| NPDES | National Pollutant Discharge Elimination System |
| NPS | National Park Service |
| NRCS | Natural Resources Conservation Service |
| NRHP | National Register of Historic Places |
| NWI | National Wetlands Inventory |
| NWRTPO | Northwest New Mexico Regional Transportation Planning Organization |
| PCE | Programmatic Categorical Exclusion |
| RCRA | Resource Conservation and Recovery Act |
| SHPO | State Historic Preservation Officer |
| SR | State Register |
| THPO | Tribal Historic Preservation Officer |
| TNM | Traffic Noise Model |
| USDA | United States Department of Agriculture |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| WOUS | Waters of the United States |

# 1. Introduction and Overview

This report documents the environmental investigations conducted by the New Mexico Department of Transportation (NMDOT) in support of the I-40 Phase I-A/B Corridor Study and the I-40 Highway Operations Improvement Plan. Exhibit 1 shows the general area studied, which includes I-40 from the Arizona state line at milepost (MP) 0 and continues east to the Atrisco Vista Interchange in Albuquerque at MP 150. The I-40 corridor study area includes I-40 and adjacent frontage roads that sometimes serve as alternate routes for I-40 travel. Exhibit 1 also identifies alternate routes that are listed on the National Register of Historic Places (NRHP), which is discussed as part of the cultural resources portion of this report.

Exhibit 1. I-40 Phase I-A/B Corridor Study Location Map and Alternate Routes




This report encompasses 3 major elements:

1. **Existing environmental conditions** in the broader I-40 corridor study area, which includes I-40 and several alternate routes located between MP 0 and 150. This report documents the environmental investigations conducted in support of the I-40 Phase I-A/B Corridor Study and the I-40 Highway Operations Improvement Plan (under development). Exhibit 1 shows the general area studied, which includes I-40 from the Arizona state line at MP 0 and continues east to the Atrisco Vista Interchange at MP 150. The study area also includes adjacent frontage roads that sometimes serve as alternate routes for I-40 travel. Exhibit 1 also identifies alternate routes that are listed on the NRHP, which is discussed as part of the cultural resources portion of this report. Existing conditions were determined to establish the general environmental setting and context at a high level and are not necessarily limited to the resources that will be impacted by the proposed build alternatives. Rather, it is what exists in the broader, overall corridor that could be affected, depending on the improvements that are ultimately recommended along I-40.
2. **Phase I-B alternatives evaluation** – This discussion summarizes the potential environmental effects associated with the proposed build alternatives. Because the approximate area potentially affected by the build alternatives is better defined than was known when the initial existing conditions investigations were performed, the discussion for this element includes an update of potentially impacted resources. In most instances, the potentially affected area has been narrowed.

3. **Environmental considerations for future projects** – The I-40 Highway Operations Improvement Plan is a priority plan for the phased implementation of the preferred alternative proposed for the I-40 corridor between MP 0 and 150. The environmental scoping section of this document in Chapter 16 identifies the anticipated environmental level of effort for improvements identified in the I-40 Highway Operations Improvement Plan and key environmental considerations as individual projects are advanced, such as logical termini and independent utility considerations, the primary environmental issues of concern, anticipated permitting needs, and other factors that could affect technical, schedule, and/or funding considerations for individual projects.

A summary of existing conditions and a description of the alternatives evaluated for Phase I-Bare summarized in the remainder of this report section. Chapter 2 through Chapter 14 discuss each specific resource, including cultural, natural, and community resources and explain the methods used to study impacts, existing conditions, and potential impacts of the proposed build alternatives. Chapter 15 provides a summary of the Phase I-B alternatives evaluation, and Chapter 16 identifies environmental considerations for future projects.

## 1.1 Existing Conditions Summary

Existing conditions were identified and documented as part of the Phase I-A Initial Evaluation of Alternatives for the I-40 Phase I-A/B Corridor Study. As part of this work, Parametrix completed a desktop review of environmental conditions and considerations for the study area. Exhibit 2 summarizes the environmental resources investigated, reference materials used for the investigation, and the geographic coverage considered for each resource. Exhibit 3 summarizes the findings of the existing conditions analysis conducted as part of Phase I-A.

**Exhibit 2. I-40 Corridor Study Phase I-A/B Environmental Study Areas Evaluated**

| Topic | Database/Reference | Study Area |
|---|---|---|
| Land Ownership and Land Use | Bureau of Land Management (BLM) New Mexico Statewide Spatial Data and Metadata, Surface Ownership (BLM 2022a)<br>Various state, regional, and local land use plans | 1,000-foot area the from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes |
| Visual Resources | *Environmental Review Toolkit: Guidelines for the Visual Impact Assessment of Highway Projects*. Federal Highway Administration (FHWA), (FHWA 2023b) | Qualitative review of potential visual components within the general corridor. |
| Noise | Google Earth review | Qualitative review of potential noise-sensitive land use developments within 500 feet of the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes |
| Air Quality | Environmental Protection Agency (EPA) Green Book (EPA 2022b) | 1/2-mile area from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes |
| Hazardous Materials | New Mexico Environment Department (NMED) Open Enviro Map (NMED 2022) | 1,000-foot area from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes |
| Demographics and Environmental Justice (EJ) | EJ Screening and Mapping Tool (EPA 2022a)<br>Justice40 Climate and EJ Screening Tool (Justice40 2022) | 1/2-mile area from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes |

(Table Continues)

## Exhibit 2. I-40 Corridor Study Phase I-A/B Environmental Study Areas Evaluated (Continued)

| Topic | Database/Reference | Study Area |
|---|---|---|
| Cultural and Historic Resources | New Mexico Cultural Resources Information System (NMCRIS) (NMCRIS 2022) | 500-meter (1,640-foot) area from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes |
| Section 4(f) Resources | Google Earth review and BLM New Mexico Statewide Spatial Data and Metadata, Surface Ownership (BLM 2022a) | Sites within the I-40 existing right-of-way |
| Wetlands and Waterways | United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2022a)<br>United States Geological Survey (USGS) National Hydrography Dataset (NHD) (USGS 2022) | Wetlands and waterways that intersect with I-40 and alternate routes |
| Floodplains | Federal Emergency Management Agency (FEMA) Flood Maps (FEMA 2022a) | Floodplains that intersect with I-40 and alternate routes |
| Threatened, Endangered and Species of Concern | USFWS Information for Planning and Consultation (IPAC) (USFWS 2022b)<br>BLM Sensitive Species List (BLM 2022b)<br>New Mexico Department of Game and Fish (NMDGF) Environmental Review Tool (NMDGF 2022)<br>New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) State Endangered Plant List (EMNRD 2023)<br>Natural Heritage New Mexico (NHNM) New Mexico Species Information (NHNM 2022a)<br>NHNM Rare Plant List (NHNM 2022b)<br>Navajo Nation Department of Fish and Wildlife (NNDFW) Navajo Endangered Species List (NNDFW 2023) | 1,000-foot area from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes |
| Farmland Soils | United States Department of Agriculture (USDA) Web Soil Survey (USDA 2022) | Potential farmland soils as identified by the USDA web soil survey that intersect I-40 and alternate routes |

## Exhibit 3. I-40 Corridor Study Phase I-A Summary of Environmental Existing Conditions and Considerations

| Resource | Summary |
|---|---|
| Land Ownership and Land Use | The study area crosses or approaches land owned by the BLM, New Mexico State Land Office (NMSLO), Department of Defense (DOD), National Park Service, several Native American tribes, and multiple private landowners. A large portion of the study area is located on tribal lands owned by the Laguna Pueblo, Acoma Pueblo, and the Navajo Nation. The Zuni Reservation is located several miles south of the study area, and they have traditionally used lands in the study area and are in the process of a land transfer involving portions of land currently owned by the DOD adjacent to I-40 near MP 33. In addition to residential areas, land use is primarily composed of recreational, mining and oil, ranching and grazing, retail, medical, hospitality, and energy industries. At this time, it is not anticipated that additional right-of-way will be needed to build proposed improvements to I-40, but this will need to be verified on a project-by-project basis. |
| Visual Resources | Visual components include background and middle-ground views of various landscapes and historic or culturally significant buildings along the I-40 mainline and other highways that parallel I-40. Background views include mesas and bluffs, such as the red sandstone cliffs in Red Rock Park east of Gallup and Mount Taylor near Grants. Middle-ground views include visual components such as the basalt flows east of Grants, the stream and small water pools that meander in an out of the highway right-of-way in this area, historic pueblos associated with the various tribal lands between Grants and Albuquerque, and the various components of Historic Route 66, such as historic buildings and bridges. Because the study area already includes a 4-lane interstate highway and various parallel state and local routes, the visual environment is unlikely to be impacted substantially by proposed improvements such as widening shoulders, adding a traffic lane and/or median barrier, or ramp extensions at interchanges. Parts of adjacent frontage roads pass near and through small communities. The potential for impact to visual resources is greater in these areas if major reconstruction occurs. |
| Noise | There are several communities that contain clusters of noise-sensitive land uses located within 500 feet of I-40 or alternate routes where proposed improvements could require a noise study. Improvements to I-40 could meet criteria for a Type I improvement, which would require a noise analysis. Type 1 projects include adding a travel lane or substantially changing the horizontal or vertical alignment of the roadway. Projects such as replacing pavement and widening shoulders are unlikely to require additional noise analysis. |
| Air Quality | Air quality is not anticipated to be an issue since air quality in the study area is in attainment with federal air quality requirements. In addition, greenhouse gas (GHG) analysis may be required for specific projects as part of the National Environmental Policy Act (NEPA) environmental analysis required for Phase I-C. |
| Hazardous Materials | There are no identified hazardous waste or mine facilities within 1,000 feet of I-40 and its adjacent alternate routes. However, there are over 400 locations with potential to contain hazardous material within 1,000 feet. Most of these locations are areas where oil and gas product storage tanks may exist. Improvements that are proposed in areas with potential hazardous materials may require additional investigation. |
| Demographics and EJ | Residents in the study area have a notably higher minority population, Native American population, and low-income population than the state of New Mexico. The minority population in the study area is about 82%, as compared to a state average of 63%. Native American communities in the study area include Laguna Pueblo, Acoma Pueblo, and the Navajo Nation. The Zuni Reservation is located several miles south of the study area. The study area crosses 20 census tracts, 13 of which are identified as disadvantaged. As such, ongoing engagement with the tribes and adjacent communities and consideration of potential effects will be critical as the study moves forward and individual projects are advanced. Efforts need to be taken to avoid alternatives that have potential to impact disadvantaged populations. This includes impacts through land acquisitions, increased traffic, and reduced access to community facilities that could negatively impact community cohesion. |

(Table Continues)

## Exhibit 3. I-40 Corridor Study Phase I-A Summary of Environmental Existing Conditions and Considerations (Continued)

| Resource | Summary |
|---|---|
| Cultural and Historic Resources | The study area traverses an area that has been inhabited for millennia by Paleoindian hunter/gatherers and prehistoric pueblo residencies. Several Native American tribes live in the study area. Additionally, the study area is located along a natural east/west travel corridor that has been used across the ages. Given this history, nearly 800 previously documented cultural and historical resources have been previously identified in the study area, which extends about 500 meters (1,640 feet) from I-40 and alternate routes. Of the nearly 800 resources, there are 7 sections of Route 66 that are listed on the NRHP. These NRHP-listed sections of the roadway span approximately 90 miles, much of which include frontage roads/alternate routes adjacent to I-40. Specific improvements to I-40 or adjacent alternate routes will require further analysis and consultation to identify impacts and avoidance and minimization measures under the New Mexico Cultural Properties Protection Act, National Historic Preservation Act (NHPA), and Section 4(f) under the United States Department of Transportation Act of 1966. |
| Section 4(f) Resources | 4(f) properties located in the study area include the Old Bowlin's Trading Post, the We the People/Babe Ruth Park, the Continental Divide Trail crossing, the El Malpais Conservation Area, and several sections of Historic Route 66. Additionally, there are 2 archeological sites, the Manuelito Archeological Complex and the Fort Wingate Ruin, that should be considered as potential 4(f) properties. These areas will require review as part of project development. |
| Wetlands and Waterways | There are 212 waterways that intersect with I-40 and adjacent alternate routes in the study area, including 17 named waterways. The Rio San Jose is the only perennial river; the other waterways in the study area are intermittent or ephemeral. A total of 93 wetlands were identified in the study area. Any impacts to wetlands and waterways from proposed improvements to I-40 and adjacent alternate routes would need to be identified, permitted, and mitigated to meet requirements under the Clean Water Act (CWA). |
| Floodplains | A total of 58 flood zones intersects with I-40 or adjacent alternate routes. Of these 58 flood zones, 48 intersect with I-40. The alternate routes intersect with 39 flood zones, which includes 9 additional floodplains that are not crossed by I-40, for a total of 58 unique flood zones crossed. Any proposed improvements to I-40 and adjacent alternate routes should consider impacts to floodplain elevation as part of roadway and drainage design. |
| Threatened and Endangered Species | A total of 94 sensitive species were identified as having the potential to occur within the study area. These sensitive species include flora and fauna that are identified as threatened and endangered at the federal and state levels, species listed as endangered by the Navajo Nation, and species of concern to the BLM and Natural Heritage New Mexico.<br>▪ 8 animal and 3 plant species are identified as being threatened, endangered, or a candidate species regulated under the Endangered Species Act (ESA).<br>▪ 5 animal species and 2 plant species are uniquely listed (are not already listed federally) as threatened or endangered by the state. New Mexico State threatened and endangered animal species are regulated by the NMDGF, and plant species are regulated by the EMNRD.<br>▪ 10 animal species and 18 plant species that are uniquely listed (meaning they are not already state or federally listed) as endangered by the Navajo Nation.<br>▪ 12 animal species and 9 plant species are uniquely listed (aren't state, federally, or NNDFW listed) by the BLM as sensitive.<br>Natural Heritage New Mexico reports there are 20 rare plant species that potentially occur in the study area in addition to 4 sensitive animal species, and 3 sensitive plant species that have been observed. Any species listed as threatened or endangered at either the federal, tribal, or state level are most critical and would require assessment, documentation, and consultation as part of environmental review if they or their critical habitat are located in areas on I-40 or alternate routes where improvements are proposed. Potential improvements to I-40 or adjacent frontage roads would also need to consider impacts to listed species of concern, such as those identified by the BLM and Natural Heritage New Mexico. |
| Farmland Soils | Most of the soil in the study area is classified by the USDA web soil survey as not prime farmland. However, there are several small areas where soils are classified as farmlands of local importance and prime farmland if irrigated. These soils could be impacted by proposed improvements that would affect areas outside of the existing right-of-way, which may require additional investigation and consultation with the USDA Natural Resources Conservation Service (NRCS). |

## 1.2 Phase I-B Alternatives Evaluated in Detail

Because of the large geographic coverage of the study area, engineering design details for the build alternatives and enhancements are conceptual and detailed plan and profile drawings and have not been prepared. For this reason, the environmental analysis for the Phase I-B evaluation was based on assumed construction footprints and relied on a desktop assessment based on published information, qualitative review, limited quantitative analysis, and limited field observations. Site-specific pedestrian resource surveys were not undertaken. The assessment included review of each I-40 corridor segment for each specific resource. A description of the alternatives evaluated is provided below and the impact analysis is provided in Chapters 2 through 15 of this report.

### 1.2.1 I-40 Mainline Improvements

This section describes the build alternatives evaluated in detail for Phase I-B of the I-40 Corridor Study: the Enhanced 2-Lane with Added Lanes Alternative and the 3-Lane Alternative. Both build alternatives include operational enhancements that are described later in this section. The Enhanced 2-Lane with Added Lanes Alternative was selected as the preferred alternative.

Both alternatives include widening I-40 to provide a continuous 12-foot inside and outside shoulders; addressing horizontal and vertical curve deficiencies; lengthening deficient ramps to provide adequate acceleration, deceleration, and merge areas; replacing and reconstructing existing bridges and drainage structures, as needed; and building crossovers in the median. The primary difference between the 2 build alternatives is the number of traffic lanes. The Enhanced 2-Lane with Added Lanes Alternative assumes 2 traffic lanes per direction, with a third lane in spot locations to meet capacity needs. This includes building a climbing lane in a single direction at locations listed below:

- Westbound near MP 76.5 to 77.5
- Westbound near MP 103.5 to 104.5
- Westbound near MP 115 to 116
- Westbound near MP 138.5 to 140
- Eastbound near MP 141.5 to 143

In addition, it is assumed that a third lane may eventually be built in Gallup in both directions between approximately MP 16 to 26. However, initially it is assumed that auxiliary lanes would be built in Gallup, which is different than building a contiguous 3-lane section. The difference is that the auxiliary lanes would provide a third lane between on and off ramps and would not provide a third lane under overpasses between the off ramps and on ramps where there is no merging traffic. Note that as improvements are made to the overpasses, they should be built with the assumption that they would need a minimum of 60 feet of clear-span width for each direction of travel (a total of 120 feet in both directions.

The 3-Lane Alternative assumes construction of an additional travel lane in both directions of I-40 over the entire length of the study area.

Existing roadway typical sections vary throughout the I-40 corridor. In general, I-40 has 2, 12-foot lanes in each direction with an outside shoulder width of 6 to 12 feet and an inside shoulder width of 4 to 6 feet; however, there are locations where the inside shoulder is less than 4 feet, particularly on bridges. The median width in the study area varies from about 10 feet to more than 100 feet. The proposed typical sections for the Enhanced 2-Lane with Added Lanes Alternative, is to widen the outside and inside shoulders to 12 feet. There are 3 typical sections proposed depending on the width of the median as described below.

Exhibit 4 shows the I-40 proposed typical section 1 that applies to about 50 miles of I-40. This typical section applies to areas with a narrow existing median (i.e., medians that are 26- to 64-feet wide). In these areas, the typical section for the Enhanced 2-Lane with Added Lanes Alternative would be built by widening and realigning I-40 to the median and building a concrete wall barrier (CWB) in the median to maintain safe separation of opposing traffic. For the 3-Lane Alternative, the third lane would be constructed to the outside.

### Exhibit 4. Typical Section 1: Enhanced 2-Lane with Flush Median and CWB, Future 3-Lane Widening to the Outside of I-40

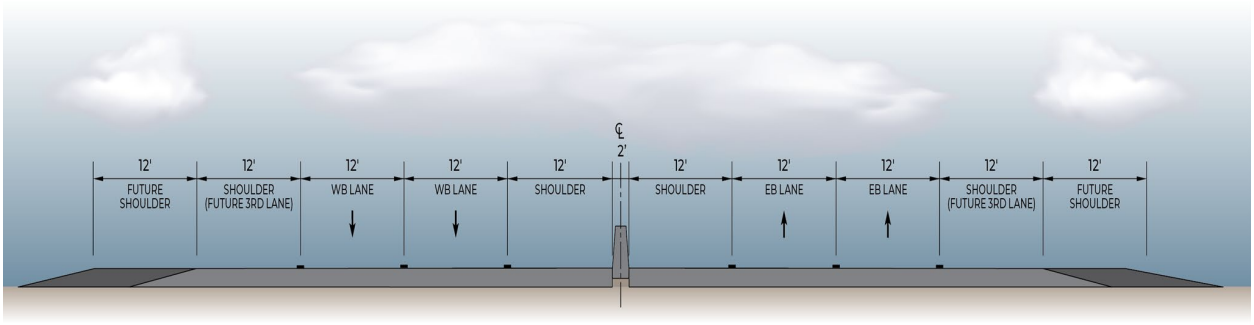



Exhibit 5 shows typical section 2 that applies to about 41 miles of I-40 with existing median widths of 54 to 64 feet. In these areas, the Enhanced 2-Lane with Added Lanes Alternative typical section would be built by widening and realigning I-40 to the median while maintaining a 50-foot median (measured from outside edges of driving lanes). A third lane could be added to the median but will require construction of CWB to maintain safe separation of opposing traffic lanes.

### Exhibit 5. Typical Section 2: Enhanced 2-Lane with Depressed Median, Future 3-Lane Widening to the Inside of I-40 with Flush Median with CWB

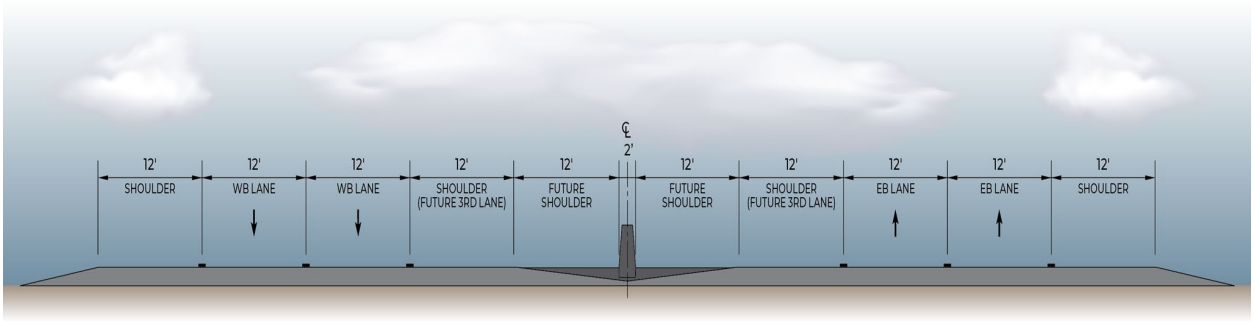
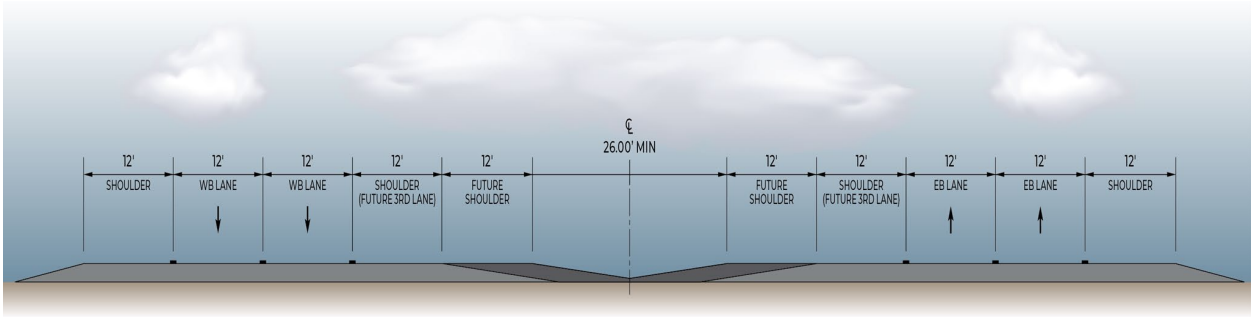


Exhibit 6 shows typical section 3 that applies to about 59 miles of I-40 and applies to I-40 segments with median widths of 80 feet or more. In these areas, both the Enhanced 2-Lane and the 3-Lane Alternatives would have all widening occur to the median. For both alternatives, a minimum 50-foot wide median would be maintained, so CWB would not be needed.

### Exhibit 6. Typical Section 3: Enhanced 2-Lane Alternative with Depressed Median, Future 3-Lane Widening to the Inside of I-40, No CWB




The typical sections above served as the basis for assessing potential impacts resulting from both build alternatives. Note that these typical sections apply to either an Enhanced 2-Lane typical section or a 3-Lane typical section. In areas where a third lane is proposed with the Enhanced 2-Lane with Added Lanes Alternative, the 3-lane typical section would apply. The proposed typical section and direction of widening within each segment is provided in Exhibit 7.

- Orange shows Typical Section 1 where widening for the Enhanced 2-Lane would occur to the I-40 median and any 3-lane widening would occur to the outside.
- Green shows Typical Section 2 where widening would occur to inside of I-40, but CWB would need to be constructed for the 3-Lane Alternative.
- Blue shows Typical Section 3 where all widening would occur to the I-40 median for both alternatives and no CWB would be required.

Exhibit 7. Area of Potential Impact by I-40 Corridor Segment

| # | Type | MP | Proposed I-40 Typical Section |
|---|---|---|---|
| 1 | Rural | 0 to 14.6 | MP 0 to 1.6 Enhanced 2-Lane widen to inside with median CWB. 3-Lane widen to outside. |
| | | | MP 1.6 to 7.5 Enhanced 2-Lane widen to inside, maintain depressed median. 3-Lane widen to inside, maintain depressed median, no CWB. |
| | | | MP 7.5 to 10 |
| | | | MP 10 to 14.6 |
| 2 | Urban (Gallup) | 14.6 to 30.3 | MP 14.6 to 30.3 |
| 3 | Rural | 30.3 to 38.0 | MP 30.3 to 38.0 Enhanced 2-Lane widen to inside with 50-foot median. 3-Lane widen to inside with median CWB. |
| 4 | Urban | 38.0 to 42.1 | MP 38.0 to 42.1 |
| 5 | Rural | 42.1 to 50.8 | MP 42.1 to 50.8 |
| 6 | Urban (Thoreau) | 50.8 to 55.2 | MP 50.8 to 55.2 |
| 7 | Rural | 55.2 to 62.6 | MP 55.2 to 58.8 |
| | | | MP 58.8 to 59.8 |
| | | | MP 59.8 to 62.6 |
| 8 | Urban (Prewitt) | 62.6 to 66.0 | MP 62.6 to 66.0 |
| 9 | Rural | 66.0 to 70.0 | MP 66.0 to 70.0 |
| 10 | Urban (Grants) | 70.0 to 84.4 | MP 70.0 to 84.4 |
| | | 84.4 to 87.0 | MP 84.4 to 87.0 |
| 11 | Rural | 87.0 to 97.0 | MP 87.0 to 89.7 |
| | | | MP 89.7 to 92.0 |
| | | | MP 92.0 to 93.9 |
| | | | MP 93.9 to 95.1 |
| | | | MP 95.1 to 97.0 |
| 12 | Urban (Acoma) | 97.0 to 103.0 | MP 97.0 to 103.0 |
| 13 | Rural | 103.0 to 112.7 | MP 103.0 to 107.1 |
| | | | MP 107.1 to 108.1 |
| | | | MP 108.1 to 112.7 |
| 14 | Urban (Laguna) | 112.7 to 119.0 | MP 112.7 to 117.2 |
| | | | MP 117.2 to 119.0 |
| 15 | Rural | 119.0 to 139.0 | MP 119.0 to 137.2 |
| | | | MP 137.2 to 139.0 |
| 16 | Rural (Route 66 Casino) | 139.0 to 140.0 | MP 139.0 to 140.0 |
| 17 | Rural | 140.0 to 145.7 | MP 140.0 to 145.7 |
| 18 | Urban (Albuquerque) | 145.7 to 150.0 | MP 145.7 to 150.0 |

For direct impacts, the affected area is assumed to include the width of new construction (i.e., added shoulder or lane width) plus an additional 50 feet of ground disturbance for slope construction and the operation of construction equipment. For segments where all widening will occur to the inside, a 25-foot area of impact on the outside of the roadway was assumed to accommodate construction

vehicle activity. The indirect impacts for resources such as noise, GHG emissions, and visual resources were evaluated using issue-specific methods and are discussed individually.

Drainage improvements are also part of both alternatives. For both alternatives it is assumed that up to 336 culvert locations may need to be upsized to meet drainage flow needs. The Enhanced 2-lane with Added Lanes Alternative will widen I-40 but that widening will primarily take place in the existing center median. In most locations, the outside pavement edge will remain in the current location or will move inward, and drainage extensions will not be required. In areas where 3 lanes are proposed and Typical Section 3 would apply, culvert extensions would be needed. It is estimated that culvert extensions at 47 drainage locations would be needed in areas where 3-lanes are proposed. The existing depressed median will be regraded and/or paved to accommodate the additional pavement. This would require that the existing median drop inlets be removed and replaced. In addition, CWB is proposed at some median locations and may require additional median or shoulder inlets to accommodate drainage flows.

