DRAFT ENVIRONMENTAL ASSESSMENT

MADRID STORMWATER AND EROSION CONTROL PROJECT

Santa Fe County, New Mexico

Coal Problem Area: Madrid Coal Breaker - NM935060

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December 2023

ENVIRONMENTAL ASSESSMENT

FOR:

Madrid Stormwater and Erosion Control Project

Santa Fe County, New Mexico

Reviewed by: _____, Director

Date: _____

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TABLE OF CONTENTS

LIST OF ACRONYMS iv

1. INTRODUCTION 1

1.1 Project Location 1
1.2 Purpose and Need for Proposed Action 1
1.3 Project History/Background 1
1.4 Project Decision 2
1.5 Relevant Statutes and Regulations 3
1.6 Public Involvement 3

2. DESCRIPTION OF ALTERNATIVES 4

2.1 Alternative A, Proposed Action 4
2.2 Alternative B 6
2.3 Alternative C, No Action Alternative 7
2.4 Alternatives Considered but Not Analyzed 8

3. AFFECTED ENVIRONMENT 8

3.1 General Project Setting 8
3.2 Cultural Resources 9
3.3 Visual Resources 10
3.4 Water Resources 11
3.5 Wildlife 13
3.6 Special Status Species 13
3.7 Vegetation 14
3.8 Soils 14
3.9 Human Health and Safety 15
3.10 Socioeconomic Conditions and Environmental Justice 15
3.11 Transportation 17
3.12 Recreation 18

4. ENVIRONMENTAL IMPACTS 18

4.1 Cultural Resources 18
4.2 Visual Resources 20
4.3 Water Resources 21
4.4 Wildlife 22
4.5 Special Status Species 23
4.6 Vegetation 24
4.7 Soils 24
4.8 Human Health and Safety 25
4.9 Socioeconomic Conditions and Environmental Justice 25
4.10 Transportation 26

4.11 Recreation 27
5. CUMULATIVE IMPACTS 28
6. MITIGATION/AVOIDANCE 29
6.1 Cultural Resources 29
6.2 Visual Resources 31
6.3 Water Resources 31
6.4 Wildlife 31
6.5 Special Status Species 32
6.6 Vegetation 32
6.7 Soils 32
6.8 Human Health and Safety 33
6.9 Socioeconomic Conditions and Environmental Justice 33
6.10 Transportation 33
6.11 Recreation 33
7. AGENCY CONSULTATION 33
8. LIST OF PREPARERS 34
9. REFERENCES 35

TABLES

Table 1. *Summary of historic properties and sites by property type* (WCRM 2021)[1]. 10

Table 2. *Historical significance of eligible features within the APE as defined by 36 CFR 60.4* (WCRM 2021). 11

Table 3. *EPA EJScreen Report*[1] *for Madrid* 17

Table 4. *Madrid Stormwater Erosional Control Archaeological Site NRHP Eligibility Determinations, Potential Project Effects, and Proposed Mitigation Treatments* 29

FIGURES AND APPENDICES

Figure 1. Vicinity Map for Madrid Stormwater and Erosion Control Project

Figure 2. Madrid Stormwater and Erosion Control Project Area of Potential Effect (APE)

Appendix A. Public Involvement Compendium

Appendix B. Agency Correspondence

Appendix C. Cultural Compliance

Appendix D. USACE Nationwide Permit

Appendix E. Biological Assessment/Biological Evaluation

LIST OF ACRONYMS

AIRFA	American Indian Religious Freedom Act
AML	Abandoned Mine Land
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
BA/BE	Biological Assessment/Biological Evaluation
BISON-M	Biota Information System of New Mexico
BMP	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	Environmental Assessment
EMNRD	Energy, Minerals, and Natural Resources Department
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EO	Executive Order
FONSI	Finding of No Significant Impact
GMEC	Grouse Mountain Environmental Consultants
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
MHD	Madrid Historic District
MOA	Memorandum of Agreement
NAGPRA	Native American Graves Protection and Repatriation Act
NAA	No Action Alternative
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMAC	New Mexico Administrative Code
NMDA	New Mexico Department of Agriculture
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NMPIF	New Mexico Partners in Flight
NMPM	New Mexico Principal Meridian
NMRPTC	New Mexico Rare Plant Technical Council
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
OSMRE	Office of Surface Mining Reclamation and Enforcement
PA	Proposed Action
SHPO	State Historic Preservation Office
SWQB	Surface Water Quality Bureau
USACE	United States Army Corps of Engineers
DOI	United States Department of the Interior
UNM	University of New Mexico
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WOTUS	Waters of the United States
WRCC	Western Regional Climate Center