The 3-Lane Alternative will also widen I-40 to the inside where feasible, but for about 50 miles, widening will also be required to the outside of I-40. Because of this, the 3-Lane Alternative will require extending many of the existing culverts to accommodate the wider roadway section. For the 3-Lane Alternative it is estimated that 261 drainage locations would require culvert extensions. CWB is proposed at some median locations and may require additional median or shoulder inlets to accommodate drainage flows.

### 1.2.2 Operational Enhancements

In addition to the 2 proposed build alternatives, operational enhancements are proposed to support both build alternatives. These operational enhancements would not meet the I-40 corridor needs on their own but would add value to improving operations and reliability on I-40. As these enhancements are advanced, their environmental consequences will be assessed as part of individual projects, as needed. The operational enhancements are the same for both build alternatives and are briefly described below:

- Intelligent Transportation System (ITS)– Proposed ITS improvements include installing numerous devices such as cameras for data collection and observation, dynamic messaging signs, variable speed limit signs, and a truck parking availability system. Potential environmental impacts from installing ITS equipment at spot locations throughout the study area are likely to be minor. In addition, a fiber optic line is proposed to support ITS equipment. There is currently a fiber optic line from MP 125 to 150 and a new line is proposed from MP 0 to 125. The existing fiber optic line is located in the I-40 median. Some or all of this line may need to be replaced due to its location in the median, but that will be determined on a case-by-case basis. The fiber optic alignment will be determined as individual projects are advanced. For analysis purposes, construction of a fiber optic line was assumed to occur within the existing highway right-of-way, offset 50 feet to either the north or south of the edge of the existing I-40 mainline. The extent of the fiber footprint will vary depending on the construction technique, but in general it was assumed that a trench of up to 2-feet wide by 3-feet deep would be constructed. Constructing a fiber optic line for the full 150-mile corridor would have the same impacts for both build alternatives but could potentially impact various environmental resources, and there could be opportunities to avoid impacts by identifying potential environmental resources early. Because of this, potential environmental impacts for the proposed fiber optic line were considered as part of the Phase I-B environmental analysis. The potential impacts between a northern or southern alignment were determined to be similar, so the recommendation is to construct the fiber

optic line on the north side of I-40, where feasible, since the north side is closer to communities that could potentially tie into a fiber line. While the north side is preferred, there may be areas where the fiber line would cross to the south side to avoid environmental or other impacts.

- Improving Alternate Routes (frontage roads) – Proposed improvements to alternate routes include minor improvements to existing frontage routes to keep them operational in case they are used as a detour in instances when I-40 is completely closed due to an incident. To keep these routes operational, maintenance activities such as pavement reconstruction and bridge maintenance, rehabilitation, or replacement are proposed. Environmental impacts associated with these improvements would be the same for both build alternatives and will be assessed as specific projects are identified and advanced.
- Minimizing lane closures during construction and maintenance – This operational enhancement involves changing existing policies and procedures surrounding how traffic is managed during construction and maintenance activities on I-40. Creating and implementing these policies could benefit traffic operations and impacts to drivers on I-40, and the benefits and impacts of these changes would be the same for either of the proposed build alternatives.
- Improving incident management – Specific improvements to incident management would be the same for both build alternatives and are still in the process of being defined. The types of improvements that are likely would be identifying new policies and procedures for improving incident management, reducing incident response times, and resuming normal traffic operations on I-40 as quickly as possible. The benefits and impacts of these changes would be the same for either of the proposed build alternatives.

# 2. Land Ownership and Land Use

## 2.1 Methods

The BLM has developed a shapefile containing metadata of land ownership across the state of New Mexico. In this use, landownership is limited to ownership at a high level and includes federal lands by agency (e.g., BLM, USFS, DOD), tribal lands, state lands, municipal lands, and private lands. Ownership of private properties at the parcel level is not included. The BLM shapefile was imported into the environmental geographic information system database to determine land ownership within 1,000 feet from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes. Tribal ownership was determined using 2020 United States Census Topologically Integrated Geographic Encoding and Referencing (TIGER) system, a GIS shapefile that was imported into the working map to match tribal land ownership with the proper tribes (United States Census Bureau, 2020). In addition, right-of-way maps were obtained from the NMDOT to identify the right-of-way limits for I-40 and many of the alternate routes in the study area. Right-of-way includes both NMDOT-owned lands and easements granted to the NMDOT. A review of relevant state, regional, and local planning documents were reviewed to determine whether proposed improvements conflict with existing land use, community development, or growth plans.

## 2.2 Existing Conditions

I-40 and adjacent alternate routes cross land owned by many agencies and private owners. Maps showing state, federal, tribal land, and private ownership are provided in Attachment A, Land Ownership and include the BLM, NMSLO, the DOD, the National Park Service (NPS), several tribes, and private landowners (BLM 2022a). A large portion of the study area is located on tribal lands owned by the Laguna Pueblo, Acoma Pueblo, and the Navajo Nation Reservation as shown in Attachment A. The Zuni Reservation is located several miles south of the study area; they have traditionally used lands in the study area and are in the process of a land transfer involving portions of land currently owned by the DOD adjacent to I-40 near MP 33. A large portion of the study area is surrounded by private lands. There are several communities located along I-40, the largest of them include Gallup, the Grants/Milan area, and the western portion of Albuquerque. Landowners affected will vary depending on the projects advanced as part of the I-40 Highway Operational Plan.

Based on a review of the study area, land uses in the area include residential development, outdoor recreation areas, industries, and uses such as mining, oil and gas extraction, education, medical facilities, hospitality/casinos, energy, and retail. Recreational areas include Mount Taylor, Bluewater Lake, El Malpais and El Morro National Monuments, and other state parks and landmarks of interest. Several trails intersect or are located near the corridor, the most prominent being the Continental Divide Trail west of Thoreau. Smaller trails include Mentmore hiking trail, the North Hogbacks trail, and other trails that are part of the 22 miles of trail located in Gallup's High Desert Trail System. Other trails are located near I-40, including several in Cibola National Forest just south of Fort Wingate, near El Malpais National Monument, and around Mount Taylor. These trails may be accessed, at least in part, by I-40 but are outside of the study area. Urban areas in the study area, such as Gallup and the Grants/Milan areas, are traditional railroad and/or mining towns. The surrounding lands continue to be used for mining operations and natural gas extraction. The eastern limits of the study area enters the Albuquerque metropolitan area.

Exhibit 8 provides an overview of state, regional, and local land use plans and identifies relevant future plans that could affect I-40 or adjacent alternate routes.

## Exhibit 8. Overview of State, Regional, and Local Planning Documents

| Document | Summary of Goals or Planned Projects Relevant to I-40 or Adjacent Alternate Routes |
|---|---|
| *New Mexico 2045 Plan* (NMDOT 2021) | ▪ The overall goal of transportation system is to "provide a safe and efficient transportation system for the traveling public, while promoting economic development and preserving the environment of New Mexico" (NMDOT 2021).<br>▪ Key considerations regarding future development include:<br>→ Transportation assets will need to respond to new technologies and environmental impacts.<br>→ Project prioritization and data-driven investments can help NMDOT balance community concerns with long-standing infrastructure goals.<br>→ Evolving planning and partnership expectations require NMDOT to be adaptable and proactive.<br>→ Preparations need to be made to address freight bottlenecks that may occur do to geographic and technology-based changes.<br>→ Rural and tribal equity.<br>▪ The I-40 Corridor Study purpose and need is consistent with public and stakeholder spending preferences and priorities, which include:<br>→ Preserving the highway system.<br>→ Supporting economic development.<br>→ Improving highway safety.<br>→ Being adaptable and proactive in working the public and stakeholders. |
| *New Mexico 2045 Freight Plan Update* (NMDOT 2023a) | ▪ The Freight Plan identified several Tier 1 locations within the I-40 study area that have the highest potential for safety improvement on the National Highway Freight Network.<br>▪ Implementation strategies include completing a comprehensive truck parking study to evaluate the location, availability, and utilization of rest areas and truck stops and prioritize truck parking investment decisions. Freight parking is evaluated in the I-40 Phase I-A/B Corridor Study, which identifies a potential deficit of truck parking spaces in the I-40 study area. Recommendations from NMDOT's planned truck parking study should be incorporated into long-term plans for the I-40 study area.<br>▪ The Freight Plan does not include any projects within the I-40 study area. |
| *New Mexico Prioritized Statewide Bicycle Network Plan* (NMDOT 2018) | ▪ Per the NMDOT Bicycle Network Plan, pedestrian travel is not a key consideration on I-40 since it is a high-speed interstate route. For bicyclists, I-40 is identified as an interstate facility and bicyclists are permitted to ride on the shoulders of I-40. NMDOT does not designate interstates as part of the priority bicycle network in New Mexico because the current design of these facilities includes shoulders and rumble strips that provide reasonable separation between motorists and bicyclists.<br>▪ Typically, interstate frontage roads/alternate routes are excluded from NMDOT's priority bicycle network, though in some cases, the frontage roads/alternate routes are also state highways and are included. In the study area, alternate routes located along I-40 between the Arizona state line and approximately MP 114 in Laguna, including NM 118, NM 112, and NM 124, are designated as Tier 1 routes (NMDOT 2018). Tier 1 routes are a high priority for bikeways because they provide intra-community and statewide connections between New Mexico's communities for cross-state travel. |
| *New Mexico 2023 Electric Vehicle Infrastructure Deployment Plan Update* (NMDOT 2023b) | ▪ NMDOT expects to receive around $38 million over 5 years from the United States Department of Transportation to install electric vehicle charging infrastructure with priority on interstate highway locations, including I-40.<br>▪ I-40 is 1 of 8 designated Alternative Fuel Corridors in New Mexico, including 1 of the 3 main Alternative Fuel Corridors, which means that these are the highest priority areas targeted for installing electric vehicle charging infrastructure.<br>▪ Federal guidance on eligible uses for installing electric vehicle charging infrastructure requires:<br>→ An openness to the public or authorized commercial motor vehicle operators from more than 1 company.<br>→ Charging cannot be located more than 1 mile from an interstate off-ramp<br>→ Charging should be more than 50 miles apart from each other. |

(Table Continues)

## Exhibit 8. Overview of State, Regional, and Local Planning Documents (Continued)

| Document | Summary of Goals or Planned Projects Relevant to I-40 or Adjacent Alternate Routes |
|---|---|
| *Connections 2040, Metropolitan Transportation Plan*. Mid-Region Metropolitan Planning Organization (MRMPO) (MRMPO 2020) | ▪ By 2040 truck traffic on I-40 is expected to grow. Long-haul truckers have voiced concern that the interstates are not functioning as well as they need to make timely and efficient deliveries. Congestion is a major concern, while safety is also a high priority. Other observations and concerns among the region's freight community include:<br>→ Insufficient truck parking and a lack of rest areas to accommodate overnight stays.<br>→ Freeway closures due to incidents are increasingly costly to carriers (and ultimately consumers).<br>→ In the event of full long-term roadway closures, long-haul freight companies are expressing the desire to not be staged in short-term parking facilities; rather, they prefer to be turned around and allowed to make the larger detours to get back on the road en route to final destinations.<br>→ Traffic delays are compounded by the inability of tow vehicles to reach and clear disabled vehicles.<br>→ Poor communication with trucking associations and drivers about truck restrictions.<br>→ Incident management – lack of information during weather or other closures results in costly delays and could be mitigated by 1) directing trucks to appropriate stops when incidents occur and 2) staging rest areas—identifying appropriate staging areas for trucks when incidents occur.<br>▪ Planned future projects in the vicinity of I-40 in the study area include:<br>→ I-40 and the Paseo del Volcan Interchange – Paseo del Volcan at proposed full build-out is to be a 30-mile long, 4-lane expressway with grade-separated interchanges. This new roadway is planned to connect to I-40 via a new interchange approximately 1.7 miles west of the existing Atrisco Vista interchange. This project is planned to be developer funded as part of the Santolina Phase B1 Master Plan. Cost is approximately $19.2 million, and construction is expected sometime between 2031 and 2040.<br>→ Northwest Loop Corridor – The Northwest Loop Corridor is proposed as part of the long-range transportation system of the metro area. The 77-mile roadway would provide a third outer loop connecting I-40 at a new interchange near existing Exit 140 (Route 66 Casino) to US 550 at the Unser Blvd intersection. Further implementation of this corridor is beyond 2040. However, public and/or private funds used to build or improve short segments of the Northwest Loop in order to serve the proposed landfill, airport, desalination plant, etc., are considered consistent to support economic vitality of the region. |
| Long Range Roadway System Maps (bikeway and roadway system maps) Mid-Region Council of Governments (MRCOG) (MRCOG (MRCOG 2023) | ▪ Includes the Paseo del Volcan, the Northwest Loop Corridor, and a proposed minor arterial south/parallel to I-40 from Atrisco Vista to Shelly Road at approximately MP 145. |

(Table Continues)

## Exhibit 8. Overview of State, Regional, and Local Planning Documents (Continued)

| Document | Summary of Goals or Planned Projects Relevant to I-40 or Adjacent Alternate Routes |
|---|---|
| *Northwest New Mexico Regional Transportation Plan*. Northwest New Mexico Regional Transportation Planning Organization (NWRTPO). (NWRTPO 2022) | ▪ Several projects are being planned to provide for economic, social, and transportation connectivity, including:<br>→ Allison Bridge and Corridor Project (Gallup): The New Mexico State Legislature allocated $4.5 million to replace a wooden bridge on Allison Road on Gallup's west side, a former mine access road that had become an asset to north-south connectivity in Gallup. These funds served to catalyze subsequent state and federal investments to develop a commercial corridor, served by an I-40 interchange and frontage road system, strategically positioned to capitalize on I-40 travelers. Finished in 2018, the replacement of the Allison Road Rio Puerco Bridge and corresponding road connections is the first phase of improvements of the 6-phase, multimillion dollar Allison Road Corridor project. The overall project mitigates existing geometric, physical, and operational deficiencies; improves safety; and provides system connectivity. It will make vast improvements to the transportation network for the City of Gallup and the I-40 corridor, with the goal of promoting commercial development and facilitating economic growth in the Gallup area.<br>→ Gallup Energy Logistics Park: This is a developing rail-served, 2,500-acre industrial park with a focus on serving the light manufacturing, storage, trans loading, and logistics industries of northwest New Mexico, the San Juan Energy Basin, and the Four Corners Region. It serves as a logistics hub for the area (Gallup Energy Logistics Park 2023).<br>→ Milan Interchange: A new I-40 interchange is being proposed at the feasibility level to support access and build-out of the Milan Industrial Park at exit 100.<br>▪ Navajo Nation Inland Port Study: Initiated and led by 3 Navajo Chapters of Manuelito, Rocksprings, and Tsayatoh in 2015 with support from the New Mexico Economic Development Department. This study highlights the potential of developing an inland port and details 2 top sites. The potential port is north of the I-40 study area, near the Gallup Port of Entry.<br>▪ Trail of the Ancients Scenic Byway: Crosses I-40 in Gallup New Mexico and runs along I-40 between Grants and Thoreau. It was designated as a national scenic byway in 2020.<br>▪ Ancient Way Arts Trail: Intersects I-40 in Gallup and Grants, and both are entry points to this trail. The trail provides access to several places known for high-quality arts and crafts and is a major economic driver.<br>▪ Native American Gaming Facilities: Casinos such as Sky City at Exit 102, Dancing Eagle Exit 108, and Route 66 Casino at Exit 140. |
| *Long Range Transportation Plan and Road Inventory Update.* Pueblo of Acoma (Pueblo of Acoma 2022) | ▪ There is a low concrete box culvert (CBC) at State Route 124 and I-40 on the western boundary of Acoma lands that is too low for trucks to clear. This becomes especially problematic when traffic is diverted off I-40. This is identified as an issue and a proposed improvement/consideration for alternate routes in the I-40 Phase I-A/B Corridor Study. |
| 2012. *Bicycle and Pedestrian Route Plan* (Pueblo of Laguna 2012) | ▪ The current I-40 overpass in Casa Blanca Road is narrow and lacks a shoulder for bicycle and pedestrian use. A widened replacement overpass is recommended.<br>▪ The current I-40 underpass on Rainfall Road is currently only wide enough for a 2-lane road, with no space on the sides for pedestrians or cyclists, forcing them to use the vehicle lane if they want to cross I-40 here. A second tunnel to accommodate a multiuse path is proposed here. |
| *Navajo Nation Long Range Transportation Plan* (Navajo Nation 2021) | ▪ In 2013, NMDOT completed the New Mexico State Rail Plan. This plan identifies several improvements in the Navajo Nation area including Freight Rail from Gallup to Farmington (Facilities and Operations Improvement); and Gamerco Logistics Hub (Facilities and Operations Improvement); and Navajo Energy Hub at Thoreau.<br>▪ Tohajiilee, Crownpoint, and Tohatchi are all growth centers primarily accessed by I-40. |
| I-40 Tradeport Corridor (Bernalillo County 2023) | ▪ This is a study that is underway for an I-40 TradePort Corridor that would be a major logistics center, clean energy, and investment hub. It is a public-private partnership. The study is federally funded. Key partners include Bernalillo County, Sandoval County, the Village of Los Lunas, and GLD Partners. |

## 2.3 Potential Impacts

Improvements proposed for either of the proposed build alternatives are not expected to adversely impact land use or ownership. Based on the current conceptual designs for the build alternatives, it appears that the proposed I-40 improvements with either alternative can be constructed within the existing right-of-way, so there are no anticipated right-of-way needs at this time. It is possible that small slivers of right-of-way may be needed in scattered areas throughout the study area for individual projects, but these will be limited to areas adjacent to the existing highway and would not be expected to affect land use. In the locations where right-of-way will be acquired from private property, ownership would change to a state-owned property, but this change would not be expected to impact adjacent land uses. Likewise, areas currently located in easements may require modification to but are not expected to affect land use. If small areas of additional right-of-way are needed, they will be identified as part of preliminary design and environmental analysis conducted under Phase I-C.

The proposed improvements with both build alternatives are not expected to adversely impact current plans and policies. Neither build alternative changes access or adversely impacts any plan or policy. However, updates to plans such as NMDOT's Statewide Transportation Plan (*New Mexico 2045 Plan*) and regional transportation plans, including the *Connections 2040 Metropolitan Transportation Plan* and *Northwest New Mexico Regional Transportation Plan*, will be needed to reflect changes to the assumptions in these plans specific to the number of lanes on I-40.

# 3. Visual Resources

## 3.1 Methods

Potential visual impacts were considered using *Environmental Review Toolkit: Guidelines for the Visual Impact Assessment of Highway Projects (FHWA 2023b)*. FHWA's visual impact assessment guidelines use 3 questions to establish the potential of visual impacts in an area (FHWA 2023b). These questions are:

- What is the visual character of the proposed project?
- Are there any legal directives or social constraints that dictate the visual quality of what can be constructed?
- To what extent is the proposed project visible?

These questions were considered when examining the study area for potential resources of visual significance.

Visual resources were identified by reviewing community information in the study area. This included general visual investigations through Google Earth reviews, known community visual resources, and documentation of visual aesthetics from previous study area drive throughs. As sight is not static in what can be observed at any location, there was no established distance surrounding the study area that was considered for visual impacts. All potential locations of visual importance were considered if they were located within a reasonable viewing distance from the study area.

## 3.2 Existing Conditions

The visual components of the I-40 corridor include a mixture of background viewsheds, components within the corridor, and foreground elements.

- Background views exist throughout the corridor and include prominent red sandstone bluffs in the Gallup area, the pinyon-juniper forests near the Continental Divide west of Thoreau, Mount Taylor north of Grants/Milan, the malpais/basalt flows east of Grants, and the high mesa tops near Laguna.
- Visual elements along and near and along I-40 include views of historic tribal communities in the tribal areas between Laguna and Albuquerque and wetlands associated along the highway east of Grants. In addition, several bridges over I-40 include art and cultural aspects that reflect the culture of nearby communities and serve as gateways. This includes bridges near Acoma, Laguna, and Tohajiilee.
- Segments of several routes parallel to I-40 are part of Historic Route 66 as shown previously in Exhibit 1 and include visual components. These visual elements include buildings and other structures within and between the small communities that are representative of this historic era. The visual aspects of Historic Route 66 are an important driver for tourism that benefits these local communities.

The visual impacts of build alternatives will need to consider disruption to these visual components as well as potential visual impacts that communities may experience from improvements from this project.

## 3.3 Potential Impacts

The proposed I-40 build alternatives include potential improvements across much of the existing I-40 study area, typically through widening the existing roadway. The visual aspects of the proposed build alternatives are limited to widening I-40, typically only impacting areas located inside existing rights-of-way. The impacts caused by these improvements are expected to be consistent with existing conditions. The improvements are not expected to result in increased traffic along I-40, and they offer the potential to improve flow on I-40 during times of lane closures, potentially offering relief to some adjacent alternate routes in the study area.

Neither build alternative is expected to adversely impact the visual character of I-40 and the surrounding area. Background views and mid-ground views from the highway and towards the highway from adjacent communities would not be affected substantially by either build alternative.

Minor adverse impacts could result in several areas, including:

- Areas within the right-of-way where wetlands and basalt flows are removed to accommodate the wider footprint. In this case, the 3-Lane Alternative would have greater impacts than the Enhanced 2-Lane with Added Lanes Alternative because of its wider footprint. However, impacts to these visual components would be temporary and would be mitigated by revegetation of impacted areas.
- Views from communities near I-40 and that are at a higher elevation would see a wider roadway than currently exists. The impact from the Enhanced 2-Lane with Added Lanes Alternative would be negligible because the wider shoulders would not represent a major change from the existing condition, especially at a distance of several hundred feet or more. Impacts from the 3-Lane Alternative would be slightly greater; however, the impacts would still not be expected to be substantive because of the minor change in overall width of the highway.
- Existing aesthetic bridge treatments could be affected for bridges that require replacement. However, impacted structures will be replaced in-kind or with new aesthetic treatments developed in collaboration with the affected communities.

# 4. Noise

## 4.1 Methods

The criteria and methods for assessing traffic noise impact are provided by the FHWA regulation (23 Code of Federal Regulations [CFR] Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*) and NMDOT policy (Infrastructure Design Directive [IDD] 2022-4, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*). To provide context for the Phase I-A/I-B analysis, a desktop review of the study area was conducted via Google Earth to locate potential clusters of noise-sensitive areas that may be affected by traffic noise within the study area. Noise impact thresholds are provided by FHWA's Noise Abatement Criteria (NAC) (see Exhibit 9). These thresholds vary depending on the type of land use adjacent to the roadway.

While activity categories A through E are of most concern when considering highway traffic noise, there are also activity areas F and G within the study area. However, categories F and G do not have an established NAC and are unlikely to require further noise analysis. Areas likely to fall in activity categories A through E include residential, commercial, and recreational areas.

Exhibit 9. Federal Highway Administration Nose Abatement Criteria

| Activity Category | Activity Criteria[1] | Evaluation Location | Activity Description |
|---|---|---|---|
| A | 57 | Exterior | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. |
| B | 67 | Exterior | Residential. |
| C | 67 | Exterior | Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings. |
| D | 52 | Interior | Auditoriums, day care centers, hospitals, libraries, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, and television studios. |
| E | 72 | Exterior | Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A through D or F |
| F | N/A | N/A | Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing. |
| G | N/A | N/A | Undeveloped lands that are not permitted. |

Source: FHWA 2018

1 Activity criteria is for the hourly equivalent noise level (Leq)

A qualitative review of potential receivers within 500 feet of the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes I-40 were considered as areas of interest for traffic noise. Particular attention was given to urban areas, or areas with clusters of land uses with an established NAC. The need for a noise study will depend on the type of improvements

proposed, since the FHWA's NAC only applies projects classified as Type 1 in 23 CFR Part 772, which include:

- Construction of a highway in a new location.
- Alteration of a highway where substantial horizontal or vertical changes are made. This includes:
  - → Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
  - → Substantial Vertical Alteration. A project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor.
- Addition of through-traffic lanes.
- Addition of an auxiliary lane that is long enough to function as a through traffic lane or increase capacity.
- Addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange.
- Restriping existing pavement for the purpose of adding a through-traffic lane or auxiliary lane.
- Addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza.

*FHWA Memorandum Information: Highway Traffic Noise – Type 1 Projects* (FHWA 1998) provides additional guidance for defining Type I projects for auxiliary lanes. Per the guidance, auxiliary lanes should be classified as a Type I project if the auxiliary lane is long enough to function as a through-traffic lane and/or increase capacity. An auxiliary lane that is added between interchanges to improve operational efficiency should be classified as a Type I project, if the lane is at least 1.5 miles long or if the lane is made continuous through a series of successive interchanges".

## 4.2 Existing Conditions

Within the 150-mile study area there are multiple communities where noise may be of concern. Exhibit 10 lists communities with development within 500 feet of I-40 or adjacent alternate routes. These communities are most likely to contain clusters of noise-sensitive land uses. The alternatives being developed could potentially shift traffic noise in a manner that could negatively affect these areas. Further noise investigation would be performed for any alternative advanced into Phase I-C that has the potential to impact these locations.

Exhibit 10. Communities Potentially Affected by Noise

| | | |
|---|---|---|
| Bluewater Village | Grants | Milan |
| Coolidge | Laguna | Prewitt |
| Cubero | McCartys Village | San Fidel |
| Gallup | Mesita | Whispering Cedars |
| Gonzales | | |

## 4.3 Potential Impacts

According to FHWA standards and NMDOT IDD-2022-04, traffic noise analysis is warranted when construction of a highway occurs on a new location, or when a substantial change is made to the roadway horizontal or vertical alignment, or when a traffic lane is added. As such, improvements included with proposed build alternatives, such as adding a lane in the entire study area and the proposed auxiliary lanes in Gallup are likely to require noise analysis as individual projects are advanced. Areas where improvements are limited to pavement rehabilitation, shoulder widening, climbing lanes, and most ramp extensions are unlikely to require additional noise analysis.

Noise assessments may be required for both alternatives depending on the types of improvements proposed. For the 3-Lane Alternative, noise analysis would be required for the entire corridor as projects are identified and funded since adding a lane is identified as a Type 1 project. The Enhanced 2-Lane with Added Lanes Alternative will likely require noise analysis for projects that include new auxiliary lanes in Gallup, since they will be longer than 1.5 miles and can serve through traffic. The addition of proposed climbing lanes are unlikely to require noise analysis if they are 1.5 miles or less in length. It is possible that the eastbound climbing lane from MP 141.5 to 143 may require additional analysis because of its length, but it is currently located outside of any known NAC sensitive receivers. Noise analysis for potential ramp improvements and extensions will need to be determined on a case-by-case basis. In most cases ramp extensions are not expected to require additional noise analysis since most of them would not met the requirements of a Type 1 project since they would not increase capacity of the interstate, serve as through traffic lanes, and significantly alter vertical or horizontal configuration of the roadway, However, any alteration to the interchanges outside of ramp lengthening (such as reconstructing the entire interchange and overpass) has potential to trigger the requirements for a Type I project and should be considered on a case-by-case basis. Per FHWA requirements, if any of these improvements are proposed as part of a distinct project, the entire project must be treated as a Type I project.