1. INTRODUCTION

The New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) Abandoned Mine Land (AML) Program, in partnership with the United States Department of Interior (DOI) Office of Surface Mining Reclamation and Enforcement (OSMRE), are proposing to establish stormwater conveyances, erosion control measures, and fire prevention improvements within the town of Madrid, New Mexico, located in Santa Fe County, approximately 22 miles southwest of Santa Fe (Figure 1). These measures are proposed on 117 acres comprised of private, state and county owned land (hereafter referred to as the Proposed Action).

The Proposed Action (PA) is designed to help address on-going coal mining legacy hazards including stormwater flooding in and around Madrid, erosion on existing gob piles and roadways, improving the town's fire suppression capabilities, and closing a re-opened adit feature. Madrid's identity is rooted in its coal mining history and its economy relies heavily on tourism. It is important for the New Mexico AML Program to preserve the historical integrity of the town while safeguarding against environmental hazards.

1.1 Project Location

The Area of Potential Effect (APE), containing the town of Madrid, is approximately 22 miles southwest of Santa Fe in Santa Fe County, NM. The APE is located within section 35 of Township 14 North, Range 7 East (T14N-R7E), as depicted in United States Geological Survey (USGS) New Mexico Principal Meridian (NMPM), and on unplatted land in the Mesita de Juana Lopez and Ortiz Mine Grants, as depicted in United States Geological Survey (USGS) New Mexico Principal Meridian (NMPM) Madrid 7.5' topographic quadrangles (Figure 2).

The APE is a combination of private, state and county-owned land that makes up approximately 117 acres (Figure 2). The percentage of surface ownership within the APE includes: 84.18 acres (72%) private, 20.65 acres (18%) Santa Fe County, 6.84 acres (6%) New Mexico Department of Transportation (NMDOT), 2.86 acres (2%) Madrid Water Cooperative, and 2.37 acres (2%) Madrid Landowners Association.

1.2 Purpose and Need for Proposed Action

The need for the PA is to address human health and safety concerns from hazards associated with the remnants of mining activities, including excessive erosion, flooding, and open mine features, as well as address fire suppression insufficiencies in Madrid. The purpose of the PA is to safeguard the public from these hazards while preserving the historic mining landscape.

1.3 Project History/Background

The town of Madrid was developed as a mining community in the 1890s. As a company town, the area grew to include housing, churches, a school, and local businesses which continued to expand through the 1930s to support miners and their families. Mining activities slowed after World War II with the last active mine in Madrid closing in 1962. During the 1960s and early 1970s, the town was mostly empty and efforts to sell it as a whole unit failed. In the late 1970s, the town was sold

as individual properties and purchased in large by eclectic individuals seeking personal freedoms. Today, Madrid is a tourist destination known for its artists who wish to preserve and embrace the rich mining history of the town (WCRM 2021).

The AML Program's work in Madrid began in the 1980s and has included adit closures, asbestos removal, water tank abatement, drainage repairs and reclamation, structure demolition, and various maintenance activities. These projects have been met with varying levels of success and public approval. Recent water quality monitoring results indicate past reclamation efforts performed by the AML Program have made a positive impact on stormwater quality (GMEC 2019a). A detailed description of past projects and results can be found in the Madrid Compendium (NM AML 2009).

In 2011, Madrid Mining Landscape community outreach identified two main reclamation projects in the town of Madrid: The East Slope Catchment project and the Arroyo Restoration project (Dekker/Perich/Sabatini 2011). Since abandonment of the mines, existing coal waste piles, known as gob piles, have remained relatively unstable and poorly vegetated. This, combined with modified natural drainages and deteriorated manmade drainage structures, has resulted in the movement of large quantities of sediment downslope and downstream flooding, especially during high precipitation events. The sediment movement has had significant negative impacts on the town of Madrid, located immediately downslope and adjacent to multiple coal gob piles. Over time, sediment has accumulated within the area, clogging drainage paths, and leading to episodic flooding throughout the town (WCRM 2021). Recently, fugitive stormwater and resulting erosion has exposed and reopened a mine adit feature that was previously backfilled by AML in 2011.

In recent years, the AML Program has increased public involvement throughout the planning process. The AML Program met numerous times with the local community and landowners. One of the main issues repeated during these communications was to determine a way to address these severe stormwater concerns without complete reclamation of the gob piles that celebrate the historical mining of the town. In addition, community members expressed concerns to update the town's fire suppression system as the current water storage tank is outdated, undersized, and has severely eroded (NM AML 2009). The AML Program strongly considered these public concerns during development of the PA. For a collection of documents regarding the history and development of this project, please see the NM AML Program's website: <https://www.emnrd.nm.gov/mmd/abandoned-mine-land-program/projects/award-winning-work/madrid-stormwater-erosion-control-project/madrid-stormwater-erosion-control-project-documents/>.

1.4 Project Decision

This Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 USC 4321, et seq.) and Council on Environmental Quality (CEQ) guidelines (40 Code of Federal Regulations [CFR] 1500-1508), which require a systematic, interdisciplinary approach to project planning and implementation, and emphasize serious consideration of environmental impacts to federally funded projects.

This EA was prepared on behalf of the AML Program and discloses the environmental consequences of implementing Alternatives A, B, and C. The OSMRE is the lead agency for the

PA. This EA will be reviewed by land management agencies with jurisdiction and made available to the public for review, comment, and consideration. A Finding of No Significant Impact (FONSI) document will then be prepared by the OSMRE describing the findings of the analysis in this EA. The OSMRE Denver Field Branch Manager will be the "Deciding Official" for the PA as the signatory of the FONSI document, if applicable.

1.5 Relevant Statutes and Regulations

The PA does not conflict with any known state or local planning or zoning ordinances. The PA is required to conform and comply with the following applicable and relevant regulations and statutes:

- American Indian Religious Freedom Act (AIRFA) of 1978 (42 USC 1996)
- Archaeological Resources Protection Act (ARPA) of 1979 (16 USC 470)
- Clean Air Act (CAA) of 1970, as amended (42 USC 7401 et seq.)
- Clean Water Act (CWA) of 1972, as amended (33 USC 1251 et seq.)
- Endangered Species Act (ESA) of 1973, as amended (16 USC 1531 et seq.)
- Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order [EO] 12898
- Floodplain Management (EO 11988)
- Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 USC 703–712)
- NEPA of 1969, as amended (42 USC 4321 et seq.)
- National Historic Preservation Act (NHPA) of 1966 as amended, (54 USC 300101 et seq.; formerly 16 USC 470 et seq.)
- National Pollutant Discharge Elimination System (NPDES), as amended (33 USC 1251 et seq.)
- Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 USC 3001 et seq.)
- Protection and Enhancement of the Cultural Environment (EO 11593)
- Protection of Wetlands (EO 11990)
- Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 et seq.)
- Secretarial Order 3206: American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act
- Tackling the Climate Crisis at Home and Abroad (EO 14008)

A Memorandum of Agreement (MOA) between OSMRE, EMNRD, and NM SHPO regarding the PA was entered into April 3, 2023 (Appendix C). The County of Santa Fe, Madrid Landowners Association, U.S. Army Corps of Engineers, and the Madrid Water Cooperative signed as concurring parties. This MOA describes previous agreements, anticipated effects of the PA, and stipulations to mitigate adverse effects to historic properties.