Potential traffic noise impacts were determined using FHWA's Traffic Noise Model (TNM) and existing traffic data, including volumes, truck percentages, and average speeds. This approach was used as a screening tool to determine if NMDOT and FHWA NAC receptors are potentially affected by I-40 traffic noise. As per the IDD, a threshold of 66 A-weighted decibels (dBA) was assumed. This approach found traffic noise impact to residential properties would extend between 300 and 500 feet from the edge of existing road in the study area, depending on location within the corridor.

Potentially impacted receivers within this 500-foot buffer area were analyzed further to determine the potential for impact and reasonableness for abatement. Only land uses categorized as residential, recreational, hospitals, and other uses potentially affected by noise were considered. In addition to use, the density of development and cost-effectiveness was considered. According to IDD-2022-04, the cost per benefited receptor must be less than $50,000. Based on the traffic volume and composition that includes a high percentage of commercial trucks, the TNM screening model indicates a wall height of 15 feet or higher will be needed to achieve reasonable noise reduction. Walls shorter than this will be ineffective at reducing truck noise. For a single receiver located within 50 feet from the edge of right-of-way, a wall 15 feet in height and about 250 feet in length would be necessary to obtain a 5 dBA or greater noise reduction. At a cost of $35 per square foot of wall barrier (per IDD policy), the cost of this wall would be about $118,000—a cost that is much higher than the $50,000 per protected receiver recommended by NMDOT and FHWA. For this reason, the screening analysis for I-40 focused on areas with higher densities of receivers. Isolated and scattered low-density areas were assumed as unlikely to meet cost-effectiveness criterion.

Locations likely to warrant noise abatement and meet the cost-effectiveness criterion are summarized in Exhibit 11. These areas coincide with the urban areas of Gallup and Grants/Milan but also include several areas associated with smaller communities, such as Fort Wingate, Thoreau, and Laguna, among others. A detailed noise assessment will be necessary for projects identified as Type 1. It is noted that the construction cost of structures has escalated significantly in recent years. Therefore, the cost of noise walls is much higher than the $35 per square foot cost assumed in the current IDD policy and the cost assumed by the screening analysis. Note that for the Enhanced 2-Lane with Added Lanes Alternative, the need for noise analysis in the areas listed in Exhibit 11 would depend on the specific improvements proposed. For the 3-Lane Alternative, additional noise analysis would be required in all cases. For either alternative, much of the proposed roadway widening will occur to the inside of I-40, which will bring travel lanes further from potential noise receptors. Roadway widening to the outside of I-40 is only planned for approximately 50 miles of the 3-Lane Alternative, and traffic noise impacts may be slightly greater in areas where widening occurs to the outside.

**Exhibit 11. General Locations Potentially Warranting Noise Abatement for the Proposed Build Alternatives**

| MP | Activity Category | Direction | Alternative |
|---|---|---|---|
| 12 to 14.5 | B (Residential) | Primarily north of I-40 | 3-Lane Alternative |
| 16 to 17 | B (Residential) and E (Commercial) | Both sides of I-40 | All alternatives |
| 17 to 18 | E (Commercial) | Primarily south of I-40 | All alternatives |
| 20 to 21 | E (Commercial) | Primarily north of I-40 | All alternatives |
| 21 to 23 | B (Residential) | Primarily north of I-40 | All alternatives |
| 23 to 24 | C (Commercial) | Primarily north of I-40 | All alternatives |
| 26 to 26.5 | E (Commercial) | Primarily north of I-40 | All alternatives |
| 26.75 to 27 | B (Residential) | Primarily south of I-40 | 3-Lane Alternative |
| 28 to 28.5 | B (Residential) and E (Commercial) | Both sides of I-40 | 3-Lane Alternative |
| 44 to 45 | B (Residential) and E (Commercial) | Primarily north of I-40 | 3-Lane Alternative |
| 45.5 | C (Commercial) | Primarily south of I-40 | 3-Lane Alternative |
| 47 to 50 | B (Residential) and E (Commercial) | Both sides of I-40 | 3-Lane Alternative |
| 61 to 62 | B (Residential) | Primarily south of I-40 | 3-Lane Alternative |
| 63 to 64 | B (Residential) and C (Commercial) | Both sides of I-40 | 3-Lane Alternative |
| 69 to 70 | B (Residential) and C (Commercial) | Both sides of I-40 | 3-Lane Alternative |
| 79 to 81 | B (Residential) and C (Commercial) | Both sides of I-40 | 3-Lane Alternative |
| 102 | C (Commercial) | Both sides of I-40 | 3-Lane Alternative |
| 105 | B (Residential) | Both sides of I-40 | 3-Lane Alternative |
| 114 to 115 | B (Residential) and E (Commercial) | Primarily north of I-40 | 3-Lane Alternative |
| 117 to 118 | B (Residential) | Both sides of I-40 | 3-Lane Alternative |
| 147 to 150 | B (Residential) and E (Commercial) | Primarily north of I-40 | 3-Lane Alternative |

# 5. Air Quality and GHG Emissions

## 5.1 Methods

The EPA has National Ambient Air Quality Standards (NAAQS) for pollutants that are common in outdoor air, considered harmful to public health and the environment, and come from numerous and diverse sources. The EPA Greenbook offers Nonattainment and Maintenance status for counties in the state of New Mexico that have exceedances of the NAAQS (EPA 2022b). This Greenbook was referenced to determine whether the study area was located in any counties that had existing air quality issues. For this resource, the study area assumed is the 1/2-mile buffer from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes. In addition to NAAQS, GHG emissions are also evaluated for transportation projects. Guidance on the analysis of GHG is available from FHWA; however, the methodologies are still being refined and include both qualitative and quantitative analysis. A more detailed air quality and GHG impact analysis will likely be required for specific projects as part of NEPA analysis required for Phase I-C.

## 5.2 Existing Conditions

New Mexico generally has good air quality, and currently, only 3 counties have been classified as nonattainment under the NAAQS in the last 30 years. These counties are Dona Ana, Bernalillo, and Grant counties. The study area does enter Bernalillo County at its eastern end, and this county has previously had NAAQS for carbon monoxide (EPA 2022b). However, Bernalillo County has been in attainment for carbon monoxide since 1995. Air quality is not anticipated to be an issue in the study area, although per policy, GHG analysis will likely still be required as individual projects are advanced within the corridor.

## 5.3 Potential Impacts

Adverse impacts to air quality and GHG emissions have not been identified for either build alternative. While nonattainment with NAAQS is not a known issue in the study area, particulates, diesel exhaust, and GHG emissions are exacerbated by high truck volumes, excessive idling, and stop-and-go traffic that occurs during traffic backups that occur on I-40 when there are lane reductions due to incidents, maintenance, and construction. Because both alternatives are intended to improve this situation, it is reasonable to assume the proposed alternatives will have a positive impact on vehicular emissions and GHGs as compared to the existing condition. Air quality is not anticipated to be an issue in the study area, although per policy, GHG analysis will likely still be required as individual projects are advanced.

# 6. Hazardous Materials Sites

## 6.1 Methods

The NMED manages the OpenEnviroMap database containing the locations of hazardous materials across the state of New Mexico (NMED 2022). This database was accessed and reviewed to identify potential hazardous materials sites located within a 1,000-foot area from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes.

## 6.2 Existing Conditions

There are no identified hazardous waste or mine facilities within 1,000 feet of I-40 and adjacent alternate routes. However, there are multiple potential hazardous materials sites located within 1,000 feet of I-40 and adjacent frontage roads. A total of 403 storage tanks are located in the study area, including aboveground and underground tanks, some of which have been found to be leaking. A total of 9 brownfields and 1 Superfund site were also identified. In addition to the potential hazardous materials sites, there are several reclamation sites identified in the study area, which include 6 voluntary remediation programs, 10 closed state cleanup programs, and 2 active state cleanup programs. Potential hazardous materials located where improvements are proposed may require further investigation.

## 6.3 Potential Impacts

The I-40 study area serves numerous small and large communities and passes through many areas developed with commercial and industrial land uses. This includes numerous truck and car refueling facilities, some of which have been in operation for many years. Exhibit 12 lists the locations of documented hazardous materials use and approved permits. This includes:

- National Pollutant Discharge Elimination System (NPDES) – Indicates a source where pollutants are permitted to be discharged into Waters of the United States (WOUS).
- Resource Conservation and Recovery Act (RCRA) – Indicates a source where some amount of solid waste has been identified.
- Air Facility System – Identifies airborne pollution sources.

## Exhibit 12. General Locations of Hazardous Materials in the I-40 Study Area

| Location (MP) | Hazardous Material Interest Type | Alternatives Affected |
|---|---|---|
| 4 to 5 | NPDES discharge | All alternatives |
| 17 to 18 | NPDES discharge | All alternatives |
| 28 to 29 | NPDES discharge | All alternatives |
| 40 to 41 | NPDES discharge | All alternatives |
| 40 to 41 | RCRA (Small Quantity Generators, Lead) | All alternatives |
| 44 to 45 | NPDES discharge | All alternatives |
| 48 | NPDES discharge | All alternatives |
| 53 to 54 | RCRA (Not Active) | Southern fiber optic footprint |
| 53 to 54 | RCRA (Universal Waste) | Southern fiber optic footprint |
| 59 | NPDES discharge | All alternatives |
| 81 to 82 | NPDES discharge | Southern fiber optic footprint |
| 85 to 86 | NPDES discharge | All alternatives |
| 94 to 95 | NPDES discharge | All alternatives |
| 115 to 116 | NPDES discharge | Northern fiber optic |
| 120 to 121 | NPDES discharge | All alternatives |
| 134 to 135 | NPDES discharge | All alternatives |
| 140 to 141 | Air Facility System | Southern fiber optic footprint |
| 145 to 146 | RCRA (Very Small Quantity Generator) | Southern fiber optic footprint |
| 145 to 146 | Integrated Compliance Information System | Southern fiber optic footprint |
| 146 to 147 | NPDES discharge | Southern fiber optic footprint |
| 146 to 147 | Air Facility System | Southern fiber optic footprint |
| 146 to 148 | Air Facility System | Southern fiber optic footprint |
| 148 to 149 | Integrated Compliance Information System | Southern fiber optic footprint |
| 148 to 149 | RCRA (Very Small Quantity Generator) | Southern fiber optic footprint |
| 148 to 149 | RCRA (Very Small Quantity Generator) | Northern fiber optic footprint |
| 148 to 149 | NPDES discharge | Northern fiber optic footprint |

The data indicates potential impacts associated with hazardous materials may be present throughout the study area, particularly in areas within and near Gallup, Fort Wingate, Thoreau, Grants/Milan, Laguna, and the industrial area near the study area terminus west of Albuquerque. The extent of areas potentially affected by hazardous materials are unknown. Because most of the improvements will occur within the existing highway right-of-way, major impacts are not anticipated. An initial site assessment for hazardous materials will be necessary when individual projects are advanced to the environmental and preliminary design phase of project development. Major differences between the build alternatives regarding hazardous materials are not anticipated.

# 7. Demographics and Environmental Justice

## 7.1 Methods

Information on socioeconomic and demographics conditions for the study area were identified from the EPA's EJ Screening Tool (EPA 2022a) using a study area of 1/2-mile area from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes. The EJ Screening Tool uses American Community Survey and United States Census data to provide environmental and demographic characteristics of a designated area. For this project, the most recent American Community Survey data available using the EJ Screening Tool was from 2015 through 2019.

In addition to the EJ Screening Tool, the study team used the Justice40 Climate and Economic Justice Screening Tool to identify areas that have been classified as disadvantaged as it pertains to issues of infrastructure, health conditions, socioeconomics, and other factors. The Justice40 Tool was developed by the Biden-Harris Administration for the purpose of tracking and delivering 40% of the benefits of federal investments in climate and clean energy, including sustainable transportation, to disadvantaged communities. This information is typically used as part of federal funding grant applications and the decision-making process to award federal funds to projects in areas identified as disadvantaged. To be classified as a disadvantaged community, a census tract must be above the threshold for one or more environmental or climate indicators and it must be above the threshold for socioeconomic indicators.

## 7.2 Existing Conditions

A total of 16 census-identified communities are documented within 1/2 mile of the study area (see Exhibit 13). Several other smaller communities, such as Native American villages, are also located in the study area, but were not identified in the census data. Many of these communities are unincorporated or occur on tribal reservations. The largest populations are in Gallup and Grants.

Exhibit 13. Communities in the Study Area

| | | | |
|---|---|---|---|
| Acomita Lake | Cubero | McCartys Village | Paraje |
| Anzac Village | Gallup | Mesita | San Fidel |
| Bluewater Village | Grants | Milan | Seama |
| Church Rock | Laguna | North Acomita Village | Thoreau |

Exhibit 14 provides an overview of economic indicators in the study area. The study area has a population of approximately 17,367 living within 1/2 mile of I-40. Of this population, about 14,316 (82%) identify as a person of color (EPA 2022a), which includes a Native American population of approximately 8,312 (48%) and a Hispanic population of approximately 5,759 (33%) (EPA 2022a). The minority population in the study area is higher than the state average of 63% (EPA 2022a). Specifically, the percentage of individuals identifying as Native Americans (48%) are higher in the study area than New Mexico's state average of 11% (United States Census Bureau 2022) and Cibola County's average of 42% (EPA 2022a). However, it is lower than McKinley County's average of 76% (EPA 2022a). Linguistically isolated populations in the study area are about 5%, which is similar to what is seen across the state (5%) and in Cibola County (4.5%). However, this is lower than McKinley County, which is about 8% (EPA 2022a).

## Exhibit 14. Demographic Indicators

| Demographic Indicator | Study Area | New Mexico |
|---|---|---|
| Minority Population | 82% | 63% |
| Native American Population | 48% | 11% |
| Low-Income Population | 57% | 41% |
| Unemployment | 13% | 4% |
| United States Census Bureau Linguistically Isolated Populations | 5% | 5% |
| Population with Less than a High School Education | 20% | 14% |

Source: EPA 2022a

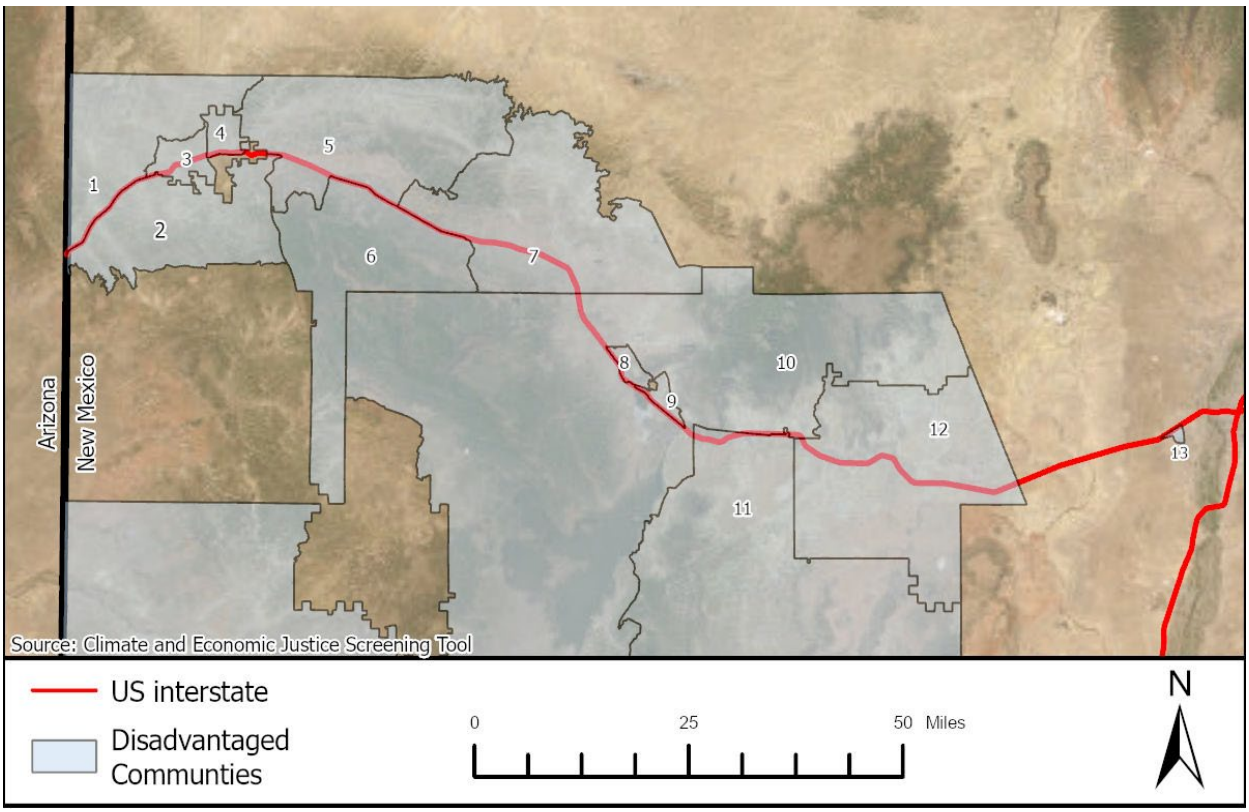
The study area has an unemployment rate of approximately 13% and a low-income population of 57%, both of which are above the state average of 4% and 41%, respectively. Additionally, the study area has a slightly higher population of individuals with less than a high school education at 20% compared to 14% for the state.

Exhibit 15 lists the specific disadvantaged census tracts in the study area (based on information from the Justice40 Climate and Economic Justice Screening Tool), and Exhibit 16 shows the locations of these tracts. The study area intersects with 16 census tracts, and 13 of these tracts are classified as being disadvantaged in at least 1 climate or economic category (Justice40 2022), Many of these tracts are located on tribal lands. As such, ongoing engagement with the tribes and adjacent communities and consideration of potential effects and benefits will be critical as the individual projects are advanced. Identifying these disadvantaged communities is important to make sure that considered alternatives do not disproportionately affect a disadvantaged group.

## Exhibit 15. Census Tracts Identified as Disadvantaged

| # | MP | Census Tract | Disadvantaged Category |
|---|---|---|---|
| 1 | 0 to 13 (north) | 35031943902 | Energy, Health, Housing, Legacy Pollution, Workforce Development |
| 2 | 0 to 13 (south) | 35031943901 | Energy, Health, Housing, Legacy Pollution, Workforce Development |
| 3 | 13 to 21 | 35031945200 | Climate Change, Housing, Legacy Pollution |
| 4 | 21 to 25 | 35031945300 | Health, Workforce Development |
| 2 | 28 to 30 | 35031943901 | Energy, Health, Housing, Legacy Pollution, Workforce Development |
| 5 | 28 to 45 | 35031943600 | Energy, Health, Housing, Legacy Pollution, Transportation |
| 6 | 37 to 53 | 35031973100 | Climate Change, Housing, Legacy Pollution |
| 7 | 45 to 69 | 35031946000 | Energy, Health, Housing, Legacy Pollution, Transportation, Workforce Development |
| 8 | 76 to 82 | 35006974400 | Climate Change, Legacy Pollution, Workforce Development |
| 9 | 82 to 89 | 35006974201 | Health, Housing, Legacy Pollution, Workforce Development |
| 10 | 69 to 107 | 35006974700 | Housing, Legacy Pollution |
| 11 | 91 to 103 | 35006941500 | Health, Energy, Legacy Pollution, Transportation |
| 12 | 104 to 131 | 35006946100 | Health, Housing, Transportation, and Workforce Development |
| 13 | 147 to 150 | 35001004712 | Climate Change, Workforce Development |

Exhibit 16. Locations of Disadvantaged Communities




## 7.3 Potential Impacts

As described in the existing conditions section, almost the entire study area is within or adjacent to an area classified as disadvantaged by the United States Council on Environmental Quality Climate and Economic Justice Screening Tool. The areas designated as disadvantaged are categorized under 1 or more of 8 specific criteria used by EPA to designate disadvantaged status:

- Climate change
- Energy
- Health
- Housing
- Legacy pollution
- Transportation
- Water and wastewater
- Workforce development

Considering the above criteria, neither of the proposed build alternatives are expected to have adverse or disproportionate impacts on disadvantaged communities. Because the build alternatives will have limited, if any, right-of-way takes, and any takes that are needed are scattered and affect only small slivers of land adjacent to the existing right-of-way, the build alternatives will not impact housing, businesses, or other community resources. The build alternatives will not increase airborne or ground-based pollutants and is not expected to increase GHG emissions that affect the health of nearby populations. It is possible that noise impacts could be experienced with the build alternatives. However, these impacts currently exist and are not expected to increase. To the contrary, implementation would provide an opportunity to implement noise walls in areas where noise studies are required that meet FHWA and NMDOT criteria.

The proposed build alternatives would likely provide benefits to disadvantaged communities. Most of the rural communities along I-40 rely on this highway to access medical services, higher education, jobs, and goods and services located in Gallup and Albuquerque. Because both build alternatives would improve the safety and efficiency of travel on I-40, local residents would benefit as they use this highway to access these needs. Ongoing engagement with the tribes and adjacent communities and consideration of potential effects and benefits will be critical as the individual projects are advanced.

# 8. Cultural and Historic Resources

## 8.1 Methods

Cultural and historic resources within the study area were identified using the NMCRIS database. Review of this resource provided the locations and types of all previously recorded archeological sites, historic districts, buildings, structures, linear resources, and objects found by prior cultural resource surveys conducted within 500 meters (1,640 feet) from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes. Site information on tribal lands was restricted and unavailable for this study.

## 8.2 Existing Conditions

The study area and surrounding vicinity have been inhabited for millennia. Paleoindian hunter/gatherers traveled through the area as early as 10,000 B.C., with permanent habitation dating back to 6,500 B.C. and the remains of prehistoric pueblo residences dating to 100 A.D. Native American presence along the study area is still prominent, with modern Native American communities in the general vicinity including Acoma, Laguna, and Zuni pueblos, as well as multiple Navajo communities including Manuelito, Church Rock, Iyanbito, Thoreau, Prewitt, and Tohajilee.

The study area also forms a natural east-west travel corridor, ranging from prehistoric trails to stagecoach routes, railroads, and modern highways. Modern transportation first came to the area in the 1880s when the railroad was established to facilitate movement of livestock and access to mining resources throughout this part of New Mexico. Later, in 1926, the first alignment of Route 66 was developed along a route that mostly paralleled the railroad. Then, beginning in 1957, I-40 slowly began replacing Route 66 through this part of the state. These modern travel modes encouraged the development of cities such as Gallup and Grants along the route. Gallup was initially a small stage stop, and Grants was a homestead until the arrival of the railroad. Later, Route 66, spurred their growth into the larger population centers seen today.

Development of Route 66 began in the mid-1920s. By the end of 1937, Route 66 was paved throughout New Mexico, making Route 66 New Mexico's first fully paved highway (New Mexico Museum of Art 2022). I-40 was built in the late 1950s and through the 1960s, replacing some sections of the former Route 66. In other areas, I-40 took a modified route, and old sections of Route 66 became frontage roads or parts of other state highways, county roads, or tribal roads. Route 66 is a tourist destination for many. It is identified as a State and National Scenic Byway and has buildings, districts, and road segments listed on the NRHP (NPS 2022).

The NMCRIS search revealed that several portions of the study area have been previously surveyed and there are nearly 800 previously documented cultural and historic resources located within the 500-meter (1,640-foot) study area (NMCRIS 2022). Of the nearly 800 resources, there are 7 sections of Route 66 (State Register [SR] No. 1581, SR 1589, SR 1674, SR 1677, SR 1678, SR 1683, and SR 1686) that are listed on the NRHP. These NRHP-listed sections of the roadway span approximately 90 miles, much of which include frontage roads/alternate routes adjacent to I-40, as shown previously in Exhibit 1. A total of 41 historic structures (box culverts, bridges, etc.) are located across the 90 miles of frontage road adjacent to I-40. Potential impacts to Historic Route 66 and its corresponding structures will need to be considered should any proposed improvements impact portions of the Historic Route 66 highway.

Potential impacts to cultural resources will need to be considered, and additional investigation and consultation with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officers (THPOs), and other tribal officials will be needed as individual projects advances into Phase I-C. Cultural resources within each project study area will need to be evaluated for their potential for listing to the NRHP, and the effects on the properties will need to be evaluated. For any NRHP-eligible properties that are adversely affected, an appropriate mitigation will need to be negotiated and implemented in consultation with the SHPO and/or THPO per Section 106 of the NHPA.

In addition to the NHPA, several of these properties will need to be considered under Section 4(f) of the Department of Transportation Act. Section 4(f) dictates that federal transportation projects cannot "use" land from a publicly owned park, recreation area, wildlife or wildfowl refuge, or a significant historic site unless there is no prudent and feasible alternative. Significant historic sites are defined as properties listed on or eligible for inclusion on the NRHP. However, most archeological sites will not be subject to Section 4(f) because properties eligible for the NRHP chiefly for their data potential rather than their preservation and interpretive value are generally exempt from the regulation. Section 4(f) would apply to properties such as the NRHP-listed sections of Route 66, although FHWA policy allows for a *de minimis* 4(f) impact to historic properties when the NHPA consultation results in a no adverse effect determination. There is precedent that modernizing historic roadways to comply with current safety standards can be accomplished while retaining the historic integrity of the roadway, resulting in a no adverse effect determination under the NHPA. However, each property will need to be considered individually under the NHPA as projects advance into Phase I-C. If a *de minimis* level of use cannot be achieved, a more in-depth 4(f) analysis will be required. Additional information on 4(f) properties is described in Section 9 below.

## 8.3 Potential Impacts

The assessment of potential impacts to cultural and historic resources was limited to review of previously recorded cultural resources using the NMCRIS database administered by NMHPD's ARMS. A pedestrian survey was not conducted. Cultural resources include prehistoric and historic archeological sites; historic properties such as historic buildings, railroads, roadways, and acequias; and historic and archeological districts.

The NMCRIS review identified 158 archeological sites, 11 NRHP-register properties, 11 linear resources, 3 historic structures, and 1 historic object located within the footprint of the proposed build alternatives and fiber optic line. Of the identified sites, there are approximately 30 archeological sites that may be located in the median of I-40 that could potentially be affected by either of the build alternatives since both alternatives propose to widen to the inside of I-40 in the 150-mile study. Regarding the median resources, the boundaries for these resources are generic circles that are auto generated based on limited location data (a center point coordinate and a maximum site dimension). They may or may not be present in the median. Additionally, most of the I-40 median is previously disturbed and unlikely to contain intact cultural resources. However, further analysis of these areas will be required to identify potential impacts as projects advance into Phase I-C.

Additional resources were identified within 500 meters (1,640 feet) of the study area as described for existing conditions but are outside of the area of potential effect for the proposed build alternatives. Observation of the data indicates some areas have a higher cultural resource density than others. Note that maps of archeological sites are not included in this section because cultural resources are considered to be sensitive in nature and locational information is protected by Section 18-6-11 of the Annotated New Mexico Statutes (1978) and 36 CFR 296.18. Generalized locations and site density for archeological resources potentially affect by the build alternatives is provided Exhibit 17.