1.6 Public Involvement

A public meeting was held on December 13, 2017, at the Madrid Fire Station, 5 Firehouse Lane, Madrid, New Mexico. The purpose of the public meeting was to provide an overview of the PA and to accept comments and answer questions from the public. Public meeting notices were

published in the *Santa Fe New Mexican* on November 29, and December 12, 2017. Public notices were also published in the *Mountain View Telegraph* on November 30, and December 7, 2017. The meeting notice was also mailed to 120 local addresses on November 27, 2017. Seventeen (17) community members and several AML Program representatives attended the public meeting. Due to the number of claimants and public response to the first public meeting, a second public meeting was held on June 20, 2018, at the Madrid Fire Station. Notice was published in the *Mountain View Telegraph* and the *Santa Fe New Mexican* on May 31, and June 14, 2018. Notices were also mailed to 137 addresses. Ten (10) community members attended the public meeting, as well as AML Program representatives (Appendix A).

A final public meeting was held on September 24, 2018, at the Mine Shaft Indoor Theater in Madrid. Public notice was published in the *Santa Fe New Mexican* on September 17, 2018. A notice was also mailed to 161 addresses. Seventeen (17) people attended the meeting, as well as AML Program representatives (Appendix A-Meeting and Workshop Summaries).

The following is a summary of the community's concerns as discussed in the meetings and written responses:

- Retaining gob piles
- Safeguarding the fire department's water storage tank
- Stabilizing the arroyo through town
- Reduce sedimentation in roads and buildings during flood events
- Maintaining gravel roads throughout town

This EA will be released to the public for a 30-day comment period. A press release announcing the availability of the EA for comments will be published on the AML Program's website. Additionally, legal notices will be published in the *Albuquerque Journal* and the *Santa Fe New Mexican* in English and Spanish. Comments and responses will be included in the compendium of public involvement provided in Appendix A.

2. DESCRIPTION OF ALTERNATIVES

Provided below is a description of the three alternatives developed by the AML Program. Included is Alternative A, the Proposed Action (PA) and the AML Program's preferred alternative, as well as Alternative B and Alternative C, the No Action Alternative (NAA).

2.1 Alternative A, Proposed Action

The PA as described below was designed to address issues related to legacy mining operations, including stormwater control, erosion, and open mine features, as well as improve fire suppression capabilities, while being visually unobtrusive in the historic setting of Madrid. The stormwater improvements proposed would provide a medium level of service and would require periodic maintenance to repair gravel roads, channels, and rolling dips, and to remove sediment and debris, especially after large precipitation events.

2.1.1 Ice House Road, Proposed Action

The PA at the Ice House Road Area would include improvements to Bethlehem Hill Road, Bethlehem Hill Arroyo, and Ice House Road. Improvements to Bethlehem Hill Road would consist of earthen rolling dips, cobble rock rundowns, and cobble swales to slow and direct stormwater off Bethlehem Hill Road and into a stormwater conveyance channel. The treatment proposed at Bethlehem Hill Arroyo would construct Zuni bowls, plunge pools, and one-rock dams to alleviate erosion during storm events. Proposed improvements at Ice House Road include constructing three channel intercepts with a concrete channel to capture and direct stormwater away from private property. Intercept channels would be upslope (east) from the village and any uphill concrete structures would be hidden from view from the village. Ice House Road would also be re-graded to have a crowned gravel roadway cross section to improve drainage. The east side of Ice House Road would include a sediment pond to accept stormwater from the lower intercept and from Bethlehem Hill Arroyo. The pond would discharge through a culvert crossing under Ice House Road to the west and a stormwater conveyance channel with drop structures would be added west from Ice House Road to Cave Road. This structure would pass under NM-14 through a piped storm drain system and return to a rectangular drainage channel. NM-14 would have one-lane closures during installation completed during warmer summer months.

2.1.2 Madrid Arroyo and Cave Road, Proposed Action

The PA at Madrid Arroyo and Cave Road would regrade Cave Road and construct a rock lined swale and gravel roadway to convey stormwater. Cave Road would be graded into two bifurcated roadways, one east and one west, to provide access to local residences while providing access to cross Madrid Arroyo. Excess fill from the arroyo would be added to the old railroad grade between Cave Road and Madrid Arroyo to prevent Madrid Arroyo from flooding homes along Cave Road. Bridge Street would be regraded with an addition of base coarse material. Additionally, Bridge Street would have a center valley gutter installed and a drainage inlet drop structure reporting to the Madrid Arroyo. The main channel of Madrid Arroyo would be re-graded and rock and soil deflectors would be installed in the channel to prevent lateral erosion. Two channels with box culverts would be constructed at Cave Road crossing to direct small stormwater flows to the original Madrid Arroyo alignment and, secondarily, to direct higher flows into the west channel. A native seed mix and plantings approved by the County would also be used within the arroyo to better stabilize soils and create habitat.

2.1.3 Firehouse Lane, Proposed Action

The PA at Firehouse Lane would include constructing a rock-lined gravel roadway to convey stormwater into Madrid Arroyo and along the west segment into the existing drop inlet adjacent to NM-14. The east gob piles in the Firehouse Lane area would have Zuni bowls, plunge pools, one rock dams, and rock rundowns placed in the higher elevations of the drainages with trapezoidal channels constructed at the toes of the gob piles to capture and convey stormwater and sediment. A drainage structure placed midway along the Firehouse Lane would pass the gravel road through a buried concrete storm drain system and feed into Madrid Arroyo. North of the drainage structure, Firehouse Lane would be regraded with an inverted crown gravel roadway to convey stormwater to the existing NMDOT inlet near NM-14. Red Dog Road would be regraded with an addition of base coarse material. Additionally, a water conveyance route (rock-lined ditch) would be added

along the hillside above the Red Dog Road to channel stormwater south to the existing culvert located under Firehouse Lane.

2.1.4 Water Tank and Fire Suppression System, Proposed Action

The PA for the water tank and fire suppression system would include the installation of a new 125,000-gallon tank with a transmission pipeline crossing NM-14 and Madrid Arroyo south of Madrid and across from the existing potable water tank. The waterline would be placed in a casing installed via horizontal directional drilling under NM-14 and Madrid Arroyo and routed to a connection to the existing fire suppression pipeline near the fire house. New pipeline would be placed in Madrid Water and NMDOT land except for one private landowner. This southern location was chosen as it is less disruptive to residents and visitors and has less potential for underground utility interference.

2.1.5 Mine Adit Closure

Recently, fugitive stormwater and resulting erosion have exposed and reopened a mine adit feature that was previously backfilled by AML in 2011. This feature is on private property near the intersection of Icehouse Road and Bethlehem Road in Madrid. To address human health and safety concerns, this feature would be closed and safeguarded, potentially utilizing the following methods: manually or mechanically filling mine openings using imported or surrounding soil and rock, waste material or using polyurethane foam, and/or building structural barriers to restrict human access, such as rock bulkheads.

2.2 Alternative B

Alternative B is a selection of actions similar to the PA with alterations for each project area as described below. In general, Alternative B includes more intensive stormwater management actions that would also be more visually obtrusive in Madrid's historic setting. The stormwater improvements proposed would provide a high level of service and would require less maintenance than the PA. Alternative B would include the same mine adit closure as discussed in the PA.

2.2.1 Ice House Road, Alternative

The Ice House Road alternative includes proposed stormwater and erosion control features characterized by paved standard and inverted crown road improvements to all roads, storm drain pipes, large detention pond, and rock-lined stormwater diversions. NM-14 would have one-lane closures during installation completed during warmer summer months.

2.2.2 Madrid Arroyo and Cave Road, Alternative

The Cave Road and Madrid Arroyo alternative would include re-grading Cave Road and constructing a rock-lined swale gravel roadway to convey stormwater. Excess fill from the arroyo would be added to the existing railroad grade between Madrid Arroyo and Cave Road to prevent Madrid Arroyo from leaving its banks and flooding homes along Cave Road. The arroyo crossing would be constructed with two concrete box culverts designed to county standards for public safety and emergency access. The arroyo would then be reseeded with a native seed mix approved by the County to stabilize areas disturbed by grading. Bridge Street would be paved and a center valley gutter and drainage inlet drop structure reporting to Madrid Arroyo installed. Improvements to

Madrid Arroyo would include re-grading the floodplain and installing rock and soil deflectors to prevent lateral erosion and direct stormwater into the west channel.