Exhibit 17. Archeological and Historic Resources Potentially Affected by the Proposed Alternatives

| MP | Enhanced 2-Lane with Added Lanes Alternative | 3-Lane Alternative | Fiber Optic (North and South) |
|---|---|---|---|
| 0 to 10 | 1 resource | 5 resources | North: 5 resources<br>South: 6 resources |
| 10 to 20 | 1 resource | 1 resource | North: 1 resource<br>South: 1 resource |
| 20 to 30 | 7 resources | 7 resources | North: 3 resources<br>South: 4 resources |
| 30 to 40 | 2 resources | 2 resources | North: 6 resources<br>South: 6 resources |
| 40 to 50 | 1 resource (1 in median) | 2 resources (1 in median) | North: 6 resources<br>South: 2 resources |
| 50 to 60 | 3 resources (2 in median) | 3 resources (2 in median) | North: 9 resources<br>South: 4 resources |
| 60 to 70 | 8 resources (7 in median) | 8 resources (7 in median) | North: 12 resources<br>South: 12 resources |
| 70 to 80 | 0 resources | 0 resources | North: 2 resources<br>South: 0 resources |
| 80 to 90 | 2 resources (1 in median) | 3 resources (1 in median) | North: 5 resources<br>South: 4 resources |
| 90 to 100 | 1 resource | 1 resource | North: 3 resources<br>South: 3 resources |
| 100 to 110 | 11 resources (6 in median) | 18 resources (6 in median) | North: 10 resources<br>South: 12 resources |
| 110 to 120 | 5 resources (2 in median) | 14 resources (2 in median) | North: 16 resources<br>South: 16 resources |
| 120 to 130 | 17 resources (5 in median) | 17 resources (5 in median) | North: 12 resources<br>South: 18 resources |
| 130 to 140 | 8 resources (4 in median) | 8 resources (4 in median) | North: 10 resources<br>South: 7 resources |
| 140 to 150 | 2 resources (2 in median) | 2 resources (2 in median) | North: 3 resources<br>South: 3 resources |
| **Totals:** | **69 resources (30 in median)** | **91 resources (30 in median)** | **North: 103 resources<br>South: 98 resources** |

A total of 11 important properties that are listed on or eligible for listing on the SR and NRHP are located within the study area, including 7 segments of Route 66, the Manuelito Archeological Complex near the Arizona state line, the Fort Wingate Ruin east of Gallup, Bowlin's Old Trading Post east of Grants, and the Rio Puerco Bridge near MP 140.

With the quantity and types of known sites located throughout the study, adverse impacts to cultural resources are likely to occur with any of the proposed build alternatives. While potential impacts to cultural resources are similar, there are slight differences. The Enhanced 2-Lane with Added Lanes Alternative intersects up to 69 previously recorded resources, and the 3-Lane Alternative intersects up to 91 resources. Similarly, fiber optic installation along the north side of I-40 would potentially intersect up to 103 resources, while fiber optic installation along the south side would potentially intersect up to 98 resources.

As individual projects are advanced to the environmental and preliminary design phase of project development, pedestrian surveys will be conducted to identify and document all cultural resources in the project's area of potential effect, and consultation with the SHPO and THPO will be completed, as applicable. Resources discovered by the pedestrian survey will be evaluated for their eligibility for listing on the NRHP. Undetermined, eligible, and listed properties will be assessed for potential project-related effects, and treatment recommendations will be offered for each resource with the potential of being adversely affected by projects.

# 9. Section 4(f) Resources

## 9.1 Methods

As mentioned above, Section 4(f) of the Department of Transportation Act dictates that federal transportation projects cannot "use" land from a publicly owned park, recreation area, wildlife or wildfowl refuge, or a significant historic site unless there is no prudent and feasible alternative. In addition to the significant historic sites discussed in the section above, there are publicly owned parks and conservation areas located throughout the study area. These were identified through a review of land use shapefiles and Google Earth imagery.

A 4(f) property is "used" when a transportation project does one or more of the following (FHWA 2023a):

- When land is permanently incorporated into a transportation project.
- When there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose.
- When there is a constructive use (a project's proximity impacts are so severe that the protected activities, features, or attributes of a property are substantially impaired).

## 9.2 Existing Conditions

Section 4(f) properties located in the study area are identified below in Exhibit 18. They include the We the People/Babe Ruth Park in Gallup, the Continental Divide Trail crossing, the El Malpais Conservation Area, Old Bowlin's Trading Post near Bluewater, and several sections of Historic Route 66. Additionally, there are 2 archeological sites, the Manuelito Archeological Complex and the Fort Wingate Ruin, that should be considered potential 4(f) properties. While archeological sites are generally not subject to Section 4(f) if they are eligible to the NRHP chiefly for their data potential, these 2 properties may possess qualities that lend themselves to preservation and interpretation. If this is the case, these archeological sites would likely require consideration under 4(f) as well as Section 106 of the NHPA. An evaluation of the potential impacts from the build alternatives is presented below.

## 9.3 Potential Impacts

Exhibit 18 identifies the 4(f) properties within the study area, their general location, and which alternatives may impact the properties.

Exhibit 18. Section 4(f) Properties Potentially Affected by the Proposed Build Alternatives

| Location | 4(f) Property | Alternatives Affected |
|---|---|---|
| Near Arizona Border | Manuelito Archeological Complex | All alternatives, either fiber optic alignment |
| MP 22 to 23 | We the People Park/Babe Ruth Park | Northern fiber optic footprint |
| East of Gallup | Fort Wingate Ruin | Northern fiber optic footprint |
| MP 48 | Continental Divide Trail/Campbell Pass | All alternatives, either fiber optic alignment |
| MP 84 to 89 | El Malpais Conservation Area | Southern fiber optic footprint |
| Near Bluewater | Old Bowlin's Trading Post | Northern fiber optic footprint |
| Multiple locations (See Historic Route 66 Section) | Historic Route 66 Segments | Alternate Route/Frontage Road Improvements |

In general, the potential impacts to Section 4(f) properties from the build alternatives are limited to Manuelito Archeological Complex and the crossing of the Continental Divide Trail.

The Manuelito Archeological Complex is listed on the NRHP and is considered a significant historic property under Section 4(f). If the Manuelito Archeological Complex is listed to the NRHP primarily for its data potential, then it would likely be exempt from 4(f) considerations (FHWA. 2023a). However, this property may possess qualities that lend itself to interpretation and preservation in place and, as such, should be considered. If this property requires 4(f) consideration, both build alternatives and the fiber optic installation options would potentially impact the Manuelito Archeological Complex. Additional investigation would be required to determine if the property merits 4(f) consideration, evaluate a potential 4(f) use, and identify potential measures to minimize harm. This would occur when individual projects advance to the environmental and preliminary design phase.

In the case of the Continental Divide Trail, trail users cross I-40 at an interchange, and there is an interpretive historic marker adjacent to the interchange at this location. However, because the trail does not have physical features within the highway right-of-way and there is no additional right-of-way required that would impact the trail, neither build alternative or fiber optic installation option would constitute a use of this property. Further, I-40 is an existing facility in this area, and there would be no substantial alignment change. As such, neither build alternative or installation of fiber optic would constitute a constructive 4(f) use of the trail.

In addition, as shown in Exhibit 18, there are 4, Section 4(f) properties that could potentially be affected by the proposed fiber optic alignments. Impacts to these potential Section 4(f) resources could potentially be avoided by routing the fiber optic line to the south side of I-40 near We the People Park, the Fort Wingate Ruin, and Old Bowlin's Trading Post and to the north side near the El Malpais Conservation Area. The Fort Wingate Ruin, which is listed on the NRHP and is considered a significant historic property under Section 4(f).

For the improvements proposed on I-40 with the build alternatives, there would be no 4(f) use of NRHP-listed sections of Route 66. However, for any improvements proposed on NRHP-listed Route 66 alternate routes/frontage roads, FHWA policy allows for a *de minimis* 4(f) impact to historic properties when the NHPA consultation results in a no adverse effect determination. There is precedent that modernizing historic roadways to comply with current safety standards can be accomplished while retaining the historic integrity of the roadway, resulting in a no adverse effect determination under the NHPA. However, each project and resource proposed on NRHP-listed alternate routes would need to be considered individually as future projects advance into the environmental and preliminary design phase.

# 10. Waterways

## 10.1 Methods

The NHD from the USGS and field investigations were used to determine non-wetland waterways that intersect with I-40 and adjacent alternate routes (USGS 2022).

## 10.2 Existing Conditions

Water in the study area primarily flows into 3 watersheds: the Puerco River watershed, the Rio San Jose watershed, and the Rio Puerco watershed. The Puerco River watershed is located from the Arizona state line to the continental divide, located at approximately MP 48. The continental divide acts as the boundary between the Puerco River and the Rio San Jose and Rio Puerco watersheds. The waterways located in the Puerco River watershed flow towards Arizona, typically entering the Little Colorado River and draining into the Colorado River, eventually entering the Pacific Ocean at the Gulf of California. Waterways located in the Rio San Jose and Rio Puerco watersheds drain into the Rio San Jose and Rio Puerco and flow east, ultimately draining into the Rio Grande, which eventually drains into the Gulf of Mexico.

The NHD identified 212 waterways that intersect I-40, or its alternate routes as shown in Attachment B, Water Resources. These flowlines included connectors, canals/ditches, rivers/streams, and artificial flow paths and included perennial, intermittent, and ephemeral waterways. Of the 212 waterways intersecting the study area, 18 are named and listed in Exhibit 19. Except for 2 perennial waterways (Rio San Jose and an unnamed waterway), all of these are classified as intermittent or ephemeral.

Exhibit 19. Waterways within 1,000 feet of I-40 and Adjacent Alternate Routes

| Name | Classification | Category |
|---|---|---|
| 1. Arroyo del Miranda | Stream/River | Ephemeral |
| 2. Bread Springs Wash | Stream/River | Intermittent |
| 3. Canada del Ojo | Stream/River | Intermittent |
| 4. Canada los Apaches | Stream/River | Intermittent |
| 5. Encinal Creek | Stream/River | Intermittent |
| 6. Gamerco Wash | Stream/River | Intermittent |
| 7. Middle Ditch | Canal Ditch | NA |
| 8. Paraje Irrigation Ditch | Canal Ditch | NA |
| 9. Puerco River | Stream/River | Intermittent |
| 10. Rinconada Creek | Stream/River | Intermittent |
| 11. Rio Gypsum | Stream/River | Intermittent |
| 12. Rio Puerco | Artificial Path | NA |
| 13. Rio San Jose | Stream/River | Perennial |
| 14. Salt Water Wash | Stream/River | Intermittent |
| 15. South Fork Puerco River | Stream/River | Intermittent |
| 16. Twin Buttes Wash | Stream/River | Intermittent |
| 17. Wild Celery Creek | Steam/River | Intermittent |
| 18. Unnamed | Stream/River | Perennial |

## 10.3 Potential Impacts

Review of waterways within the existing footprint and area of potential effect for the build alternatives identified numerous crossings in the study area. Ephemeral, intermittent, and perennial waterways intersect I-40 at 168 locations. A total of 975 drainage structures are associated with these waterways, including 154 bridges, 131 CBCs up to 16-by-16 feet in size, and 690 culverts. Of the 168 waterways, intermittent and perennial waterways cross the study area at 22 locations and include 5 culvert pipe structures, 6 CBCs, and 11 bridge structures. Exhibit 20 lists the locations of intermittent and perennial waterway crossings within the limits of the proposed build alternatives.

Exhibit 20. Intermittent and Perennial Waterway Crossings Potentially Affected by the Build Alternatives

| Location (MP) | Crossing Type | Waterway Type |
|---|---|---|
| 7 to 8 | Bridge | Puerco River (intermittent) |
| 11 to 12 | Bridge | Salt Water Wash (intermittent) |
| 17 to 18 | Bridge | Puerco River and Bread Springs Wash (both intermittent) |
| 20 to 21 | Pipe | Gamerco Wash (intermittent) |
| 25 to 26 | Bridge | Puerco River (intermittent) |
| 29 to 30 | Bridge | South Fork Rio Puerco (intermittent) |
| 35 to 36 | Bridge | South Fork Rio Puerco (intermittent) |
| 67 to 68 | CBC | Unnamed (perennial) |
| 68 to 69 (fiber optic, southern) | N/A | Unnamed (perennial) |
| 80 to 81 | Culvert Pipe | Rio San Jose (perennial) |
| 81 to 82 | Culvert Pipe | Rio San Jose (perennial) |
| 90 to 91 | Culvert Pipe | Rio San Jose (perennial) |
| 92 to 93 | Bridge | Rio San Jose (perennial) |
| 93 to 94 | Bridge and Pipe | Rio San Jose (perennial) |
| 94 to 95 | Culvert Pipe | Rio San Jose (perennial) |
| 97 to 98 | CBC | Rinconada Creek (intermittent) |
| 106 to 107 | CBC | Rio San Jose (perennial) |
| 112 to 113 | CBC | Wild Celery Creek (intermittent) |
| 120 to 121 | Bridge | Rio San Jose (perennial) |
| 130 to 131 | CBC | Arroyo del Miranda (intermittent) |
| 136 to 137 | Bridge | Canada los Apaches (intermittent) |
| 140 to 141 | Bridge and CBC | Unnamed (intermittent) and Rio Puerco (intermittent) |

Recent revisions to the definition of WOUS limit jurisdictional waters considered under the CWA to those used for interstate or foreign commerce, including the tributaries of such waters that are relatively permanent and standing or continuously flowing water (40 CFR 120). Ephemeral waterways that are tributaries to WOUS are no longer included because they are dry most of the time. Thus, impacts to ephemeral waterways will not require CWA permits for construction, although common best management practices to reduce stormwater runoff and erosion are still recommended as a stewardship measure.

The recent changes to the WOUS definition are less clear for intermittent waterways. Whether or not an intermittent waterway is jurisdictional would depend on the amount and frequency of surface flows in the drainage and will require an evaluation on a case-by-case basis. As a general practice, it is more expedient to assume intermittent waterways qualify as WOUS and proceed with the typical CWA permitting process.

In most instances, construction activities will consist of upsizing, extending, or reconstructing drainage structures (i.e., culverts and CBCs) to address existing culvert risks or accommodate the wider roadway. Impacts at waterways will include the loss of vegetation from channel reconstruction to accommodate new, reconstructed, or extended structures and associated bank stabilization, as needed. As mentioned above, ephemeral drainages no longer require a permit under Section 404 of the CWA, although best management practices to minimize stormwater runoff and encourage revegetation are recommended.

The Enhanced 2-Lane with Added Lanes Alternative is expected to require structure extensions at 47 drainage locations. The 3-Lane Alternative will require culvert extensions for an estimated 261 drainage locations in approximately 50 miles of the study area where the third lane would be built to the outside of I-40. Both build alternatives will require culvert replacements to increase their capacity where they do not currently meet design flows.

In addition to the pavement widening with the 2 build alternatives, construction of the fiber optic line could also impact waterways. However, impacts will be minimal as trenching for fiber optic installation has a narrow footprint. Construction of the fiber optic line could avoid intermittent and perennial drainages and minimize potential damage to the cable by attaching it to drainage structures. While these precautions may not be necessary for small ephemeral drainages, best management practices should be implemented to the extent needed and practical. Constructing the fiber optic alignment to the south of I-40 will affect 1 more waterway than the northern alignment.

Impacts to waterways will be similar with both alternatives but will be greater with the 3-Lane Alternative since it has a wider footprint and will require more widening to the outside of the existing I-40 footprint, where waterways and drainages are located, rather than the disturbed I-40 median. All waterways should be considered and field verified further when individual projects are advanced to the environmental and preliminary design phase of project development. The waterways mentioned above are potentially protected under the jurisdiction of the CWA and may require adherence to specific stipulations identified in the appropriate Section 404 permit.

Impacts to intermittent and perennial waterways will require coordination with the United States Army Corps of Engineers to determine the need for and type of Section 404 permit required, as well as state and tribal EPA representatives for a 401 water quality certification. Because the magnitude of improvements within the ordinary high-water mark at any 1 waterway will be relatively small, construction will likely be authorized under a nationwide permit. The specific impacts at waterways and permit requirements will be determined as individual projects are advanced for design and construction.

# 11. Wetlands

## 11.1 Methods

The USFWS NWI mapper provides information on water and wetland resources such as the waterway type, extent, and characteristics. Data from the NWI was downloaded from the website and added to the I-40 working environmental ArcGIS database to identify NWI features that intersect I-40 or its adjacent alternate routes (USFWS 2022a).

## 11.2 Existing Conditions

The NWI data identified 93 classified wetland resources intersecting I-40 or its adjacent alternate routes, all of which are classified as riverine wetland type. Attachment B, Water Resources, shows both the NWI resources within the study area and the various riverine features that occur within the study area. Any impacts to wetlands from proposed improvements to I-40 and adjacent alternate routes would need to be identified, permitted, and mitigated to meet requirements under the CWA.

## 11.3 Potential Impacts

Review of the NWI for the study area indicates the potential occurrence of 6 wetland resources, including 3 freshwater ponds and 3 freshwater emergent wetlands. The type and general location of known wetland resources within the study area are summarized in Exhibit 21.

In general, wetland resources within the study area are outside of the anticipated construction limits of the proposed roadway widening for either alternative but could be impacted by drainage structure improvements and construction of the fiber optic line. The actual presence and boundaries of wetland resources at these and other locations will need to be verified as individual projects are advanced to the environmental and preliminary design phase of project development. Because of its wider footprint, impacts to wetlands are likely greater with the 3-Lane Alternative as compared to the Enhanced 2-Lane with Added Lanes Alternative.

Exhibit 21. Potential Wetland Resources within the Potentially Affected by the Build Alternatives

| Location (MP) | Alternatives Affected | Wetland type |
|---|---|---|
| 35 to 36 | North and south fiber optic footprints | Freshwater ponds |
| 38 to 39 | South fiber optic footprint | Freshwater emergent wetland |
| 70 to 71 | North fiber optic footprint | Freshwater pond |
| 85 to 86 | North and south fiber optic footprints | Freshwater emergent wetland |
| 86 to 87 | North fiber optic footprint | Freshwater emergent wetland |
| 92 to 93 | North fiber optic footprint | Perennial freshwater pond |

Impacts to wetlands will require coordination with the United States Army Corps of Engineers to determine the permitting needs. The specific impacts to wetlands and permit requirements will be determined as individual projects are advanced for design and construction.

# 12. Floodplains

## 12.1 Methods

FEMA provides flood hazard information by identifying areas that have high flood potential and publishes a national flood hazard layer containing flood zone information. Flood zone information was uploaded to the I-40 environmental database (FEMA 2022a) and used to identify flood zones that intersect with I-40 and alternate routes.

## 12.2 Existing Conditions

A total of 58 floodplains intersect with or include I-40 or adjacent alternate routes, as shown in Attachment B, Water Resources. Of these 58 flood zones, 48 intersect with I-40. The alternate routes intersect with 39 flood zones, which include 9 additional floodplains that are not crossed by I-40, for a total of 58 unique flood zones crossed. Of the 58 flood zones, all but 1 are classified as flood zones A, AE, or AO, which are considered high risk areas with at least a 1% annual chance of flooding (100-year flood event). One of the flood zones crossing I-40 is classified as flood zone X, which is considered to be an area of low flood risk, experiencing a flood probability of 0.2% annually (FEMA 2022b). Any work within floodplains should consider potential flooding and impacts to floodplain elevation as part of roadway and drainage design.

## 12.3 Potential Impacts

Floodplains and floodways are protected by Executive Order 11988, Floodplain Management, and 23 CFR 650, Subpart A, Location and Hydraulics Design of Encroachment on Floodplains. These protections require that the effects to floodplain drainage conditions be assessed to reduce the risk of flood loss; minimize the effect of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains.

As discussed above, potential floodplain impacts were determined using FEMA's national flood hazard layer. This data was used to identify flood zones that intersect with I-40 and the estimated footprints for each alternative. Review of this FEMA data indicated several encroachments of floodplains in the study area. Exhibit 22 below lists the floodplains intersecting the study area.

## Exhibit 22. Floodplain Resources Potentially Affected by the Build Alternatives

| Location (MP) | Floodplain Type | Alternatives Affected |
|---|---|---|
| 7 to 8 | 100-year | All alternatives |
| 16 to 18 | 100-year | All alternatives |
| 19 to 21 | 100-year | All alternatives |
| 21 to 22 | 500-year | All alternatives |
| 23 to 26 | 100-year | All alternatives |
| 29 to 31 | 100-year | Southern fiber optic footprint |
| 33 to 34 | 100-year | Southern fiber optic footprint |
| 40 to 41 | 100-year | Southern fiber optic footprint |
| 43 to 44 | 100-year | Southern fiber optic footprint |
| 67 to 69 | 100-year | Southern fiber optic footprint and 3-lane alternative |
| 71 to 74 | 100-year | All alternatives |
| 79 to 80 | 100-year and 500-year | Northern fiber optic footprint |
| 80 to 82 | 100-year and 500-year | All alternatives |
| 85 to 87 | 100-year | All alternatives |
| 89 to 95 | 100-year | All alternatives |
| 97 to 98 | 100-year | All alternatives |
| 99 to 100 | 100-year | All alternatives |
| 104 to 105 | 100-year | All alternatives |
| 106 to 107 | 100-year | All alternatives |
| 140 to 141 | 100-year and 500-year | All alternatives |

Impacts to floodplains are not likely to occur with either build alternative or construction of the fiber optic line. Existing drainage flows will be preserved by the drainage improvements included with roadway widening so floodplain locations and their elevations will not be affected. Locations requiring more extensive drainage improvements will need to be investigated, and the potential for floodplain impacts verified as individual projects are advanced to the environmental and preliminary design phase of project development. Disturbance resulting from construction of the fiber optic line will be minimal and will not affect floodplains.

# 13. Habitat and Wildlife

## 13.1 Methods

I-40 and adjacent alternate routes intersect with multiple habitats over the 150-mile study area, some of which are within areas under the jurisdiction of federal, state agencies, or tribal agencies. Since habitats do not have rigid boundaries and many animals have a home range that extends well beyond the I-40 corridor, the area considered for the initial assessment of threatened and endangered species included a 1,000-foot area from the centerline of the eastbound and westbound lanes of I-40 and the centerline of alternate routes.

Several data sources were accessed to identify general habitat and determine the potential for threatened, endangered, or other species of concern to be within the study area. These sources included:

- Griffith et al. 2006. Ecoregions of New Mexico.
- USFWS IPAC (USFWS 2022b).
- USFWS Environmental Conservation Online System (ECOS) (USFWS 2023).
- NMDGF Environmental Review Tool (NMDGF 2022).
- BLM sensitive species list (BLM 2022b).
- NHNM New Mexico Biotics Database (2022a) and NHNM Rare Plant List (2022b).
- Navajo Nation Department of Fish and Wildlife (NNDFW) Navajo Endangered Species List (NNDFW 2023).
- Navajo Natural Heritage Program (NNHP) Navajo Nation Endangered Species List: Species Account Version 4.20 (NNHP 2023)
  - → Only species from Group 2 and 3 of the Navajo Endangered Species List were considered.
- EMNRD) State Endangered Plant List (EMNRD 2023).
- NatureServe Explorer (NatureServe 2023).

Additionally, the NHNM provides a dataset of observed species of interest across Arizona and New Mexico. This dataset includes observed species on non-tribal lands. Species on tribal lands are not included due to data sharing restrictions.

## 13.2 Existing Conditions

### 13.2.1 Habitat and Wildlife

The 150-mile study area crosses 3 level IV ecoregions, all of which are part of the larger level III Arizona/New Mexico Plateau ecoregion. The ecoregions that intersect the study area are:

- *Semi-Arid Table Lands* – Accounting for 128 miles, this ecoregion covers most of the study area. Ranging in elevation from 5,200 feet to 8,750 feet, this ecoregion's typical physiography includes mesas, plateaus, canyons, and valleys, with waterways consisting primarily of ephemeral and intermittent streams. The climate includes an average annual precipitation of 10 to 15 inches and a mild environment with average minimum

temperatures of 15 degrees Fahrenheit in January and average maximum highs of 86 degrees Fahrenheit in July. Vegetation is primarily scattered juniper/pinyon-juniper woodlands, with ground cover of fourwing saltbush, alkali sacaton, and mixed grama grasses (Griffith et al.2006).

- *Lava Malpais* – Accounting for approximately 8 miles of the project between MP 82 and 90, the elevation of this ecoregion is between 6,300 and 8,200 feet. The physiography of this ecoregion includes irregular lava flow plains, cinder cones, and lava tubes and caves. Average annual precipitation is 11 to 13 inches, and the climate is mild, with average minimum temperatures of 14 degrees Fahrenheit in January and average maximum highs of 89 degrees Fahrenheit in July. Vegetation is bare in some areas, with grasses, some shrubs (such as Apache plume or New Mexico Olive), and stunted pinyon pine forests. Some plants occur that are indicative of a moist climate, including ferns that grow in shady areas (Griffith et al. 2006).
- *Albuquerque Basins* – Accounting for approximately 14 miles of the project, from MP 136 to 150, this area ranges in elevation between 4,800 and 6,600 feet. Physiography in this region is primarily plains with alluvial fans present, associated with surrounding foothills. Waterways in this area are predominantly ephemeral and intermittent streams. The climate includes an average annual precipitation of 8 to 11 inches and a mild environment, with average minimum temperatures of 19 degrees Fahrenheit in January and average maximum highs of 92 degrees Fahrenheit in July. Vegetation is primarily sand scrub and desert grassland, with represented species of sand dropseed, blue and black grama, and sand sage (Griffith et al. 2006).

Each of these ecoregions covers a large area of the project footprint, and their habitat extends many miles beyond the study area. For this reason, the loss of habitat by the project is not expected to be significant, and wildlife using this habitat can relocate to nearby areas. Of particular concern will be migratory birds and bats using drainage structures and bridges for nesting and roosting areas. In addition, trees and utility poles may be used for nesting habitat by other protected bird species. Surveys for these species will be necessary as individual projects are advanced to the environmental and preliminary design phases of project development.

The loss of habitat and associated impacts to wildlife will result from both build alternatives but will be greater with the 3-Lane Alternative because of its wider footprint. The potential for impact to habitat and wildlife is reduced by the use of the existing median for much of the project because of the lower quality habitat found in this area.

### 13.2.2 Special Status Habitat and Wildlife

A review of the database mentioned above identified 94 species of plants and animals that have some level of concern by at least 1 agency and could occur within the study area. Animal species of concern are listed in Exhibit 23, and plant species of concern are listed in Exhibit 24.

Of the 94 species:

- 8 animal and 3 plant species are identified as threatened, endangered, or a candidate species regulated under the ESA. Section 7 of the ESA mandates that federal agencies aid the conservation of all federally listed species and ensure that their existence is not jeopardized by a given activity.
- 5 animal species and 2 plant species are uniquely listed (i.e., are not already listed federally) as threatened or endangered by the state. New Mexico State threatened and endangered

animal species are regulated by the NMDGF, and plant species are regulated by the EMNRD. It is generally considered a best management practice to consider New Mexico State threatened and endangered species during project development.

- 10 animal species and 18 plant species that are uniquely listed (i.e., are not already state or federally listed) as endangered by the Navajo Nation.
- 12 animal species and 9 plant species are uniquely listed (i.e., are not state, federally, or NNDFW listed) by the BLM as sensitive. BLM-listed species should be considered when performing an activity on BLM land.
- There are 20 NHNM rare plant species (that are not state, federally, NNDFW, or BLM listed) that potentially occur in the study area. The NHNM database lists 4 sensitive animal species and 3 sensitive plant species as having been observed in the study area. These species are not on state or federal lists as threatened or endangered, but organizations such as BLM and NHNM are monitoring them.