2.2.3 Firehouse Lane, Alternative
The Firehouse Lane alternative would consist of installing stormwater and erosion control features such as paved standard roads, storm-drain pipes, rock-lined stormwater diversions, and sediment basins. Red Dog Road would be paved and a water conveyance route (rock-lined ditch) would be added along the hillside of Red Dog Road to channel stormwater south to the existing culvert located under Firehouse Lane.

2.2.4 Water Tank and Fire Suppression System, Alternative
The water tank and fire suppression alternative would still install a new 125,000-gallon water tank and use horizontal directional drilling for the pipeline under the highway. However, the proposed new pipeline would be routed along the west side of NM-14 and cross under the highway at the bend. The new pipeline would be placed entirely in the NM-14 right-of-way.

2.3 Alternative C, No Action Alternative

The NAA would take no measures to reduce hazards associated with past mining activity. This alternative provides the lowest level of service, as no stormwater or erosion structures would be constructed in the discussed project areas and fire suppression capabilities would remain at the current level. The NAA does not satisfy the purpose and need of the PA based on AML Program reclamation priorities (PL 95-87, 30 USC 1240[a] 2006).

2.3.1 Icehouse Road, No Action Alternative
Under the NAA, none of the proposed improvements for stormwater and erosion control, including road improvements, storm drain pipes, detention ponds, rock-lined water diversions, or sediment basins, would be constructed in the Ice House Road area.

2.3.2 Madrid Arroyo and Cave Road, No Action Alternative
Under the NAA, none of the proposed improvements for stormwater and erosion control, including road improvements, channel regrading, culverts, drain pipes, seeding, rock and soil deflectors, or weirs and debris catchment, would be constructed in the Arroyo and Cave Road areas.

2.3.3 Firehouse Lane, No Action Alternative
Under the NAA, none of the proposed improvements for stormwater and erosion control, including road improvements, storm drain pipes, detention pond, rock lined water diversions, or sediment basins, would be constructed in the Firehouse Lane area.

2.3.4 Water Tank, No Action Alternative
Under the NAA, no updates would be made to the current fire suppression system. The water tank used to supply fire hydrants throughout Madrid would remain at 100,000 gallons and be below requirements to meet National Fire Protection Association (NFPA) standards (Weston Inc. 2019). The tank would also continue to be susceptible to damage from erosion and flooding as it would continue to leak and remain within the flood path.

2.3.5 Mine Adit Closure, No Action Alternative
Under the NAA, the recently opened mine adit feature would not be closed and no actions to safeguard the public would occur.

2.4 Alternatives Considered but Not Analyzed

Additional alternatives were considered during public scoping and the development of the PA that will not be analyzed. Initially, the AML Program proposed fully reclaiming the gob piles in effort to significantly, and more permanently, reduce sedimentation and address stormwater and erosion control needs. However, public scoping indicated Madrid residents strongly opposed the reclamation of these prominent visual representations of mining history. Rehabilitating the existing water storage tank was also considered; however, this was eliminated from consideration due to the age, condition, and operational requirements of the outdated system.

3. AFFECTED ENVIRONMENT

This section describes the existing environmental resources and their present conditions within the APE. Resource issues unlikely to be affected by the PA and therefore not discussed in detail below include air quality and visibility, energy, farmlands, floodplains, forestry, geology, greenhouse gases and climate change, groundwater, historic trails, leasable and locatable minerals, livestock grazing and rangeland, and noise.

3.1 General Project Setting

The PA is within the town of Madrid, NM. The population of Madrid is 247, with 169 associated buildings, 145 of which are occupied (U.S. Census Bureau 2020). Madrid is located in the foothills of the Ortiz Mountains. The Ortiz Mountains are a small range within the San Pedro-Ortiz porphyry belt. Elevation within the APE ranges from approximately 5,930 to 6,350 feet above sea level. The topography ranges from nearly level in the valley floor to steeply sloping mountain sides. The APE includes steep slopes and drainages, narrow ridgelines, talus deposits, gob piles, and several ephemeral arroyos. Average temperatures in the general area range from a minimum of 17.6°F in January to a maximum of 90.1°F in July; annual precipitation averages 12.77 inches (WRCC 2016).