The 94 species discussed above may have habitat in the study area; however, the presence of specific habitat and the likelihood of occurrence were not investigated as part of this analysis and would need to be determined on a project-by-project basis as part of Phase I-C. Any species listed as threatened or endangered at either the federal, tribal, or state level are most critical and would require assessment, documentation, and consultation with the USFWS, NMDGF, BLM, and affected tribes as part of environmental review in Phase I-C if their critical habitat is located in areas on I-40 or adjacent alternate routes where improvements are proposed.

**Exhibit 23. Special Status Animal Species Potentially Occurring in the Study Area**

| Class | Species | Common Name | Federal Status[1] | State Status[1] | Navajo Listed | BLM Sensitive[1] | NHNM Observed[1] |
|---|---|---|---|---|---|---|---|
| 1. Amphibian | *Anaxyrus microscaphus* | Southwestern Toad | – | – | – | X | – |
| 2. Amphibian | *Lithobates pipiens* | Northern Leopard Frog | – | – | X | X | – |
| 3. Bird | *Aquila chrysaetos* | Golden Eagle | – | – | X | – | – |
| 4. Bird | *Buteo regalis* | Ferruginous Hawk | – | – | X | – | – |
| 5. Bird | *Cinclus mexicanus* | American Dipper | – | – | X | – | – |
| 6. Bird | *Strix occidentalis lucida* | Mexican Spotted Owl | Threatened | Threatened | X | – | – |
| 7. Bird | *Falco peregrinus* | Peregrine Falcon | – | Threatened | – | – | – |
| 8. Bird | *Falco femoralis* | Aplomado Falcon | – | Endangered | – | – | – |
| 9. Bird | *Vireo vicinior* | Gray Vireo | – | Threatened | – | – | – |
| 10. Bird | *Haliaeetus leucocephalus* | Bald Eagle | – | Threatened | X | – | – |

(Table Continues)

## Exhibit 23. Special Status Animal Species Potentially Occurring in the Study Area (Continued)

| Class | Species | Common Name | Federal Status[1] | State Status[1] | Navajo Listed | BLM Sensitive[1] | NHNM Observed[1] |
|---|---|---|---|---|---|---|---|
| 11. Bird | *Empidonax traillii extimus* | Southwestern Willow Flycatcher | Endangered | Endangered | X | – | – |
| 12. Bird | *Coccyzus americanus* | Yellow-Billed Cuckoo | Threatened | – | X | – | – |
| 13. Bird | *Athene cunicularia* | Western Burrowing Owl | – | – | – | X | X |
| 14. Bird | *Antrostomus arizonae* | Mexican Whip-Poor-Will | – | – | – | X | – |
| 15. Bird | *Gymnorhinus cyanocephalus* | Pinyon Jay | – | – | – | X | – |
| 16. Bird | *Toxostoma bendirei* | Bendire's Thrasher | – | – | – | X | – |
| 17. Bird | *Setophaga nigrescens* | Black-Throated Gray Warbler | – | – | – | – | X |
| 18. Bird | *Vermivora virginiae* | Virginia's Warbler | – | – | – | X | – |
| 19. Fish | *Hybognathus amarus* | Rio Grande Silvery Minnow | Endangered | – | – | – | – |
| 20. Fish | *Catostomus discobolus yarrowi* | Zuni Bluehead Sucker | Endangered | Endangered | X | – | – |
| 21. Fish | *Catostomus plebeius* | Rio Grande Sucker | – | – | – | X | X |
| 22. Fish | *Gila pandora* | Rio Grande Chub | – | – | – | X | X |
| 23. Fish | *Catostomus commersonii* | White Sucker | – | – | – | – | X |
| 24. Fish | *Gila cypha* | Humpback Chub | – | – | X | – | – |
| 25. Fish | *Gila robusta* | Roundtail Chub | – | – | X | X | – |
| 26. Fish | *Ptychocheilus lucius* | Colorado Pikeminnow | – | – | X | – | – |
| 27. Fish | *Xyrauchen texanus* | Razorback Sucker | – | – | X | – | – |
| 28. Insect | *Danaus plexippus* | Monarch Butterfly | Candidate | – | – | X | – |
| 29. Insect | *Speyeria nokomis* | Great Basin Silverspot | – | – | X | – | – |
| 30. Mammal | *Antilocapra americana* | Pronghorn | – | – | X | – | – |
| 31. Mammal | *Euderma maculatum* | Spotted Bat | – | Threatened | – | X | – |
| 32. Mammal | *Zapus hudsonius luteus* | New Mexico Meadow Jumping Mouse | Endangered | – | – | – | – |
| 33. Mammal | *Corynorhinus townsendii* | Townsend's Big-Eared bat | – | – | – | X | – |

(Table Continues)

## Exhibit 23. Special Status Animal Species Potentially Occurring in the Study Area (Continued)

| Class | Species | Common Name | Federal Status[1] | State Status[1] | Navajo Listed | BLM Sensitive[1] | NHNM Observed[1] |
|---|---|---|---|---|---|---|---|
| 34. Mammal | *Cynomys gunnisoni* | Gunnison's Prairie Dog | – | – | – | X | X |
| 35. Mammal | *Cratogeomys castanops* | Yellow-Faced Pocket Gopher | – | – | – | – | X |
| 36. Mammal | *Cynomys ludovicianus* | Black-Tailed Prairie Dog | – | – | – | X | – |
| 37. Mammal | *Nyctinomops macrotis* | Big Free-Tailed Bat | – | – | – | – | X |
| 38. Reptile | *Thamnophis eques megalops* | Northern Mexican Garter Snake | Threatened | – | – | – | – |
| 39. Reptile | *Sistrurus tergeminus* | Desert Massasauga | – | – | – | X | – |
| | | **Total** | **8** | **8** | **15** | **16** | **8** |

1 Data sources include USFWS 2022b, BLM 2022b, NMDGF 2022, and NHNM 2022a

## Exhibit 24. Special Status Vegetation Potentially Occurring in the Study Area

| Class | Species | Common Name | Federal Status[1] | State Status[1] | Navajo Listed | BLM Sensitive[1] | Rare Plant[1] | NHNM Observed[1] |
|---|---|---|---|---|---|---|---|---|
| 1. Plant | *Helianthus paradoxus* | Pecos Sunflower | Threatened | Endangered | – | – | X | X |
| 2. Plant | *Erigeron rhizomatus* | Rhizome Fleabane | Threatened | Endangered | X | – | X | – |
| 3. Plant | *Asplenium scolopendrium* var. *americanum* | American Hart's tongue Fern | Threatened | Endangered | – | – | X | – |
| 4. Plant | *Puccinellia parishii* | Parish Alkaligrass | – | Endangered | – | X | X | – |
| 5. Plant | *Allium gooddingii* | Goodding's Onions | – | Endangered | X | – | X | – |
| 6. Plant | *Carex geophila* | Sedge | – | – | – | – | – | X |
| 7. Plant | *Erigeron acomanus* | Acoma Fleabane | – | – | X | X | X | X |
| 8. Plant | *Proatriplex pleiantha* | Mancos Saltbrush | – | – | – | – | – | X |
| 9. Plant | *Aliciella formosa* | Aztec Gilia | – | – | X | – | – | – |
| 10. Plant | *Anticlea vaginatus* | Alcove Death Camas | – | – | X | – | – | – |
| 11. Plant | *Asclepias welshii* | Welsh's Milkweed | – | – | X | – | – | – |
| 12. Plant | *Astragalus cremnophylax* var. *hevroni* | Marble Canyon Milkvetch | – | – | X | – | – | – |
| 13. Plant | *Astragalus cronquistii* | Cronquist Milkvetch | – | – | X | – | – | – |
| 14. Plant | *Astragalus cutleri* | Cutler's Milkvetch | – | – | X | – | – | – |

(Table Continues)

## Exhibit 24. Special Status Vegetation Potentially Occurring in the Study Area (Continued)

| Class | Species | Common Name | Federal Status[1] | State Status[1] | Navajo Listed | BLM Sensitive[1] | Rare Plant[1] | NHNM Observed[1] |
|---|---|---|---|---|---|---|---|---|
| 15. Plant | *Astragalus knightii* | Knights Milkvetch | – | – | – | X | – | – |
| 16. Plant | *Astragalus naturitensis* | Naturita Milkvetch | – | – | X | – | – | – |
| 17. Plant | *Astragalus ripleyi* | Ripley Milkvetch | – | – | – | X | – | – |
| 18. Plant | *Astragalus accumbens* | Zuni Milkvetch | – | – | – | – | X | – |
| 19. Plant | *Astragalus chuskanus* | Chuska Milkvetch | – | – | – | – | X | – |
| 20. Plant | *Astragalus cliffordii* | Clifford's Milkvetch | – | – | – | – | X | – |
| 21. Plant | *Astragalus heilii* | Heil's Milkvetch | – | – | – | – | X | – |
| 22. Plant | *Astragalus humillimus* | Mancos Milkvetch | – | – | X | – | – | – |
| 23. Plant | *Astragalus micromerius* | Chaco Milkvetch | – | – | – | – | X | – |
| 24. Plant | *Astragalus naturitensis* | Naturita Milkvetch | – | – | – | – | X | – |
| 25. Plant | *Carex specuicola* | Navajo Sedge | – | – | X | – | – | – |
| 26. Plant | *Eriogonum lachnogynum* var. *colobum* | Wild Buckwheat, Clipped | – | – | – | X | X | – |
| 27. Plant | *Erigeron sivinskii* | Sivinskii Fleabane | – | – | – | – | X | – |
| 28. Plant | *Eriogonum lachnogynum* var. *sarahiae* | Sarah's Wild Buckwheat | – | – | – | – | X | – |
| 29. Plant | *Errazurizia rotundata* | Round Dunebroom | – | – | X | – | – | – |
| 30. Plant | *Mentzelia todiltoensis* | Todilto Stickleaf | – | – | – | X | – | – |
| 31. Plant | *Pediocactus bradyi* | Brady Pincushion Cactus | – | – | X | – | – | – |
| 32. Plant | *Pediocactus peeblesianus* ssp. *Fickeiseniae* | Fickeisen Plains Cactus | – | – | X | – | – | – |
| 33. Plant | *Penstemon navajoa* | Navajo Penstemon | – | – | X | – | – | – |
| 34. Plant | *Perityle specuicola* | Alcove Rock Daisy | – | – | X | – | – | – |
| 35. Plant | *Physaria newberryi* var. *yesicola* | Yeso Twinpod | – | – | – | X | X | – |

(Table Continues)

## Exhibit 24. Special Status Vegetation Potentially Occurring in the Study Area (Continued)

| Class | Species | Common Name | Federal Status[1] | State Status[1] | Navajo Listed | BLM Sensitive[1] | Rare Plant[1] | NHNM Observed[1] |
|---|---|---|---|---|---|---|---|---|
| 36. Plant | *Physaria navajoensis* | Navajo Bladderpod | – | – | X | – | X | – |
| 37. Plant | *Platanthera zothecina* | Alcove Bog-Orchid | - | - | X | - | - | - |
| 38. Plant | *Sclerocactus cloverae* ssp. *brackii* | Hardwall Brack's Cactus | – | – | - | X | – | – |
| 39. Plant | *Sclerocactus cloverae* | Clovers Cactus | – | – | - | X | – | – |
| 40. Plant | *Townsendia gypsophila* | Gypsum Townsend Daisy | – | – | - | X | – | – |
| 41. Plant | *Abronia bigelovii* | Sand verbena | – | – | - | X | – | – |
| 42. Plant | *Dalea scariosa* | La Jolla Prairie Clover | – | – | - | – | – | X |
| 43. Plant | *Artemisia pygmaea* | Pygmy Sagebrush | – | – | -- | – | X | – |
| 44. Plant | *Camissonia scapoidea* | Leafless Suncups | – | – | - | – | X | – |
| 45. Plant | *Helianthus praetermissus* | New Mexico Sunflower | – | – | - | – | X | – |
| 46. Plant | *Mentzelia filifolia* | Threadleaf Blazingstar | – | – | - | – | X | – |
| 47. Plant | *Mentzelia todiltoensis* | Jemez Mountain Blazingstar | – | – | - | – | X | – |
| 48. Plant | *Muhlenbergia arsenei* | Navajo Muhly | – | – | - | – | X | – |
| 49. Plant | *Sclerocactus mesae-verdae* | Mesa Verde Cactus | - | - | X | - | - | - |
| 50. Plant | *Sclerocactus papyracanthus* | Paperspine Fishhook Cactus | – | – | - | – | X | – |
| 51. Plant | *Senecio cliffordii* | Clifford's Groundsel | – | – | - | – | X | – |
| 52. Plant | *Talinum brevifolium* | Shortleaf Rockpink | – | – | - | – | X | – |
| 53. Plant | *Phacelia serrata* | Cinders Phacelia | – | – | - | – | X | – |
| 54. Plant | *Phacelia sivinskii* | Sivinskii Phacelia | – | – | - | – | X | – |
| 55. Plant | *Phemeranthus brachypodius* | Laguna Fame Flower | – | – | - | – | X | – |
| | | **Total:** | **4** | **6** | **20** | **11** | **29** | **5** |

1 Data sources include USFWS 2022b, NMDGF 2022, BLM 2022b, and NHNM 2022a and 2022b, and EMNRD 2023

# 13.3 Potential Impacts

## 13.3.1 Habitat and Wildlife

As discussed in the existing conditions section, each of the 3 ecoregions cover a large area of the study area footprint, and their habitat extends many miles beyond the study area. For this reason, the loss of habitat by the project is not expected to be significant, and wildlife using this habitat can relocate to nearby areas. Moreover, the potential for impact is reduced by the use of the existing median for much of the project because of the lower quality habitat found in this area. Of particular concern will be migratory birds and bats using drainage structures and bridges for nesting and roosting areas. In addition, trees and utility poles may be used for nesting habitat by other protected bird species. Surveys for these species will be necessary as individual projects are advanced to the environmental and preliminary design phases of project development.

The loss of habitat and associated impacts to wildlife will result from both build alternatives but will be greater with the 3-Lane Alternative because of its wider footprint. Habitat and wildlife impacts resulting from fiber optic line construction will be negligible and will not differ with the north or south alignments.

## 13.3.2 Special Status Species – Threatened, Endangered, and Candidate Species

Phase I-B analysis focused on a review of potential impacts to federal, tribal, and state-regulated threatened, endangered, or candidate species. A review of environmental resources identified 46 plant and animal species listed as threatened, endangered, or a candidate species at either the federal, state, or Navajo Nation level in the study area. These species require assessment, documentation, and consultation with the USFWS, NMDGF, and affected tribes, depending on their status. BLM species were not assessed since no habitat impacts are expected on BLM-managed lands. At the federal level, the ESA mandates federal agencies aid in the conservation of all federally listed species, ensuring their existence is not jeopardized by a given activity. At the state level, protection is established by the New Mexico Wildlife Conservation Act (17-2-40.1 NMSA 1978) and requires agencies to consider New Mexico State threatened and endangered species during project development. Other protected categories, such as species of concern or sensitive species, may require consideration and action when individual projects are advanced; however, for Phase I-B the analysis was limited to federal, tribal, and state threatened and endangered species only, which, if located in the study area, could require avoidance or other mitigation effort.

For each of the federal, tribal, and/or state listed species, the Phase I-B assessment considered first if they occur in the county of concern and was then followed by whether habitat used by the species is likely to occur within or near the area potentially impacted by the build alternatives. If likely habitat is not present, a recommendation of no further analysis is made. Each listed species potentially occurring in the study area is listed below.

- *Mexican Spotted Owl (Strix occidentalis lucida), Federal and State Threatened, and Navajo Nation Endangered* – Information from the life history description in the USFWS ECOS states, “Spotted owls are residents of old-growth or mature forests that possess complex structural components (uneven aged stands, high canopy closure, multistoried levels, high tree density). Canyons with riparian or conifer communities are also important components” (USFWS 2023, Mexican Spotted Owl). Habitat for this species is unlikely within the study area. No further consideration is recommended.

- *Peregrine Falcon (Falco peregrinus), State Threatened* – Information from the life history description in the USFWS ECOS states, "The habitat of the Peregrine Falcon includes many terrestrial biomes in North America…Peregrine Falcons generally utilize open habitats for foraging. Nonbreeding Peregrine Falcons may also occur in open areas without cliffs. Many artificial habitats like towers, bridges and buildings are also utilized by Peregrine Falcons" (USFWS 2023, Peregrine Falcon). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *Aplomado Falcon (Falco femoralis), State Endangered* – Information from the life history description in the USFWS ECOS states, "Species range includes palm and oak savannahs, various desert grassland associations, and open pine woodlands…the essential habitat elements appear to be open terrain with scattered trees" (USFWS 2023, Aplomado Falcon). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *Gray Vireo (Vireo vicinior), State Threatened* – Information from the life history description in the USFWS ECOS states, "Found in desert scrub, mixed juniper or pinyon pine and oak scrub associations, and chaparral, in hot, arid mountains and high plains scrubland" (USFWS 2023, Gray Vireo). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *Bald Eagle (Haliaeetus leucocephalus), State Threatened, Navajo Nation Endangered* – Information from the life history description in the USFWS ECOS states, "Bald Eagles typically nest in forested areas adjacent to large bodies of water, staying away from heavily developed areas when possible" (USFWS 2023, Bald Eagle). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *Southwestern Willow Flycatcher (Empidonax traillii extimus), Federal, State, and Navajo Nation Endangered* – Information from the life history description in the USFWS ECOS states this species, "requires dense riparian habitats with cottonwood/willow and tamarisk vegetation and microclimatic conditions that are dictated by the local surroundings" (USFWS 2023, Southwestern Willow Flycatcher). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *Yellow-Billed Cuckoo (Coccyzus americanus), Federal Threatened, Navajo Nation Endangered* – Information from the life history description in the USFWS ECOS states, "Yellow-billed cuckoos use wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland and dense thickets along streams and marshes" (USFWS 2023, Yellow-Billed Cuckoo). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *Rio Grande Silvery Minnow (Hybognathus amarus), Federal Endangered* – Information from habitat section NatureServe states, "This riverine minnow occurs in waters with slow to moderate flow in perennial sections of the Rio Grande…Most often it uses silt substrates (much less often sand) and typically occurs in pools, backwaters, or eddies formed by debris piles" (NatureServe 2023, Rio Grande Silvery Minnow). Habitat for this species is outside of the study area. No further consideration is recommended.
- *Zuni Bluehead Sucker (Catostomus discobolus yarrow), Federal, State, and Navajo Nation Endangered* – Information from habitat section on NatureServe states, "Currently the subspecies occurs in low numbers in several creeks in the Kinlichee Creek and Canyon de Chelly areas in Arizona and is restricted to three isolated populations in the upper Rio Nutria drainage in the Zuni River watershed in west-central New Mexico" (NatureServe 2023, Zuni Bluehead Sucker). Habitat for this species is unlikely within the study area. No further consideration is recommended.

- *Monarch Butterfly (Danaus plexippus), Federal Candidate* – Information from habitat section on NatureServe states, "Breeding areas are virtually all patches of milkweed in North America and some other regions" (NatureServe 2023, Monarch). Habitat for this species likely exists within the study area, and further analysis is recommended to determine potential impacts and mitigation efforts.
- *Spotted Bat (Euderma maculatum), State Threatened* – Information from habitat section on NatureServe states, "This species occurs in various habitats from desert to montane coniferous stands, including open ponderosa pine, pinyon-juniper woodland, canyon bottoms, riparian and river corridors, meadows, open pasture, and hayfields…Roosts, including maternity roosts, generally are in cracks and crevices in cliffs" (NatureServe 2023, Spotted Bat). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *New Mexico Meadow Jumping Mouse (Zapus hudsonius luteus), Federal Endangered* – Information from the life history description in the USFWS ECOS states that the jumping mouse utilizes the following habitat types: "riparian communities along rivers and streams, springs and wetlands, or canals and ditches that contain: 1) persistent emergent herbaceous wetlands; or 2) scrub-shrub riparian areas that are composed of willows or alders" (USFWS 2023 New Mexico Meadow Jumping Mouse). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *Northern Mexican Garter Snake (Thamnophis eques megalops), Federal Threatened* – Information from the general information description in the USFWS ECOS states, "The northern Mexican gartersnake is considered a riparian obligate and occurs chiefly in the following general habitat types: (1) source-area wetlands—e.g., ciénegas (mid-elevation wetlands with highly organic, reducing [basic, or alkaline] soils), stock tanks (small earthen impoundment); (2) large river riparian woodlands and forests; and (3) streamside gallery forests" (USFWS 2023, Northern Mexican gartersnake). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *Pecos Sunflower (Helianthus paradoxus), Federal Threatened and State Endangered* – Information from habitat section on NatureServe states the species "grows in saline soils that are permanently saturated. Areas that maintain these conditions are commonly called ciénegas (desert wetlands) associated with springs. The required conditions are also found along stream margins and at the margins of impoundments" (NatureServe 2023, Pecos Sunflower). Habitat for this species likely exists in the study area, and critical habitat for this species has been identified in the study area. Further analysis is recommended to determine potential impacts and mitigation efforts.
- *Rhizome Fleabane (Erigeron rhizomatus), Federal Threatened, State Endangered, and Navajo Nation Endangered* – Information from conservation status section on NatureServe states, "The plants prefer specific substrates (outcrops of coarse-textured shales on the Baca Formation in west-central New Mexico and the Chinle Formation in northwestern New Mexico and northeastern Arizona) that are potentially minable" (NatureServe 2023, Rhizome Fleabane). Habitat for this species is unlikely within the study area. No further consideration is recommended.
- *American Hart's Tongue Fern (Asplenium scolopendrium var. americanum), Federal Threatened* – Information from habitat section on NatureServe states, "American Hart's Tongue Fern is found on or near dolomitic limestone (a type of limestone high in magnesium), where it typically occurs in moist crevices, on mossy rock outcrops, or in sinkholes or blowholes of limestone caves" (NatureServe 2023, American Hart's Tongue Fern). Habitat for this species is unlikely within the study area. No further consideration is recommended.

- *Northern Leopard Frog (Lithobates pipiens), Navajo Nation Endangered* – Information from habitat section on NatureServe states, "Northern leopard frogs live in the vicinity of springs, slow streams, marshes, bogs, ponds, canals, flood plains, reservoirs, and lakes; usually they are in or near permanent water with rooted aquatic vegetation" (NatureServe 2023, Northern Leopard Frog). Habitat for this species will be limited to locations with sufficient waters, predominantly wetlands. In the study area, the only location that may have suitable habitats is between MP 85 and 95, which is outside of the Navajo Nation jurisdiction. Therefore, no further consideration is recommended for this species.
- *Humpback Chub (Gila cypha), Navajo Nation Endangered* – Information from habitat section on NatureServe states, "Humpback chubs inhabit large rivers. Adults use various habitats, including deep turbulent currents, shaded canyon pools, areas under shaded ledges in moderate current, riffles, and eddies" (NatureServe 2023, Humpback Chub). The range of the Humpback Chub does not typically extend into New Mexico. No further consideration is recommended.
- *Roundtail Chub (Gila robusta), Navajo Nation Endangered* - Information from habitat section on NatureServe states, "Habitat includes rocky runs, rapids, and pools of creeks and small to large rivers; also large reservoirs in the upper Colorado River system; generally this species prefers cobble-rubble, sand-cobble, or sand-gravel substrate. Adults are associated with the largest, most permanent water in streams" (NatureServe 2023, Roundtail Chub). Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Colorado Pikeminnow (Ptychocheilus lucius), Navajo Nation Endangered* – Information from habitat section on NatureServe states, "Habitat includes medium to large rivers. Young prefer small, quiet backwaters. Adults use various habitats, including deep turbid strongly flowing water, eddies, runs, flooded bottoms, or backwaters (especially during high flow). Lowlands inundated during spring high flow appear to be important habitats" (NatureServe 2023, Colorado Pikeminnow). Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Razorback Sucker (Xyrauchen texanus), Navajo Nation Endangered* – Information from habitat section on NatureServe states, "Habitats required by adults in rivers include deep runs, eddies, backwaters, and flooded off-channel environments in spring; runs and pools often in shallow water associated with submerged sandbars in summer; and low-velocity runs, pools, and eddies in winter" (NatureServe 2023, Razorback sucker). Habitat for this species in unlikely in the study area. No further consideration is recommended.
- *Cutler's Milkvetch (Astragalus cutleri), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat includes "warm desert shrub communities, on sandy, seleniferous soils with level to moderate slopes, on the Shinarump and Chinle Formations. Known populations from ca. 3800ft elevation". (NNHP 2020, Cutler's Milkvetch) Habitat for this species in unlikely in the study area. No further consideration is recommended.
- *Mancos Milkvetch (Astragalus humillimus), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat includes, "typically found on large, nearly flat sheets of exfoliating whitish-tan colored sandstone, in small depressions and sand filled cracks on or near ledges and mesa tops in slickrock communities of Point Lookout & Cliffhouse Sandstone" (NNHP 2020, Mancos Milkvetch) Habitat for this species in unlikely in the study area. No further consideration is recommended.

- *Brady Pincushion Cactus (Pediocactus bradyi), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat includes "Kaibab limestone chips overlaying soils derived from Moenkopi shale and sandstone. It is typically found on gently sloping benches and terraces with sparse vegetation" (NNHP 2020, Brady Pincushion Cactus). Habitat for this species does not occur within the study area. No further consideration is recommended.
- *Mesa Verde Cactus (Sclerocactus mesae-verdae), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat includes "typically in the Fruitland and Mancos shale formations, but also in the Menefee Formation overlaying Mancos shale. It is most frequently found on the tops of hills or benches and along slopes" (NNHP 2020, Mesa Verde Cactus). Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Pronghorn (Antilocapra americana), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document classifies pronghorn habitat as "grasslands or desertscrub areas with rolling or dissected hills or small mesas, and usually with scattered shrubs and trees" (NNHP 202, Pronghorn). Habitat for this species exists along much of the study area, except for the Continental Divide area, which is predominantly pinyon-juniper habitat, but extends for many miles beyond the corridor. None of the build alternatives are likely to impact this species, either through habitat loss or from wildlife-vehicle collisions, as crash data do not show a high incidence of wildlife-vehicle collisions involving this specific animal. As such, no further consideration for this species is recommended.
- *Golden Eagle (Aquila chrysaetos), Navajo Nation Endangered* – Information from the habitat section on NatureServe states, "Golden eagles generally inhabit open and semi-open country such as prairies, sagebrush, arctic and alpine tundra, savannah or sparse woodland, and barren areas, especially in hilly or mountainous regions, in areas with sufficient mammalian prey base and near suitable nesting sites" (NatureServe 2023, Golden Eagle). Due to the presence of heavy human activity from the freeway, habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Ferruginous Hawk (Buteo regalis), Navajo Nation Endangered* – Information from the life history description in the USFWS ECOS states that "ideal habitat for the Ferruginous Hawk is grassland and shrub-steppe habitat including pastures, hayland and cropland…nests can be found in trees and large shrubs and on roofs" (USFWS 2023, Ferruginous Hawk). Habitat for this species likely exists within the study area. However, any habitat potentially impacted by project alternatives are unlikely to provide quality nesting or feeding grounds. As such, no further consideration is recommended.
- *American Dipper (Cinclus mexicanus), Navajo Nation Endangered* – Information from habitat section on NatureServe states this species inhabits "montane streams, primarily swift-flowing, less frequently along mountain ponds and lakes" (NatureServe 2023, American Dipper). Habitat for this species does not occur within the study area. No further consideration is recommended.
- *Great Basin Silverspot (Speyeria nokomis nokomis), Navajo Nation Endangered* – Information from habitat section on NatureServe states this species is "found in streamside meadows and open seepage areas with an abundance of violets in generally desert landscapes" (NatureServe 2023, *Argynnis nokomis nokomis*). The only habitat suitable for this species is between MP 85 and 95, which is outside of the Navajo Nation's jurisdiction. Therefore, no further consideration is recommended.

- *Aztec Gilia (Aliciella formosa), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that this species habitat is "endemic to soils of the Nacimiento Formation. Salt desert scrub communities, 5,000 to 6,400 feet" (NNHP 2020, Azec Gilia) which does not occur within the I-40 study area. Therefore, no further consideration is recommended.
- *Gooddings Onion (Allium gooddingii), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that the habitat consists of "spruce-fir forests and mixed conifer forests; in Chuska Mountains also under Gambel oak thickets interspersed with aspen, dogwood, and Douglas fir; in moist, shady canyon bottoms and north-facing slopes, often along streams' (NNHP 2020, Gooddings Onion). Habitat for this species in unlikely in the study area. No further consideration is recommended.
- *Alcoves Death Camas (Anticlea vaginatus), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is generally "hanging gardens in seeps and alcoves, mostly on Navajo Sandstone" (NNHP 2020, Alcove Death Camas). The habitat for this species does not exist in the study area. No further consideration is recommended.
- *Welsh's Milkweed (Asclepias welshii), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "Active sand dunes derived from Navajo sandstone in sagebrush, juniper, and ponderosa pine communities" (NNHP 2020, Welsh's Milkweed). Habitat for this species in unlikely in the study area. No further consideration is recommended.
- *Marble Canyon Milkvetch (Astragalus cremnophylax* var. *hevronii), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "crevices and depressions with shallow soils on Kaibab Limestone on rim-rock benches at the Marble Canyon edge in Great Basin Desertscrub communities" (NNHP 2020, Barneby Marble Canyon Milkvetch). Marble canyon is outside of the study area. No further consideration is recommended.
- *Cronquist Milkvetch (Astragalus cronquistii), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "salt desert shrub and blackbrush communities on sandy or gravelly soils derived from the Cutler and Morrison Formations. Also known to occur on Mancos Shale 4,750 to 5,800 in elevation" (NNHP 2020, Cronquist's Milkvetch). Habitat for this species in unlikely in the study area. No further consideration is recommended.
- *Naturita Milkvetch (Astragalus naturitensis), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "sand filled pockets of sandstone slickrock and rimrock pavement along canyons in the pinion-juniper zone." (NNHP 2020, Maturita Milkvetch) Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Navajo Sedge (Carex specuicola), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "found in seeps and hanging gardens, on vertical sandstone cliffs and alcoves. Known populations occur from 4,600 ft to 7,200 ft" (NNHP 2020, Navajo Sedge). Habitat for this species in unlikely in the study area. No further consideration is recommended.
- *Acoma Fleabane (Erigeron acomanus), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "sandy slopes beneath sandstone cliffs of the Entrada Sandstone Formation in piñon-juniper woodland communities. Populations are known from ca. 7000 ft elevation" (NNHP 2020, Acoma fleabane). Habitat for this species is unlikely in the study area. No further consideration is recommended.

- *Round Dunebroom (Errazurizia rotundata), Navajo Nation Endangered* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "known from several types of outcrops ranging from sandy soils in sandstone, gravelly soils in calcareous outcrops, to deep, alluvial cinders in sandstone breaks. Generally in exposed habitats in the semi-arid environment of the Great Basin Desertscrub" (NNHP 2020, Round dune-broom). Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Fickeisen Plains Cactus (Pediocactus peeblesianus* ssp. *fickeiseniae)* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "soils overlain by Kaibab Limestone in Navajoan desert or Great Plains Grassland, along canyon rims and flat terraces along washes" (NNHP 2020, Fickeisen Plains Cactus). Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Navajo Penstemon (Penstemon navajoa)* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "rocky, open places in Ponderosa Pine, aspen, Douglas-fir communities from 7,000 to 10,300 feet elevation" (NNHP 2020, Navajo Penstemon). Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Alcove Rock Daisy (Perityle specuicola)* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "known from hanging garden communities at 3,690 to 4,000 feet elevation" (NNHP 2020, Alcove Rock Daisy). Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Navajo Bladderpod (Physaria navajoensis)* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species "mostly occurs on windward, windswept mesa rims and nearby habitat with little vegetative cover and high insolation. Also found at the base and slopes of small hills of the Chinle Formation" (NNHP 2020, Navajo Bladderpod). Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Alcove Bog-Orchid (Platanthera zothecina)* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "seeps, hanging gardens, and moist stream areas from the desert shrub to pinyon-juniper & Ponderosa pine/mixed conifer communities" (NNHP 2020, Alcove bog-orchid). Habitat for this species is unlikely in the study area. No further consideration is recommended.
- *Brack's Hardwall Cactus (Sclerocactus cloverae brackii)* – Information from the habitat section of the NNHP Species Accounts document states that habitat for this species is "desert scrub and scattered juniper communities. On sandy clay hills of the Nacimiento Formation at 5,000 to 6,000 feet" (NNHP 2020, Brack's Hardwall Cactus). Habitat for this species is unlikely in the study area. No further consideration is recommended.

The recommendation of no further consideration for the species discussed above is based on the likelihood of populations occurring within the study area. It is possible individual specimens could occur within the I-40 study area; however, primary habitat that would attract these species or foster their propagation is not present. A total of 2 threatened, endangered, and candidate species have the potential to occur within the study area. Potential impacts and considerations for these species are described below.

### 13.3.3 Monarch Butterfly (*Danaus plexippus*)

The USFWS currently lists the monarch butterfly as a candidate species, allowing for project developers and agencies to voluntarily take actions in their projects to conserve this species. Monarchs are dependent on various milkweed species (*Asclepias* spp.*)* to sustain a healthy population. There are multiple species of milkweed that can be used by the Monarch Butterfly to lay eggs, and they exist in numerous habitats. The potential for milkweed to occur within the study area is high, and future projects should consider survey for milkweed. If suitable habitat is found during subsequent environmental studies for future construction projects, revegetation using milkweed and other suitable pollinator plants should be considered.

### 13.3.4 Pecos Sunflower (*Helianthus paradoxus*)

Listed as a federally threatened species and as a state endangered species, this species has potential to occur within the study area. NatureServe states the species "grows in saline soils that are permanently saturated. Areas that maintain these conditions are commonly called ciénegas (desert wetlands) associated with springs" (NatureServe 2023, Pecos Sunflower). This habitat description is consistent with what is found in the study area between MP 84 and 90. There are multiple wetlands and waterways intersecting the study area at this location. Additionally, the USFWS IPaC tool identifies critical habitat for the Pecos Sunflower intersects with the study area around MP 86. The USFWS defines critical habitat as specific areas within the geographic area, occupied by the species at the time it was listed, that contain the physical or biological features that are essential to the conservation of endangered and threatened species (USFWS 2017). With identified critical habitat and a suitable environment in the study area between MP 84 and 90, future projects will require survey of the area to identify impacts to this species and habitat.

# 14. Farmland Soils

## 14.1 Methods

The USDA NRCS provides a Web Soil Survey dataset for soil survey information (USDA 2022). This online tool allows for the investigation of soil types within a study area. For this study, the study team used this information to identify soils associated with farmlands that intersect I-40 and adjacent alternate routes.

## 14.2 Existing Conditions

The USDA web soil survey report classified 97 soil types located within 1,000 feet of the study area. Across the study area, most of the soil is classified as "not prime farmland." However, there are several small areas classified as farmlands of local importance and prime farmland if irrigated. The areas that have soils of importance for farmlands are identified in Exhibit 25 and shown in Attachment C, Farmlands. Alternatives that would require land outside of the existing right-of-way could potentially impact areas classified as farmland and may need additional investigation or consultation with the USDA NRCS.

Exhibit 25. Prime Farmlands in the I-40 Study Area

| Location | Soil Type | Farmland |
|---|---|---|
| MP 1 to 10 | Small areas along I-40 and adjacent alternate routes have zia sandy loam (1% to 5% slopes) | Farmland of local importance |
| MP 25 and 30 to 39 | There are several patches of potential farmland soils, including venadito clay (1% to 3% slopes), zia sandy loam (1% to 5% slopes), hawaikuh clay loam (0% to 2% slopes), and nuffel-venadito complex (1% to 3% slopes) | Farmland of local importance |
| MP 51 and 68 | These areas have venadito clay (1% to 3% slopes), zia sandy loam (1% to 5% slopes), and hawaikuh clay loam (0% to 2% slopes). | Farmland of local importance |
| MP 70 to 75 | Aparejo clay (0% to 1% slopes) | Prime farmland if irrigated |
| MP 105 and 115 to 120 | These areas have clovis sandy clay loam (1% to 3% slopes) | Prime farmland if irrigated |

## 14.3 Potential Impacts

The USDA NRCS is concerned with any action that may impair the productive capacity of American agriculture (CFR 657.1). Using the USDA Web Soil Survey tool, soils that are classified as prime or unique that occur within the area of the proposed build alternatives or fiber optic footprint were identified. All prime or unique farmlands potentially impacted were identified and listed in Exhibit 26 below and are shown in Attachment C, Farmlands.

## Exhibit 26. Unique Farmlands Potentially Affected by the Build Alternatives

| Location (MP) | Farmland Potentially Disturbed | Alternatives Affected |
|---|---|---|
| 1 to 2 | Farmland of Local Importance | All alternatives |
| 3 | Farmland of Local Importance | All alternatives |
| 25 to 25.25 | Farmland of Local Importance | All alternatives |
| 31.25 | Farmland of Local Importance | Northern fiber optic footprint |
| 33.5 to 35.75 | Farmland of Local Importance | All alternatives |
| 37.75 | Farmland of Local Importance | Northern fiber optic footprint |
| 38.25 to 39 | Farmland of Local Importance | All alternatives |
| 47.5 to 55 | Farmland of Local Importance | All alternatives |
| 57 | Farmland of Local Importance | All alternatives |
| 66.25 to 67.5 | Farmland of Local Importance | All alternatives |
| 70.5 to 71 | Prime Farmland If Irrigated | All alternatives |
| 74.5 to 75 | Prime Farmland If Irrigated | All alternatives |
| 105 to 105.5 | Prime Farmland If Irrigated | All alternatives |
| 116 to 116.5 | Prime Farmland If Irrigated | All alternatives |

As shown in Exhibit 26, areas that qualify as prime farmlands based on the NRCS qualifying criteria are present near the study area. These soils are located within the existing I-40 right-of-way but are not currently being farmed; therefore, impacts to prime farmlands would not occur with either alternative. Because this status could change, further analysis to verify their status at that time should be undertaken as individual projects are advanced to the environmental and preliminary design phase of project development.

# 15. Summary of Environmental Analysis for Phase I-B

As discussed in Section 1.2, the build alternatives for I-40 were evaluated for their potential impacts to environmental, cultural, and community resources. Because of the large geographic coverage of the study area, engineering design details used for the analysis were preliminary and limited to concepts only. Detailed plan and profile drawings will be prepared as individual projects are advanced for implementation. For this reason, the environmental analysis for Phase I-B was based on assumed construction footprints of the 2 build alternatives identified for I-40, an assumed fiber optic line that extends the entire length of the corridor along either side of the I-40 mainline. Exhibit 27 summarizes impacts for each of the resources evaluated and identifies environmental considerations for future projects.

Exhibit 27. Phase I-B Alternatives Evaluation Summary

| Resource | Summary |
|---|---|
| Land Ownership and Land Use | Improvements proposed with either of the build alternatives are not expected to adversely impact land use or ownership. Based on the current conceptual designs for the build alternatives, it appears that the proposed I-40 improvements with either alternative can be constructed within the existing right-of-way, so there are no anticipated right-of-way needs at this time. It is possible that small slivers of right-of-way may be needed in scattered areas throughout the study area for individual projects, but these would be limited to areas adjacent to the existing highway and would not be expected to affect land use. If small areas of additional right-of-way are needed, they will be identified as part of preliminary design and environmental analysis conducted under Phase I-C<br><br>Adverse impacts to state or local land use and transportation plans and policies have not been identified. However, updates to plans such as NMDOT's Statewide Transportation Plan (*New Mexico 2045 Plan*) and regional transportation plans, including the *Connections 2040 Metropolitan Transportation Plan* and *Northwest New Mexico Regional Transportation Plan,* will be needed to reflect changes to the assumptions in these plans specific to the number of lanes on I-40. |
| Visual Resources | Neither build alternative is expected to adversely impact major visual components found in the study area. Background views and mid-ground views from the highway and towards the highway from adjacent communities would not be affected substantially by either build alternative.<br><br>Minor adverse impacts to visual could result in several areas, including:<br>▪ Areas within the right-of-way where wetlands and basalt flows are removed to accommodate the wider footprint. This impact will be temporary until impacted wetlands are replaced.<br>▪ Views from communities that are near I-40 and at a higher elevation would see a wider roadway than currently exists. However, wider shoulders or the addition of a third lane is not expected to have a substantial impact because it affects an existing component of the viewshed.<br>▪ Existing aesthetic bridge treatments could be affected for bridges that require replacement. However, impacted structures will be replaced in-kind or with new aesthetic treatments developed in collaboration with the affected communities. |

(Table Continues)

## Exhibit 27. Phase I-B Alternatives Evaluation Summary (Continued)

| Resource | Summary |
|---|---|
| Noise | Noise assessments would be required on a case-by-case basis for both build alternatives, depending on improvements proposed. The 3-Lane Alternative would require analysis for the entire corridor due to the addition of a travel lane. The Enhanced 2-Lane with Added Lanes Alternative would require analysis on a case-by-case basis, depending on the specific improvements proposed. For the Enhanced 2-Lane with Added Lanes Alternative, adding auxiliary lanes (or a third lane in Gallup) would require noise analysis. Additional improvements such as widening shoulders, correcting geometric deficiencies, building climbing lanes, or extending ramps are unlikely to require noise analysis. However, the proposed eastbound climbing lane from MP 141.5 to 143 or reconstructing interchanges and overpasses could require noise analysis and should be considered on a case-by-case basis. Locations likely to warrant noise abatement and meet cost-effectiveness criteria are summarized in Exhibit 11 and include most of the communities adjacent to the highway with moderately dense development. Areas with low-density development may meet FHWA and NMDOT thresholds that warrant the consideration of abatement but are unlikely to meet cost-effectiveness criteria. |
| Air Quality | Adverse impacts to air quality and GHG emissions have not been identified for either build alternative. The build alternatives are expected to have a positive impact on air quality and GHGs, as compared to the existing conditions, because of a reduction in stop-and-go traffic operations in areas where there are lane reductions due to construction, maintenance, or incidents. Air quality is not anticipated to be an issue in the study area, although per policy, GHG analysis will likely still be required as individual projects are advanced. |
| Hazardous Materials | Major differences between the proposed build alternatives regarding hazardous materials are not anticipated. Potential impacts associated with hazardous materials may be present throughout the study area, particularly in areas within and near Gallup, Fort Wingate, Thoreau, Grants/Milan, Laguna, and the industrial area just west of Albuquerque. Because the improvements will occur within the existing highway right-of-way, major impacts are not anticipated. An initial site assessment for hazardous materials will be necessary when individual projects are advanced to the environmental and preliminary design phase of project development. |
| Demographics and EJ | Neither of the proposed build alternatives are expected to adversely impact any of the 13 disadvantaged communities in the study area. The proposed build alternatives will not substantially increase pollutants, take businesses or other community resources, and are not expected to require additional right-of-way used by disadvantaged communities. Improved traffic flow and travel time predictability and improved safety are expected to benefit the residents of disadvantaged communities by improving access to services, jobs, education, and medical services. Ongoing engagement with the tribes and adjacent communities and consideration of potential effects and benefits will be critical as the individual projects are advanced. |
| Cultural and Historic Resources | Adverse impacts to cultural resources are likely to occur with either of the proposed build alternatives. The Enhanced 2-Lane with Added Lanes Alternative intersects up to 69 resources and the 3-Lane Alternative intersects up to 91 resources. Similarly, fiber optic installation along the north side of I-40 would potentially intersect up to 103 resources, while fiber optic installation along the south side would potentially intersect up to 98 resources. The extent of impacts, if any, to these previously recorded resources is unknown. Approximately 90 miles of the frontage roads adjacent to I-40 are listed on the NRHP, which includes 41 historic structures (e.g., bridges or box culverts). Specific improvements to I-40 or adjacent alternate routes will require further analysis and consultation to identify impacts and avoidance and minimization measures under the New Mexico Cultural Properties Protection Act, NHPA, and Section 4(f).As individual projects are advanced to the environmental and preliminary design phase of project development, pedestrian surveys will be needed to identify and document all cultural resources, and consultation with the SHPO and THPO will be completed, as applicable. Resources discovered by the pedestrian survey will be evaluated for their eligibility for listing on the NRHP and specific mitigation needed. |

(Table Continues)

## Exhibit 27. Phase I-B Alternatives Evaluation Summary (Continued)

| Resource | Summary |
|---|---|
| Section 4(f) Resources | In most instances, I-40 roadway construction is proposed within the existing right-of-way and use of Section 4(f) resources is not expected for the proposed build alternatives as summarized below.<br>▪ A total of 2 potential impacts to Section 4(f) resources were identified including the Manuelito Archeological Complex and the crossing of the Continental Divide Trail.<br>▪ The Manuelito Archeological Complex is listed on the NRHP and is considered a significant historic property under Section 4(f). If the property is listed for its data recovery potential, then it would likely be exempt from 4(f) considerations. However, this property may possess qualities that lend itself to interpretation and preservation in place and, as such, should be considered. If this property requires 4(f) consideration, both build alternatives and the proposed fiber optic line would potentially impact the Manuelito Archeological Complex. Additional investigation would be required to determine if the property merits 4(f) consideration, evaluate a potential 4(f) use, and identify potential measures to minimize harm. This would occur when individual projects advance to the environmental and preliminary design phase.<br>▪ In the case of the Continental Divide Trail, trail users cross I-40 at an interchange and there is an interpretive historic marker adjacent to the interchange at this location. Because the trail does not have physical features within the highway right-of-way, and no additional right-of-way is required, neither build alternative would constitute a use of this 4(f) property. Further, I-40 is an existing facility in this area and there would be no substantial alignment change. As such neither build alternative or the installation of the fiber optic line would constitute a constructive 4(f) use of the trail.<br>Potential impacts to Section 4(f) resources from the proposed fiber optic line include the Manuelito Archeological Complex as discussed above. Potential impacts to additional Section 4(f) resources from the proposed fiber optic line could potentially be avoided by routing the fiber optic line to the south side of I-40 near We the People Park in Gallup, the Fort Wingate Ruin east of Gallup, and Old Bowlin's Trading Post new Bluewater and to the north side near the El Malpais Conservation Area near Grants.<br>For the improvements proposed on I-40 with the build alternatives, there would be no 4(f) use of NRHP-listed sections of Route 66. However, for any improvements proposed on NRHP-listed Route 66 alternate routes/frontage roads, each project and resource proposed on NRHP-listed alternate routes would need to be considered individually as future projects advance into the environmental and preliminary design phase. |

(Table Continues)

## Exhibit 27. Phase I-B Alternatives Evaluation Summary (Continued)

| Resource | Summary |
|---|---|
| Waterways | The build alternatives and fiber optic line will cross intermittent and perennial waterways at 22 locations, including 5 culvert pipe structures, 6 CBCs, and 11 bridge structures. While dozens of ephemeral waterways will also be affected by the proposed build alternatives, recent revisions to the definition of WOUS will not require CWA permits for construction at these locations.<br><br>In most instances, construction activities will consist of upsizing, extending, or reconstructing drainage structures (i.e., culverts and CBCs). Impacts at waterways will include the loss of vegetation from channel reconstruction to accommodate the new or extended structures and associated bank stabilization, as needed. The Enhanced 2-Lane with Added Lanes Alternative is expected to require structure extensions at 47 drainage locations. The 3-Lane Alternative would require culvert extensions for an estimated 261 drainage locations. Both build alternatives will require culvert replacements to increase their capacity where they do not currently meet design flows.<br><br>The 3-Lane Alternative will have greater effects to waterways since it has a wider footprint and will require more culvert extensions than the Enhanced 2-Lane with Added Lanes Alternative. All waterways should be considered and field verified further when individual projects are advanced to the environmental and preliminary design phase of project development.<br><br>Construction of the fiber optic line could also impact waterways. However, impacts will be minimal as trenching for fiber optic installation has a narrow footprint. Construction of the fiber optic line could avoid intermittent and perennial drainages and minimize potential damage to the cable by attaching it to drainage structures. While these precautions may not be necessary for small ephemeral drainages, best management practices should be implemented to the extent needed and practical.<br><br>Impacts to intermittent and perennial waterways will require coordination with the United States Army Corps of Engineers to determine the need for and type of Section 404 permit required, as well as state and tribal EPA representatives for a 401 water quality certification. Because the magnitude of improvements within the ordinary high-water mark at any 1 waterway will be relatively small, construction will likely be authorized under a nationwide permit. The specific impacts at waterways and permit requirements will be determined as individual projects are advanced for design and construction. |
| Wetlands | A total of 6 wetland resources, including 3 freshwater ponds and 3 freshwater emergent wetlands, occur within the study area. In general, these wetland resources are outside of the anticipated construction limits of the proposed roadway widening for either alternative but could be impacted by drainage structure improvements and construction of the fiber optic line. The actual presence and boundaries of wetland resources at these and other locations will need to be verified as individual projects are advanced to the environmental and preliminary design phase of project development. Because of its wider footprint, impacts to wetlands are likely greater with the 3-Lane Alternative as compared to the Enhanced 2-Lane with Added Lanes Alternative. The specific impacts to wetlands and permit requirements will be determined as individual projects are advanced for design and construction. |
| Floodplains | Impacts to floodplains are not likely to occur with either build alternative because existing drainage flows will be preserved by proposed drainage improvements and floodplain locations and elevations would not be affected |
| Threatened and Endangered Species | Review of threatened and endangered and other special status species with the potential to occur within the study area included species protected by the USFWS, BLM, Navajo Nation, and several New Mexico state agencies. The potential for these species to occur within the project impact area was determined considering their habitat requirements.<br><br>A total of 2 species, including the Monarch Butterfly and Pecos Sunflower, were identified as likely to occur within the impact area in addition to migratory birds and bats. Additional investigations will be necessary as design details are defined and individual projects are advanced. |
| Farmland Soils | Impacts to prime farmlands would not occur with either alternative. Because this status could change, further analysis to verify their status at that time should be undertaken as individual projects are advanced to the environmental and preliminary design phase of project development. |

# 15.1 Differences Between Alternatives

## 15.1.1 Proposed I-40 Build Alternatives

Differences in impacts between the 2 build alternatives are generally minor, except for potential impacts to noise, cultural resources, and waterways and wetlands. For these resources, the 3-Lane Alternative will have greater impacts due to its wider footprint.

For the 3-Lane Alternative, noise analysis would be required throughout the study area when the third lane is constructed. The Enhanced 2-Lane with Added Lanes Alternative would likely only require noise analysis for projects that include auxiliary lanes longer than 1.5 miles (e.g., proposed lanes through Gallup and potentially the eastbound climbing lane from MP 141.5 to 143 or substantial changes to interchanges. Traffic noise impacts may be slightly greater with the 3-Lane Alternative in areas where widening occurs to the outside. The feasibility of noise abatement will be determined as part of environmental review for projects as they advance.

In the case of cultural and historic resources, the 3-Lane Alternative may impact 91 resources, compared to 69 for the Enhanced 2-Lane with Added Lanes Alternative, but impact and significance cannot be determined until pedestrian field surveys are conducted.

Impacts to waterways and wetlands are also greater with the 3-Lane Alternative due to its larger footprint. However, it is unlikely the impacts to this resource will be substantial, and Section 404 permits will likely still fall under the threshold for a nationwide permit. Drainage improvements are proposed as part of both of the build alternatives and include a mixture of structure replacements, repairs, and extensions. The Enhanced 2-Lane with Added Lanes Alternative is expected to require structure extensions for 47 drainage locations. The 3-Lane Alternative will require culvert extensions for an estimated 261 drainage locations. Both build alternatives will require culvert replacements to upsize culverts that are undersized or cannot accommodate expected flows. With regard to wetlands, the analysis is based on limited field data. It may be possible to avoid wetlands once further design details are known.

While differences were found in the impacts of the build alternatives, none of the differences are substantial or expected to result in a significant impact. Therefore, based on the information available at the time of the analyses, neither alternative is identified as environmentally preferred.

## 15.1.2 Operational Enhancement - Fiber Optic Installation

Both build alternatives propose to construct a fiber optic line from MP 0 to 125 and the existing line from MP 125 to 150 may need to be relocated out of the median. Potential impacts of installing the fiber optic line would be the same for both build alternatives. Little difference was identified for the 2 fiber optic alignments, so it is proposed to place the fiber line on the north side of I-40, where feasible. For cultural resources, the northern alignment was found to potentially impact a few more previously recorded cultural resources than the southern alignment (103 vs 98 resources). However, it is possible that in these areas, the fiber alignment could be shifted to avoid impacts. In addition, the proposed fiber optic line could potentially impact Section 4(f) resources depending on the alignment as summarized below:

- Either fiber alignment could potentially affect the Manuelito Archeological Complex. Additional investigation would be required to determine if the property merits 4(f) consideration, evaluate a potential 4(f) use, and identify potential measures to minimize

harm. This would occur when individual projects advance to the environmental and preliminary design phase.

- In the case of the Continental Divide Trail, installation of fiber optic for either alignment would not constitute a constructive 4(f) use of the trail.
- Potential impacts to the remaining Section 4(f) resources from the proposed fiber optic line could potentially be avoided by routing the fiber optic line to the south side of I-40 near We the People Park near MP 22 in Gallup, the Fort Wingate Ruin east of Gallup, and Old Bowlin's Trading Post near Bluewater and to the north side near the El Malpais Conservation Area in Grants.

### 15.1.3 Operational Enhancement – Alternate Routes/Frontage Roads

Improvements to alternate routes would include maintenance activities to keep these routes operational, such as pavement reconstruction and bridge maintenance, rehabilitation, or replacement. Environmental impacts associated with these improvements would be the same for both build alternatives and will be assessed as specific projects are advanced.

Approximately 90 miles of the frontage roads adjacent to I-40 are listed on the National Register of Historic Places, which includes 41 historic structures (e.g., bridges or box culverts). Specific improvements to adjacent alternate routes will require further analysis and consultation to identify impacts and avoidance and minimization measures under the New Mexico Cultural Properties Protection Act, NHPA, and Section 4(f).