The APE is located within Arizona/New Mexico Mountains Level III ecoregion (Griffith et al 2006); higher elevation portions are within the Rocky Mountain Conifer Forests sub-region, and lower elevation areas are within the Conifer Woodlands and Savannahs sub-region (Level IV). The Conifer Woodlands and Savannahs reflect the transitional zone between grassland and scrubland vegetative communities and conifer woodlands and typically contain pinyon-juniper woodlands intermingled with grasslands and shrublands. The Rocky Mountain Conifer Woodlands reflect higher moisture levels, with ponderosa pine, Gamble oak, mountain mahogany, and dense understory (GMEC 2019b).

3.2 Cultural Resources

The PA is subject to Section 106 (54 USC 306108) of the National Historic Preservation Act (NHPA) (54 USC 300101 et seq. and its implementing regulations 36 CFR Part 800: Protection of Historic Properties, as revised August 2004). To comply with Section 106 of the NHPA, a Class III cultural resource inventory, including archival research, records review, preliminary listing recommendations for National Register of Historic Places (NRHP) eligibility, and a 100 percent pedestrian survey of the entire APE was completed to identify any historic properties that would be potentially impacted by the PA. During the field inventory, cultural resource contractors evaluated and provided preliminary listing recommendations for NRHP eligibility; through the consultation process with the State Historic Preservation Office (SHPO), final NRHP eligibility determinations were made in accordance with Section 106. Class III archaeological survey methods were conducted in accordance with *Standards for Survey and Inventory* (NMAC 2006) and in compliance with Sections 18-6-5, 18-6-9, and 18-6-9.1 through 18-6-9.3 of the Cultural Properties Act; New Mexico Statutes Annotated 1978 (NMSA 1978) of the Cultural Properties Act and in observance of the requirements of New Mexico Administrative Code (NMAC) Title 4, Chapter 10, Part 8, Subsection 17 (4.10.8.17 NMAC) and Title 4, Chapter 10, Part 15 (4.10.15 NMAC) for protection of archaeological resources in New Mexico (WCRM 2021).

A large portion of the APE overlaps with the Madrid Historic District (MHD). The MHD encompasses approximately 200 acres and covers the downtown area, areas of the town that hold historic resources such as the ballpark, mining museum, and historic railroad segments. The MHD was listed in the New Mexico State Register of Cultural Properties (SR 356) in 1974 and the NRHP (NRHP No. 77000928) in 1977. In the NRHP nomination form, the MHD is stated as being representative of one of the oldest company-owned mining towns in the Western United States (Baxter and Cook 1976), with a period of significance from 1828 to 1926.

The APE for cultural resources includes 163.79 acres of primarily private lands, with small parcels administered by the County of Santa Fe, the Madrid Water Users Cooperative and Madrid Landowners Associations in Santa Fe County, and the NMDOT. The cultural inventory completed in 2020 (WCRM 2021) determined there are 109 historic buildings, two (2) historic structures, fifteen (15) archaeological sites, and one (1) historic isolated occurrence within the APE. All identified historical resources are associated with the mining history of Madrid. The nature of the historic buildings, structures, and archaeological sites within Madrid can be split between the following group type descriptions and summarized in Table 1:

1. Residential Buildings and Features and subtype
    1.a. Community Refuse Disposal,
2. Commercial Buildings and Features and subtype
    2.a. Community Pride Resources,
3. Transportation and Infrastructure System Features,
4. Mine-Related Buildings, Structures, Features, and Objects, and
5. Post-Mining Era Tourist and Vacation Buildings, Structures, and Features.

Table 1. *Summary of historic properties and sites by property type* (WCRM 2021)[1]**.**

	Property Type 1	Property Type 1a	Property Type 2	Property Type 2a	Property Type 3	Property Type 4
Buildings	80		33	13		1
Structures					2	
Archaeological Sites	6	1		3	2	5

[1] Some buildings and sites were assigned to multiple property types. The historic isolate could not be assigned a property type .