# 16. Environmental Considerations for Future Projects

Project implementation for I-40 will be a long-term effort occurring over many years. The types of projects proposed range from simple maintenance activities that can be completed in a few days to major projects covering multiple miles of I-40 with a construction schedule lasting more than one year. The environmental requirements, level of effort, and public engagement will vary by project type and magnitude. In addition to scoping-level information on potential impacts found in this report, Exhibit 28 provides a summary of information that can be used by NMDOT Districts and project managers to anticipate the likely level of environmental effort, cost, and schedule for environmental review for projects expected in the I-40 corridor. Key considerations in determining the environmental level of effort include:

- The type of environmental document to be prepared. Most projects can be authorized using a categorical exclusion (CE), although the level of supporting technical studies may vary. Most simple projects, such as smaller-scale pavement rehabilitation that does not involve widening, culvert maintenance and repair, and other simple actions completed over several days or a week, may be authorized with a Programmatic CE (PCE). Projects requiring more extensive disruption to traffic or impacts to nearby habitat or development will typically require a CE with supporting technical studies. An environmental assessment (EA) may be required in instances where the extent of impact may be more substantial, or the project may result in public controversy. In every instance, the District and project manager should consult with the NMDOT Environmental Bureau to determine the appropriate level of environmental documentation.
- Logical termini and independent utility should be considered for projects that involve adding a traffic lane or a major interchange reconfiguration. Projects should not force the need for other improvements and should be able to function independently.
- Authorizations and approvals from outside agencies can affect project schedules and, in some instances, the level of effort and types of investigations needed. These typically include consultation with the SHPO and coordination with the USFWS, NMDGF, NMSLO, BLM, USFS, and the United States Army Corps of Engineers. Coordination with tribal governments is always necessary for projects on I-40 within the boundaries of tribal lands.
- Environmental investigations, analysis, and reporting required will affect the project schedule and budget. In most instances, resources of concern include cultural, water quality, protected plant and animal species, wildlife habitat, visual resources, and Section 4(f) properties. Additional common considerations include addressing impacts to disadvantaged communities, traffic noise, and hazardous materials. However, other resources and considerations are present within the I-40 corridor and may require investigation.
- Public outreach needs should follow guidelines published by the NMDOT Environmental Bureau. Minor projects may not require public notification or involvement; however, projects that disrupt traffic flow on I-40 for more than 3 days must also comply with 23 CFR 630, subpart J and develop a Traffic Management Plan, which may require public notification.

The recommended actions in Exhibit 28 are based on environmental rules and practices in effect at the time the I-40 Phase I-A/B Corridor Study was completed, including 23 CFR 771, FHWA Technical Advisory T6640.8 and the NMDOT Location Study Procedures. However, environmental requirements and procedures are continually updated, and it is therefore important for project managers to consult with the NMDOT Environmental Bureau as part of the scoping process.

## Exhibit 28. I-40 Corridor Environmental Considerations by Project Type

| Project Type | | National Environmental Policy Act (NEPA) Compliance[1] | Logical Termini | Permits, Consultations, and Approvals | Public Outreach Considerations | Resource Investigations | Other Considerations |
|---|---|---|---|---|---|---|---|
| **Widening Projects** | Enhanced 2-Lane (widen mostly to median)<br>Widen to 3-Lanes (widen mostly to the median)<br>Add Climbing Lanes | ▪ Likely a CE with supporting studies[1].<br>▪ Potentially an environmental assessment (EA) depending on length and location of project and if public controversy is expected. | Termini should be defined so that individual projects:<br>▪ Satisfy the Purpose and Need.<br>▪ Function appropriately without the need to construct additional projects.<br>▪ Do not exclude consideration of alternatives for future adjacent or nearby projects. | ▪ SHPO concurrence is needed if the project has the potential to affect cultural resources.<br>▪ Potential for USFWS and NMDGF consultation if the project has the potential to affect federal or state-listed species.<br>▪ Potential for consultation with other land-managing agencies or tribes if the project is located on a right-of-way easement.<br>▪ Potential for CWA Section 404/401 permitting (see Bridge and Culvert projects below). | ▪ Public outreach should provide information and opportunities for input on the project scope, purpose and need, and construction schedule.<br>▪ For interstate projects disrupting traffic for more than 3 days, public notification may be required per the Transportation Management Plan required by 23 CFR 630 subpart J. | Often requires consideration of:<br>▪ Traffic noise if the project is adjacent to developed areas with noise sensitive land uses.<br>▪ Cultural resources<br>▪ Natural resources<br>▪ Hazardous materials<br>▪ Demographics and environmental justice | ▪ When defining the extent of resource field investigations, the Environmental Bureau will consider the condition of the median. Completely disturbed medians often do not require field investigation. However, sometimes critical resources, such as wetlands or archeological sites, can still be intact in the median and should be investigated. |
| **Pavement Projects[2]** | Pavement Reconstruction<br>Pavement Rehabilitation<br>Crossovers in the median | ▪ Typically cleared with a Programmatic CE (PCE) or CE; assumes that I-40 remains open to traffic at all times[1]. | ▪ Logical termini do not typically apply because the project maintains an existing roadway.<br>▪ Termini are defined by roadway condition and funding constraints. | ▪ Typically, this is not necessary. | ▪ May include public notification of project scope and construction schedule.<br>▪ For interstate projects disrupting traffic for more than 3 days, public notification may be required per the Transportation Management Plan required by 23 CFR 630 subpart J. | ▪ For projects constructing crossovers and major rehabilitation or reconstruction environmental review will typically be limited to desktop investigation of cultural resources, natural resources, hazardous materials, and demographics to identify possible concerns. | ▪ PCEs are applicable to projects that remain in the existing roadway prism. For crossovers or reconstructions that are located out of the existing roadway prism, a PCE may still be applicable depending on the existing condition of the median. See the note above. |
| **Interchanges** | Modification (could include footprint adjustment)<br>Ramp Extension | ▪ Likely a CE with supporting studies[1].<br>▪ Potentially an EA if the project involves residential or business relocations in disadvantaged communities, Section 4(f) impacts, or substantial cultural or natural resource mitigation needs. | Termini are centered around the interchange and defined by the extent of improvements. Termini should be defined so that projects:<br>▪ Satisfy the Purpose and Need<br>▪ Function appropriately without the need to construct additional projects.<br>▪ Do not exclude consideration of alternatives for future adjacent or nearby projects. | ▪ SHPO concurrence is needed if the project has the potential to affect cultural resources.<br>▪ Potential for USFWS and NMDGF consultation if the project has potential to affect federal or state-listed species.<br>▪ Potential for CWA Section 404/401 permitting (see Bridge and Culvert projects below).<br>▪ An Interchange Access Change Request is typically required by FHWA. | ▪ Public outreach should provide information and opportunities for input on the project scope, purpose and need, and construction schedule.<br>▪ For interstate projects disrupting traffic for more than 3 days, public notification may be required per the Transportation Management Plan required by 23 CFR 630 subpart J. | Often requires consideration of:<br>▪ Traffic impacts if project results in permanent changes in traffic circulation<br>▪ Traffic noise<br>▪ Cultural resources<br>▪ Natural resources<br>▪ Hazardous materials<br>▪ Demographics and environmental justice | |
| **Bridge Projects (I-40 Mainline & Overpasses)[2]** | Replacement and/or reconstruction<br>Widening<br>Repair | ▪ Bridge replacement and widening projects are likely CEs with supporting studies[1].<br>▪ Bridge repairs may qualify for a PCE. | ▪ Project termini and scope are defined based on bridge condition and geometry.<br>▪ Termini are centered around the bridge and include roadway approaches. | ▪ Potential CWA Section 404 permitting if any material is placed in WOUS regulated by the United States Army Corps of Engineers. Similarly, a CWA Section 401 Water Quality Certification may be required from NMED.<br>▪ SHPO concurrence is needed if the project has the potential to affect cultural resources, including historic bridges.<br>▪ Potential for USFWS and NMDGF consultation if the project has the potential to affect federal or state-listed species. | ▪ Update the public and stakeholders on the need for the project, its scope, and the construction schedule.<br>▪ For interstate projects disrupting traffic for more than 3 days, public notification may be required per the Transportation Management Plan required by 23 CFR 630 subpart J. | Often requires consideration of:<br>▪ Cultural resources<br>▪ Natural resources, especially for bats, nesting birds, and impacts to important habitat near the bridge.<br>▪ Hazardous materials<br>▪ Demographics and environmental justice | |

(Table Continues)

Exhibit 28. I-40 Corridor Environmental Considerations by Project Type (Continued)

| | Project Type | National Environmental Policy Act (NEPA) Compliance[1] | Logical Termini | Permits, Consultations, and Approvals | Public Outreach Considerations | Resource Investigations | Other Considerations |
|---|---|---|---|---|---|---|---|
| Culvert Projects | New Culverts<br>Culvert Extensions<br>Culvert Cleanout/ Maintenance | ▪ Culvert replacements and widening projects are likely CEs with supporting studies[1].<br>▪ Culvert cleanout and maintenance projects may qualify for a PCE. | ▪ Project termini and scope are defined based on culvert condition and geometry.<br>▪ Termini are centered around the culverts and they include roadway approaches and possibly areas up and down stream. | ▪ Potential CWA Section 404 permitting if any material is placed in WOUS regulated by the United States Army Corps of Engineers. Similarly, CWA Section 401 Water Quality Certification may be required from NMED.<br>▪ SHPO concurrence is needed if the project has the potential to affect cultural resources.<br>▪ Potential USFWS and NMDGF consultation if the project has the potential to affect federal or state-listed species. | ▪ Update the public and stakeholders on the need for the project, the project scope, and the construction schedule.<br>▪ If culvert replacement or repair disrupts traffic on I-40 for more than 3 days, public notification may be required per the Transportation Management Plan as required by 23 CFR 630 subpart J. | Often requires consideration of:<br>▪ Cultural resources<br>▪ Natural resources<br>▪ Hazardous materials<br>▪ Demographics and environmental Justice<br>▪ Visual impacts | |
| ITS Projects | Install Fiber Optic Cable<br>Install Data Collection Stations and ITS Devices | ▪ Likely CE with supporting studies[1]. | ▪ Project termini are defined based on data collection and/or fiber optic connection needs.<br>▪ Projects should function appropriately without the need to construct additional projects. | ▪ SHPO concurrence is needed if the project has the potential to affect cultural resources.<br>▪ Potential for USFWS and NMDGF consultation if project has potential to affect federal or state-listed species.<br>▪ Potential for consultation with other land-managing agencies or tribes if the project is located on right-of-way easement.<br>▪ Potential for CWA Section 404/401 permitting (see Bridge and Culvert projects below). | ▪ May require public notification of the project scope and construction schedule.<br>▪ If construction of ITS disrupts traffic on I-40 for more than 3 days, public notification may be required per the Transportation Management Plan as required by 23 CFR 630 subpart J. | Often requires consideration of:<br>▪ Cultural resources<br>▪ Natural resources<br>▪ Hazardous materials<br>▪ Visual impacts | ▪ Several components of ITS projects, such as fiber optic installation may be designed and environmentally cleared as part of larger projects for lane widening, bridge replacement, interchange improvements, etc. |

1 Always confirm information and approach through coordination with NMDOT Environmental Bureau.

2 Project type and considerations could also apply to alternate route/frontage road improvements. Most of the frontage roads and many frontage road bridges are listed on the NRHP, which will require consideration by the SHPO. See Exhibit 1 for a map showing alternate routes listed on the NRHP.

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# Attachment A

## Land Ownership

Navajo Nation

Navajo Nation

Navajo Nation

Navajo Nation

Navajo Nation

APACHE COUNTY

MCKINLEY COUNTY

10

Gallup

Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography Accessed July 2, 2022
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

Attachment A - I-40 Land Ownership
Milepost 1 - 15

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Navajo Nation

20

Gallup

30

Navajo Nation

Navajo Nation

Fort Wingate (Will be transferred to Navajo and Zuni in the future)

Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography Accessed July 2, 2022
PCS: NAD 1983 UTM Zone 13N
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New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

Attachment A - I-40 Land Ownership
Milepost 15 - 30

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Navajo Nation

Navajo Nation

Gallup

30

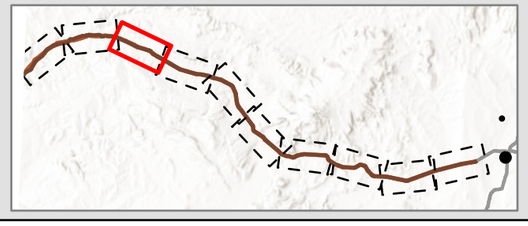
40

Fort Wingate (Will be transferred
to Navajo and Zuni in the future)

Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography
Accessed July 2, 2022
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

Attachment A - I-40 Land Ownership
Milepost 30 - 45

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Navajo Nation

50

60

Navajo Nation

Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography
Accessed July 2, 2022
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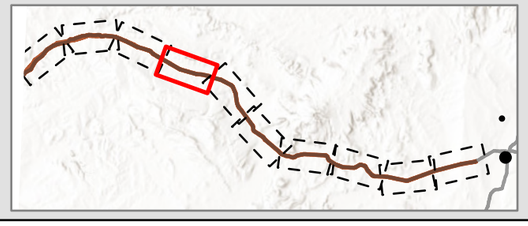
New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet

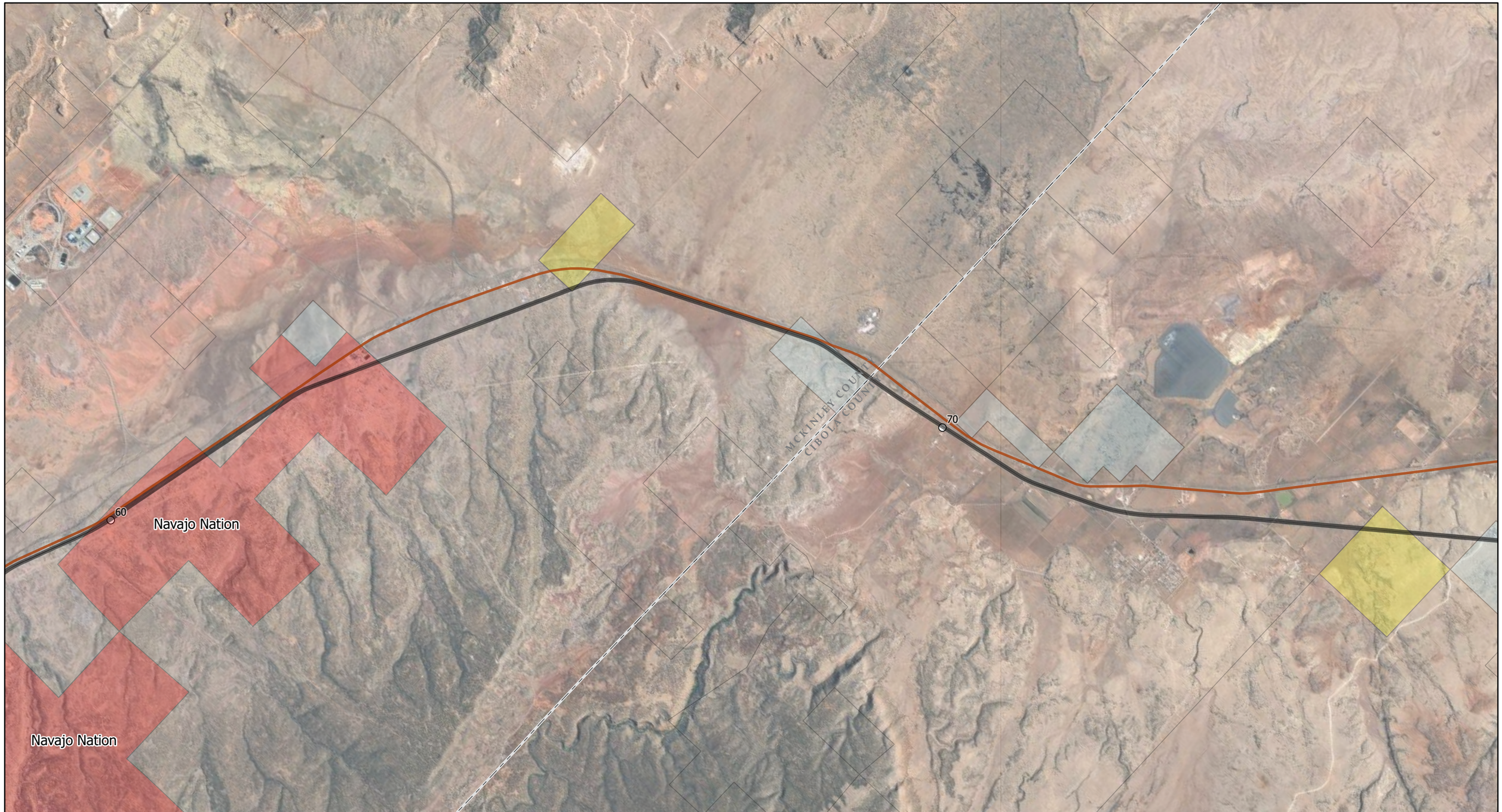


- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

Attachment A - I-40 Land Ownership
Milepost 45 - 60

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)




Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography
Accessed July 2, 2022
PCS: NAD 1983 UTM Zone 13N
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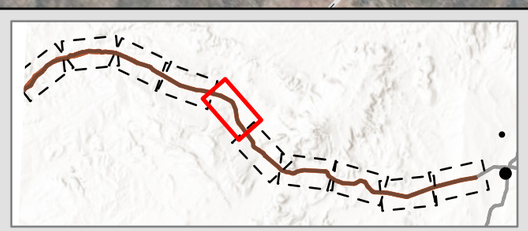
New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

Attachment A - I-40 Land Ownership
Milepost 60 - 75

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Milan

Grants

Acoma

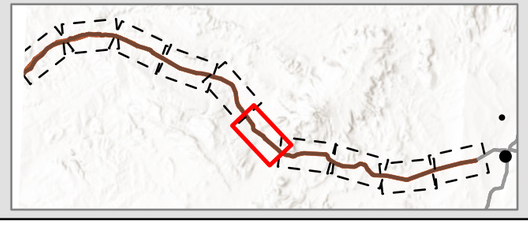
80

90

Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography
Accessed July 2, 2022
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet

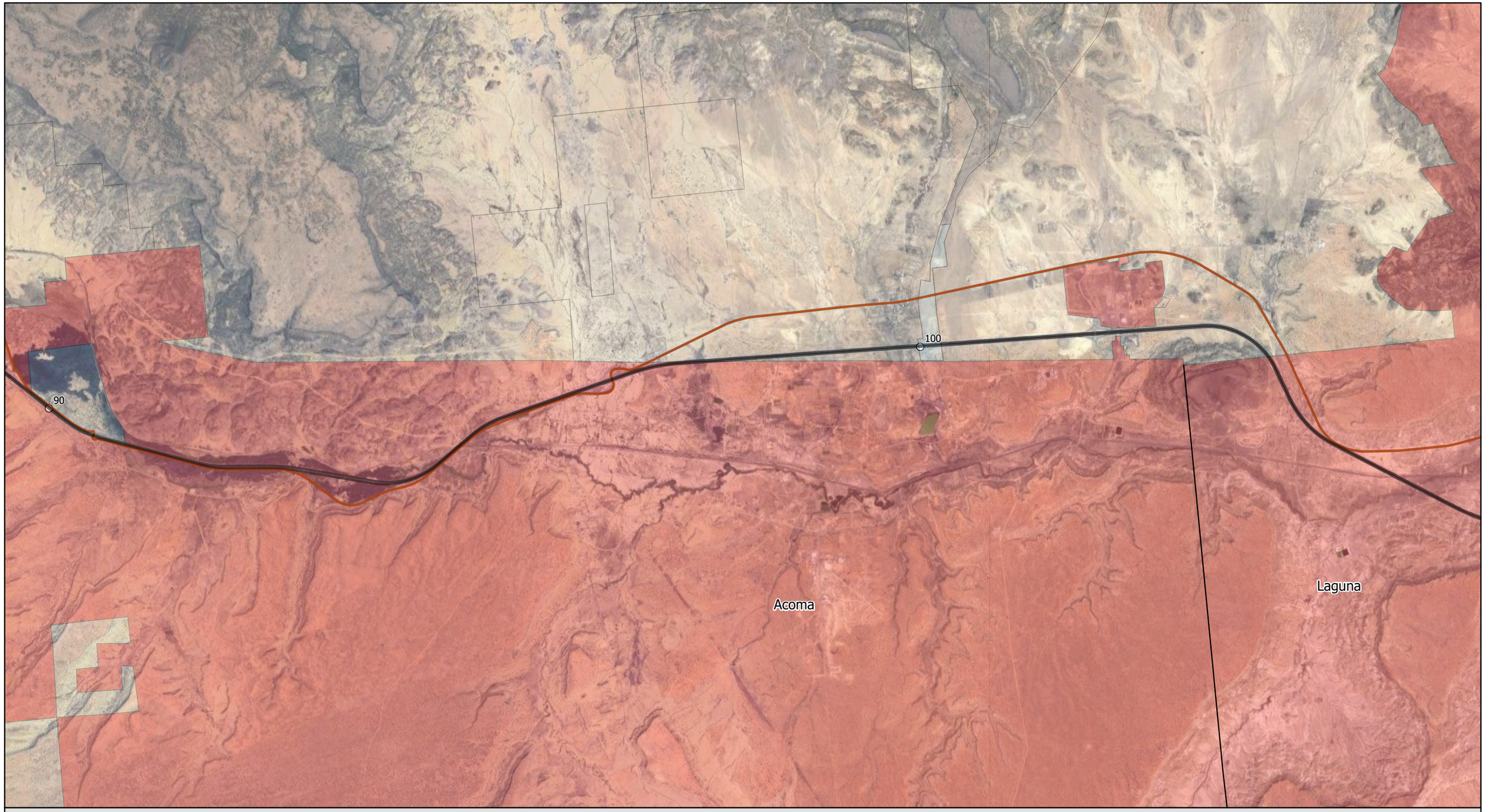


- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

Attachment A - I-40 Land Ownership
Milepost 75 - 90

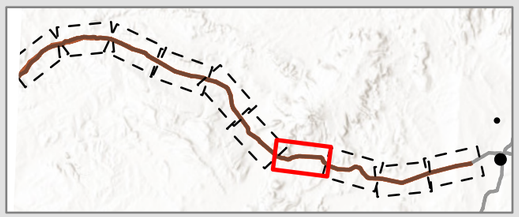
I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)




Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography
Accessed July 2, 2022
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

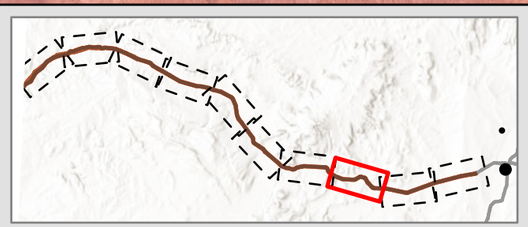
Attachment A - I-40 Land Ownership
Milepost 90 - 105

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)


Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography
Accessed July 2, 2022
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000
Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

Attachment A - I-40 Land Ownership
Milepost 105 - 120

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Laguna

BERNALILLO COUNTY
CIBOLA COUNTY

130

Laguna

CIBOLA COUNTY
VALENCIA COUNTY

BERNALILLO COUNTY
VALENCIA COUNTY

Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography
Accessed July 2, 2022
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000
Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

Attachment A - I-40 Land Ownership
Milepost 120 - 135

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Navajo Nation

Laguna

Albuquerque

140

150

Date: 5/10/2024
Sources: Bureau of Land Management NM Statewide Spatial Data and Metadata, Surface Ownership.
US Census 2020 TIGER Shapefile: American Indian Area Geography
Accessed July 2, 2022
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000
Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

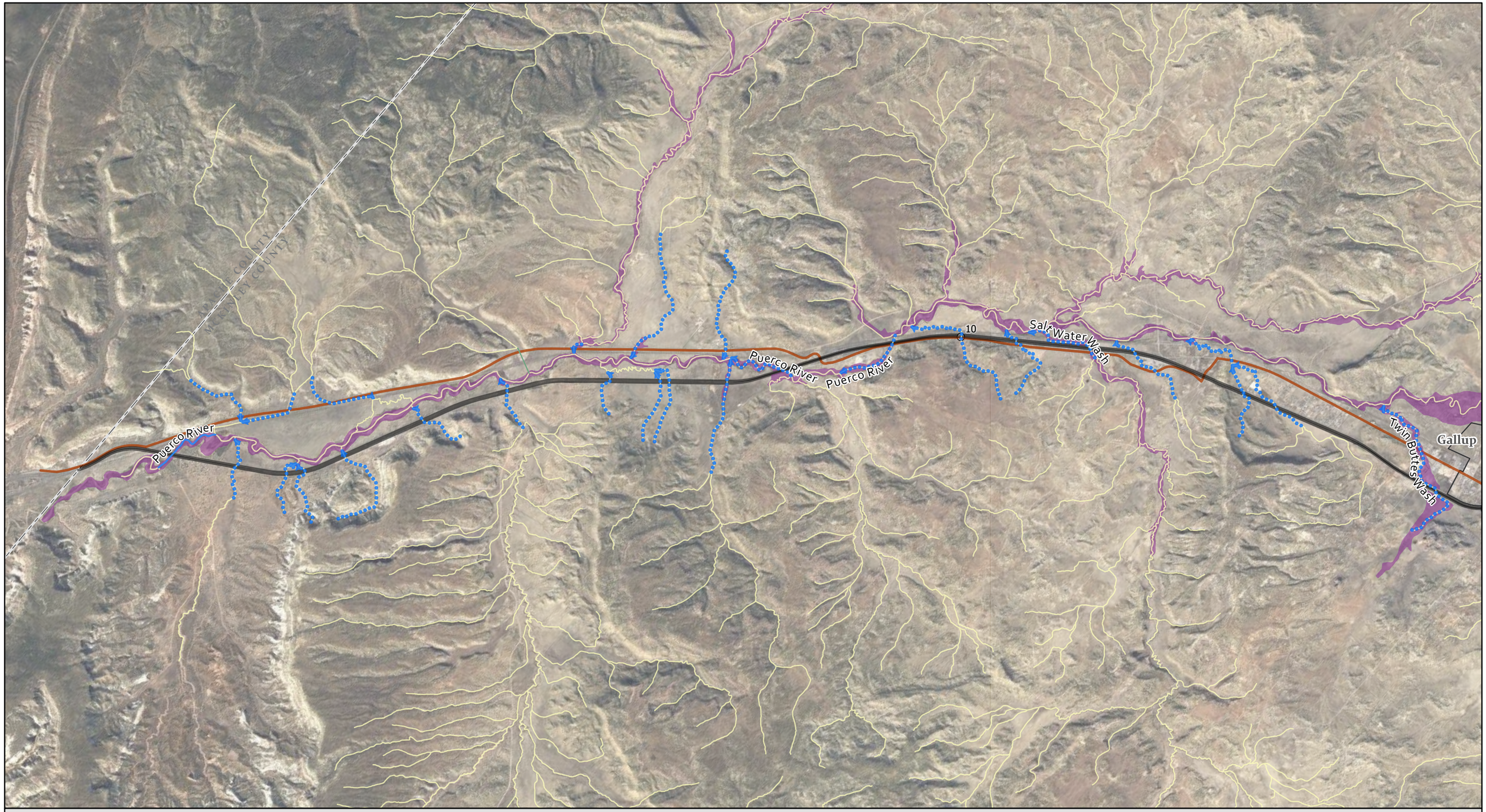
- Bureau of Land Managment
- Department of Defense
- Tribal
- National Park Service
- Private
- New Mexico State Land Office

Attachment A - I-40 Land Ownership
Milepost 135 - 150

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

# Attachment B

## Water Resources




Date: 5/4/2023
Sources: United States Geological Services National Hydrography Data Set, United States Fish and Wildlife Service National Wetlands Inventory,
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

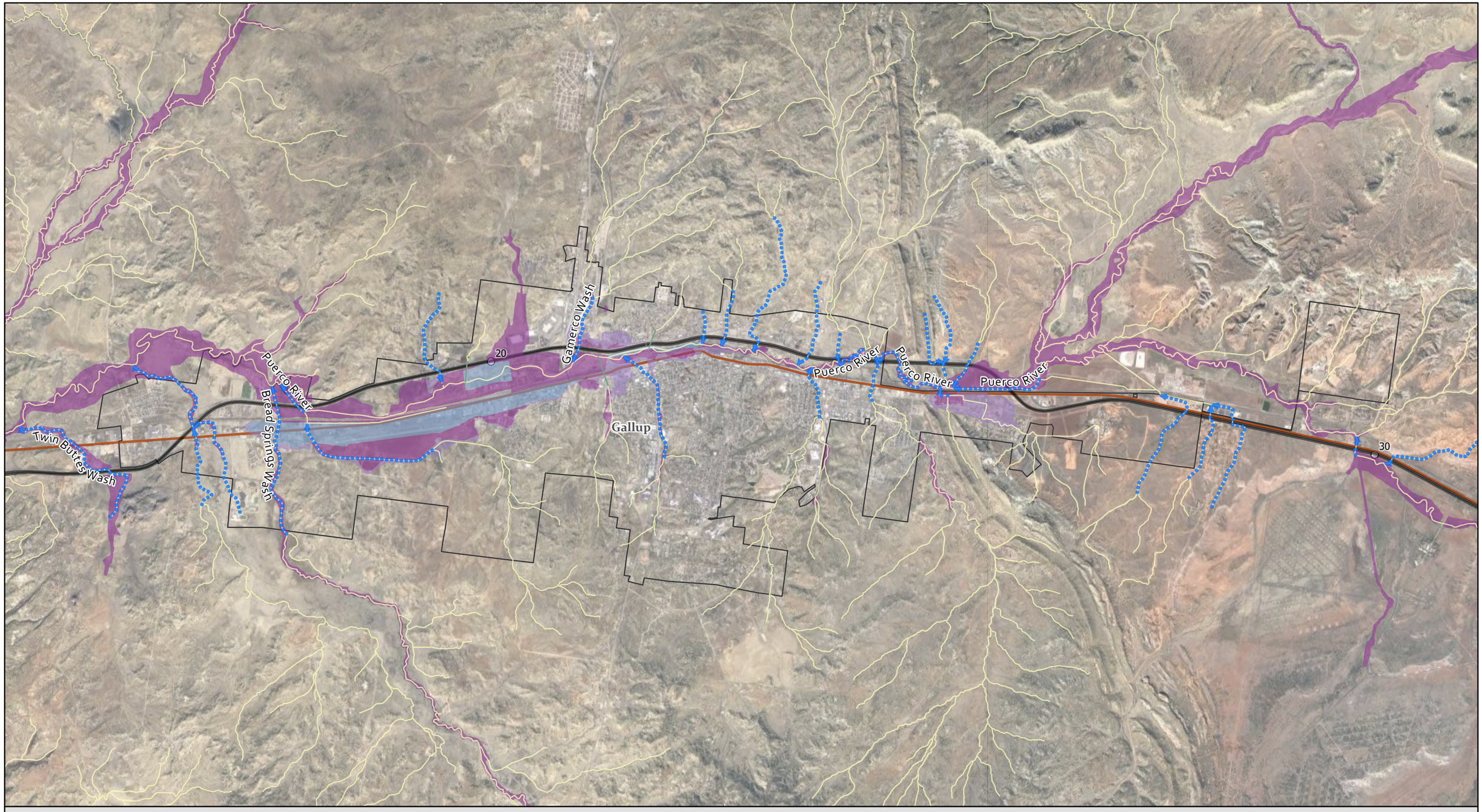
**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

Attachment B - I-40 Water Resources
Milepost 1 - 15

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)




Date: 5/4/2023
Sources: United States Geological Services National Hydrography Data Set, United States Fish and Wildlife Service National Wetlands Inventory, PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of TRANSPORTATION

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

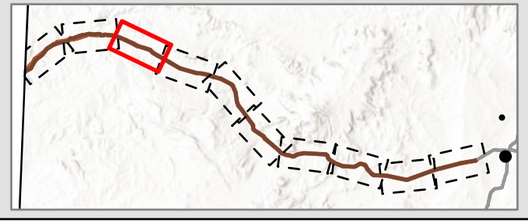
Attachment B - I-40 Water Resources
Milepost 15 - 30

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)


Date: 5/4/2023
Sources: United States Geological Services National Hydrography Data Set, United States Fish and Wildlife Service National Wetlands Inventory, PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

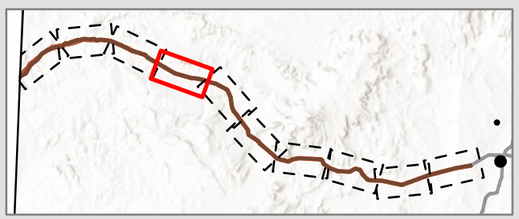
Attachment B - I-40 Water Resources
Milepost 30 - 45

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)


Date: 5/4/2023
Sources: United States Geological Services National Hydrography Data Set, United States Fish and Wildlife Service National Wetlands Inventory, PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of TRANSPORTATION

0 1,500 3,000 6,000
Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

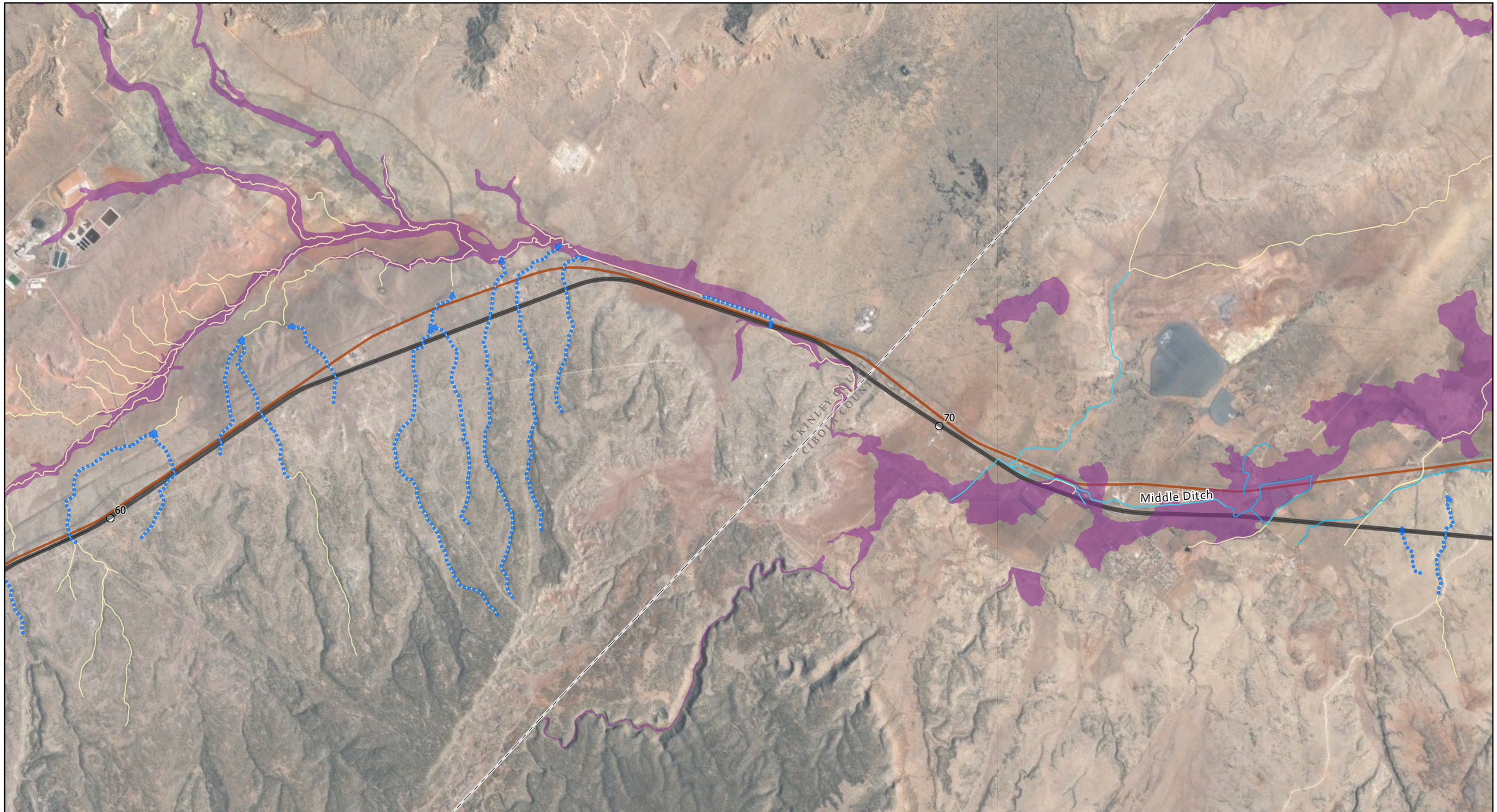
**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

Attachment B - I-40 Water Resources
Milepost 45 - 60

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

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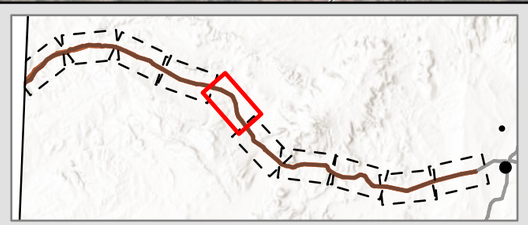
New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

Attachment B - I-40 Water Resources
Milepost 60 - 75

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Grants
Milan
Rio San Jose
Rio San Jose
Rio San Jose
80
90

Date: 5/4/2023
Sources: United States Geological Services National Hydrography Data Set, United States Fish and Wildlife Service National Wetlands Inventory, PCS: NAD 1983 UTM Zone 13N
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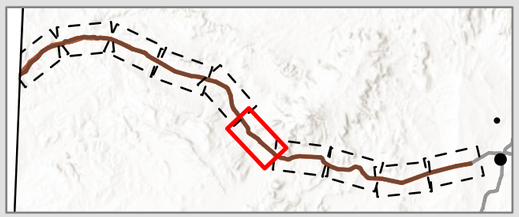
New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

Attachment B - I-40 Water Resources
Milepost 75 - 90

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)


Date: 5/4/2023
Sources: United States Geological Services National Hydrography Data Set, United States Fish and Wildlife Service National Wetlands Inventory, PCS: NAD 1983 UTM Zone 13N
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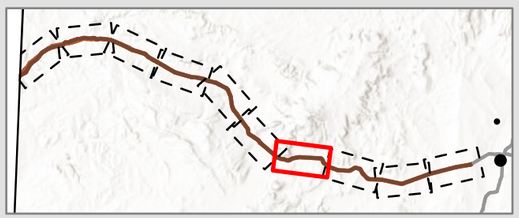
New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

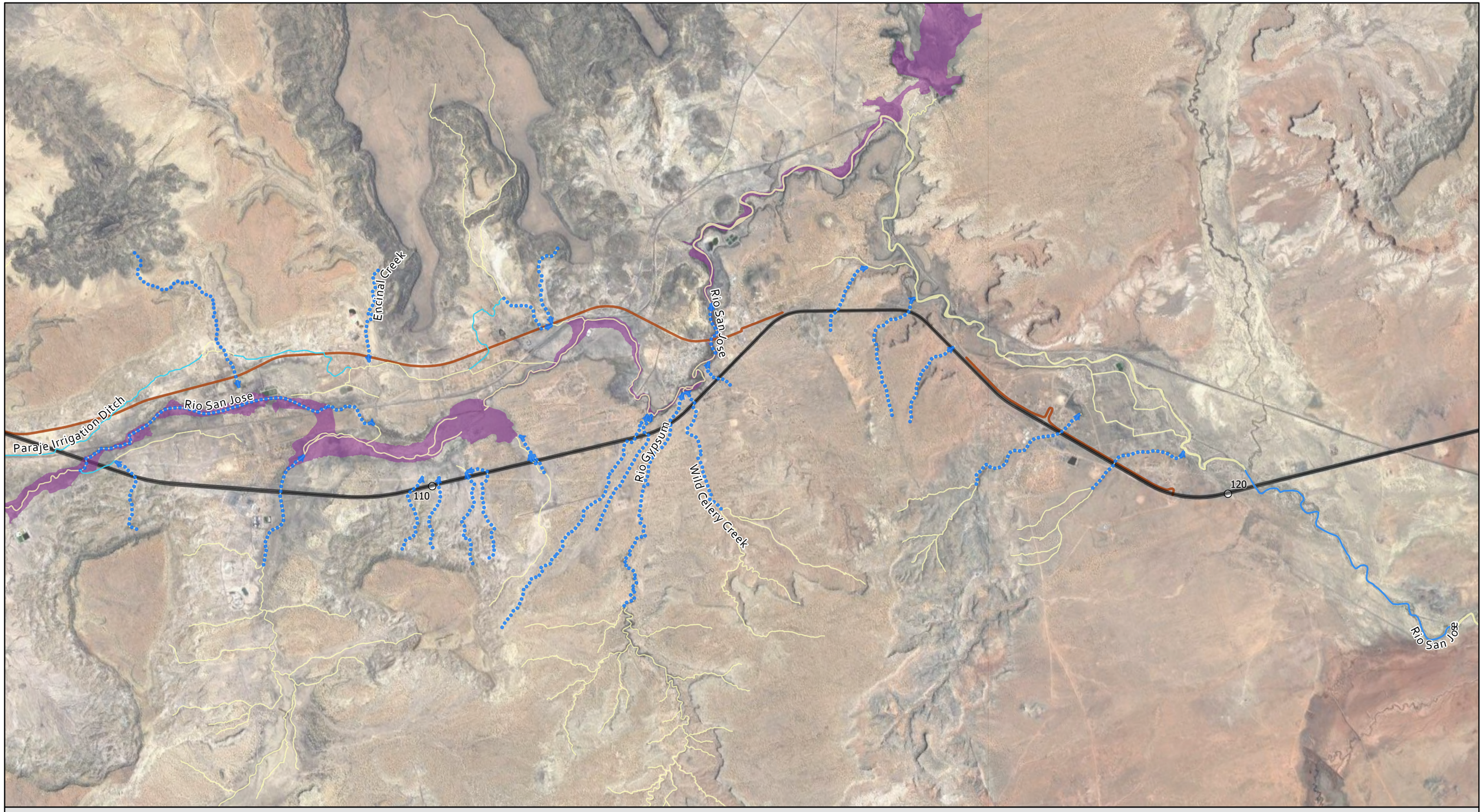
**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

Attachment B - I-40 Water Resources
Milepost 90 - 105

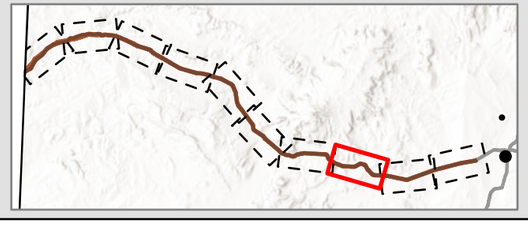
I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)




Date: 5/4/2023
Sources: United States Geological Services National Hydrography Data Set, United States Fish and Wildlife Service National Wetlands Inventory, PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

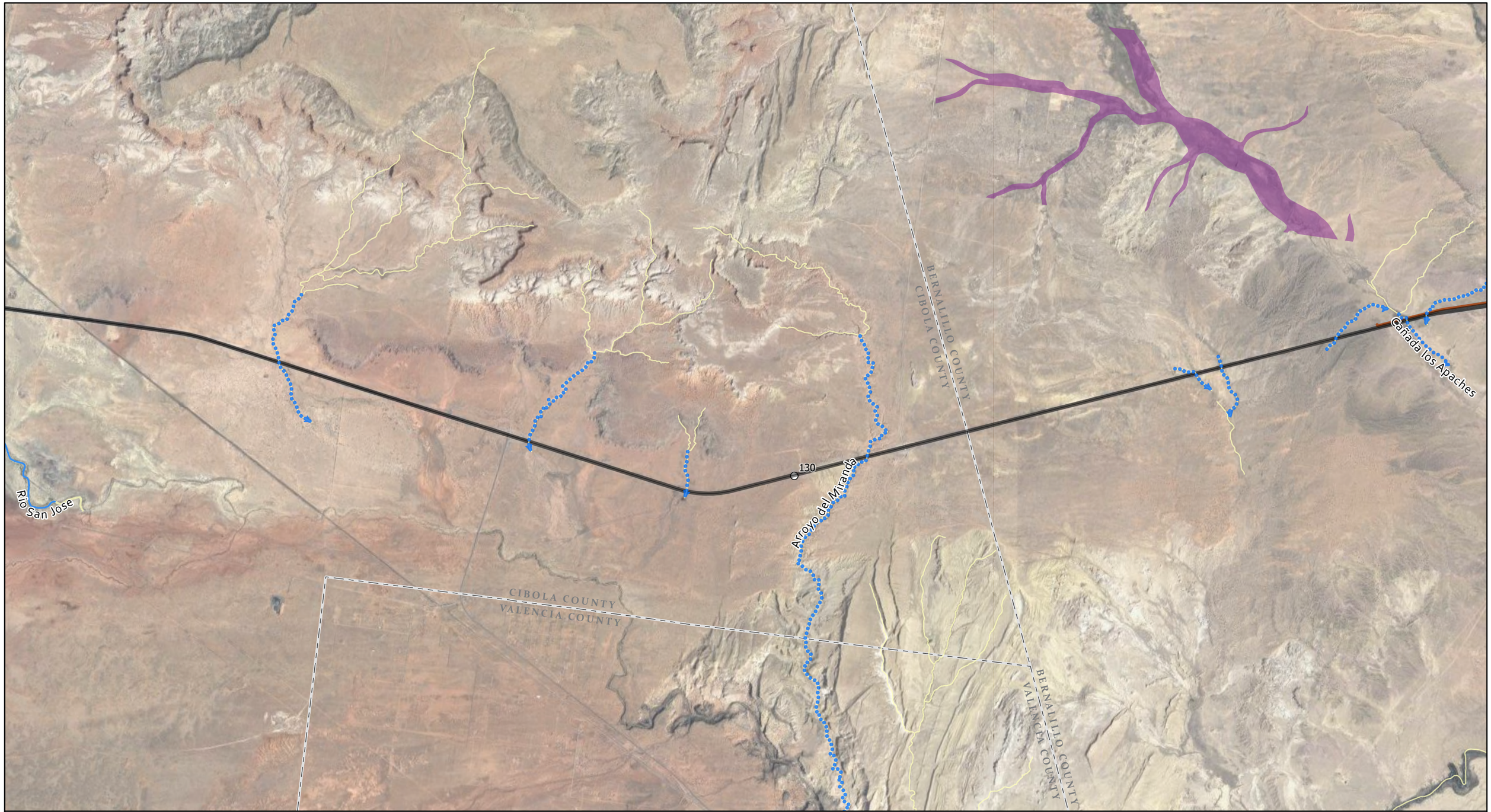
**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

Attachment B - I-40 Water Resources
Milepost 105 - 120

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)




Date: 5/4/2023
Sources: United States Geological Services National Hydrography Data Set, United States Fish and Wildlife Service National Wetlands Inventory, PCS: NAD 1983 UTM Zone 13N
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New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

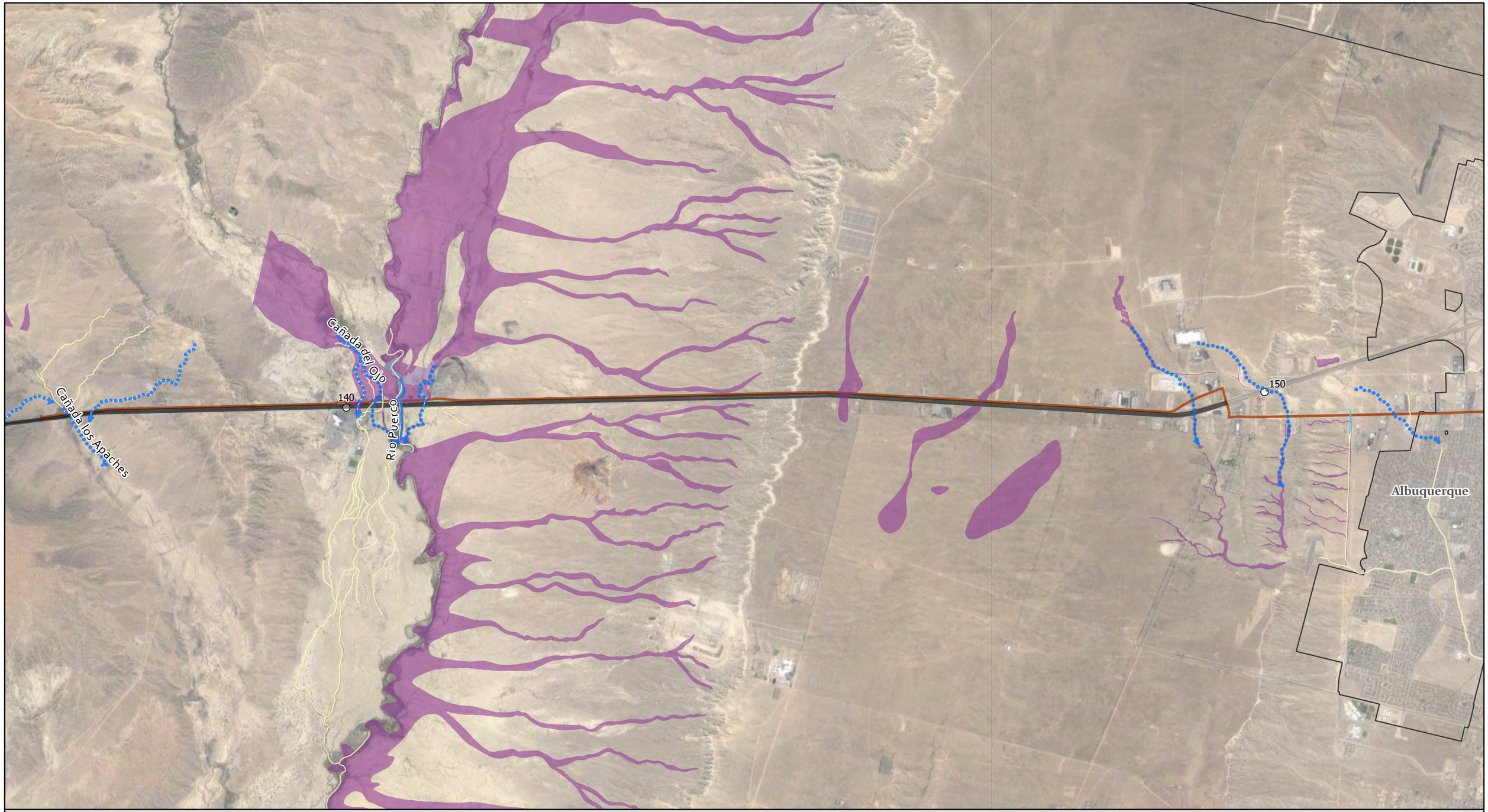
**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

Attachment B - I-40 Water Resources
Milepost 120 - 135

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)




Date: 5/4/2023
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New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts
- Continental Divide

**FEMA Flood Zones**
- 500-year Flood Zone
- 100-year Flood Zone
- Regulatory Floodway

**National Hydrography Dataset**
- Connector
- Canal Ditch
- Stream River
- Artificial Pathway

**Wetland Type**
- Riverine

Attachment B - I-40 Water Resources
Milepost 135 - 150

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

# Attachment C

## Farmlands


Date: 5/23/2023
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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New Mexico Department of TRANSPORTATION

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

**Prime Farmland**

- Farmland of local importance
- Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 1 - 15

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)


Date: 5/23/2023
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New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Prime Farmland

- Farmland of local importance
- Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 15 - 30

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Gallup

Zia sandy loam

Zia sandy loam

Nuffel-Venadito complex

Venadito clay

Venadito clay

30

40

Date: 5/23/2023
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PCS: NAD 1983 UTM Zone 13N
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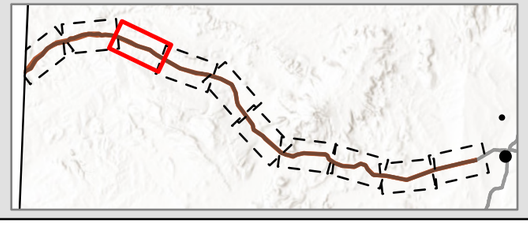
New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet



Frontage Roads
County Boundary
I-40
City Limits
I-40 Mileposts

Prime Farmland
Farmland of local importance
Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 30 - 45

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)


Date: 5/23/2023
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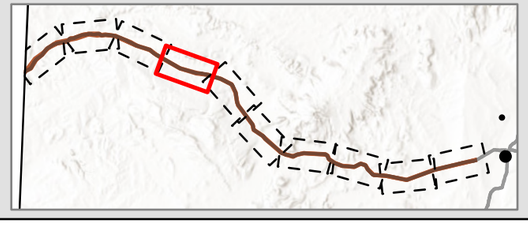
New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Prime Farmland

- Farmland of local importance
- Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 45 - 60

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Zia sandy loam

Venadito clay

MCKINLEY COUNTY
CIBOLA COUNTY

70

Aparejo clay

Aparejo clay

Aparejo clay

Aparejo clay

60

Date: 5/23/2023
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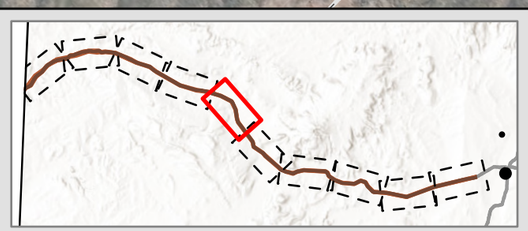
0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Prime Farmland

- Farmland of local importance
- Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 60 - 75

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Milan

Grants

Aparejo clay

80

90

Date: 5/23/2023
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PCS: NAD 1983 UTM Zone 13N
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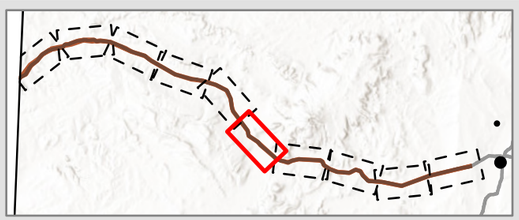
0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Prime Farmland

- Farmland of local importance
- Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 75 - 90

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)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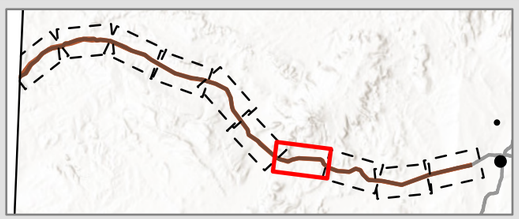
0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

**Prime Farmland**

- Farmland of local importance
- Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 90 - 105

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)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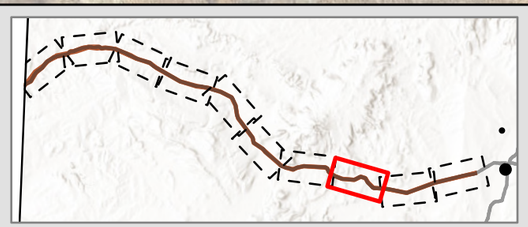
New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

**Prime Farmland**

- Farmland of local importance
- Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 105 - 120

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)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New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

**Prime Farmland**

- Farmland of local importance
- Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 120 - 135

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)


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New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet

- Frontage Roads
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Prime Farmland
- Farmland of local importance
- Prime farmland if irrigated

Attachment C - Farmland Status
Milepost 135 - 150

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)