Of the 109 historic buildings, fifty (50) are recommended as eligible for inclusion in the NRHP and the other fifty-nine (59) buildings and two (2) structures are recommended not eligible. Of the fifteen (15) historical archaeological sites, twelve (12) sites are recommended as eligible for inclusion in the NRHP, and three (3) sites are recommended as not eligible. The one (1) documented isolated occurrence represents a nonsignificant resource with no NRHP eligibility. The historic significance of the eligible resources within the APE is summarized in Table 2 (WCRM 2021). Two of the archaeological sites (LA 117776 and LA 117779) recommended eligible by WCRM were subsequently determined not eligible by the SHPO, and one site (LA 195464 recommended not eligible was assigned an undetermined eligibility status by the SHPO (HPD Log No. 114885).

3.3 Visual Resources

Visual resources consist of landforms, vegetation, rock and water features, and cultural modifications that create the visual character and sensitivity of landscapes. Two factors were considered when evaluating the existing condition of visual resources within the APE: visual quality and visual sensitivity. Visual quality is the overall impression or attractiveness of an area, considering the variety, vividness, coherence, harmony, or pattern of landscape features. Visual sensitivity is a measure of an area's potential sensitivity to visual change considering types of viewers, viewer exposure, volumes, as well as viewing distance.

Evidence of the historic mining activities are visually apparent throughout the APE. There are 111 historic buildings and structures throughout the APE that help visually tell the history of Madrid mining. Black-colored gob piles left by past mining activities contrast sharply with the natural setting, supporting little vegetation other than sparse weedy cover and have highly eroded side-slopes with gob waste sloughing off into the canyon bottoms and drainage courses (Dekker/Perich/Sabatini 2010). While the gob piles detract from the natural visual quality, they do provide a distinctive visual context of the historical land use in the area. Visual sensitivity is high given the tourist destination and direct access through the center of the APE on NM-14.

Table 2. *Historical significance of eligible features within the APE as defined by 36 CFR 60.4* (WCRM 2021).

	Buildings	Structures	Archaeological Sites (WCRM Recommendation)	Isolated Occurrence	Archaeological Sites (SHPO Determination)
Criterion A, B, and C[1]	1				
Criterion A and B			2		2
Criterion A and C	21		1		1
Criterion A and D					7
Criterion A	28		2		
Criterion C	1				
Criterion D			7		
Not Eligible	59	2	3	1	5

[1]Criterion A- associated with events that have made a significant contribution to the broad patterns of our history
Criterion B- associated with the lives of persons significant to our past
Criterion C- embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess highly artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
Criterion D- that have yielded, or may be likely to yield, information important in prehistory or history

The Turquoise Trail National Scenic Byway (NM-14) bisects the APE. The byway was recognized as a National Scenic Byway for the area's intrinsic scenic quality. Scenic quality is derived from a distinct, memorable visual experience that incorporates a harmony between the natural landscape and manmade elements (FHWA 2019).

3.4 Water Resources

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

3.4.1 Wetlands

No National Wetlands Inventory (NWI) wetlands are located within the APE and no wetlands were located during any field surveys (GMEC 2019). Therefore, there would be No Effect to wetlands, and they will not be discussed further.

3.4.2 Waterways

Based on hydrological data obtained from the Resource Geographic Information System (UNM 2017), four (4) ephemeral waterways occur within the APE. Two ephemeral drainages are located on the west side of the APE and enter Madrid Arroyo via outlets located on the west streambank. Only the outlets are located within the APE, and no infrastructure associated with the PA would occur within these drainages. One of these drainages is a stormwater conveyance outlet with no OHWM indicators present and likely does not provide a significant hydrologic connection with associated drainages or Galisteo Creek further downstream. A third drainage documented on the eastern edge of the APE was identified as an "isolated" erosional feature with no apparent hydrologic connectivity to associated drainages or Galisteo Creek further downstream and does not meet the USACE definition of WOTUS. These drainages lack characteristics consistent with jurisdictional waterways and CWA permits for activities within these waterways will not be required from the USACE (GMEC 2019).

The fourth ephemeral drainage is Madrid Arroyo, a large drainage running through the middle of Madrid. Madrid Arroyo was identified as having a distinct OHWM with indicators including bed and bank, gravel sheets, presence of litter and debris, exposed root hairs below intact soil layers, and change in particle distribution. It also appears to have a significant nexus with Galisteo Creek roughly 2.5 miles north of Madrid and, subsequently, the Rio Grande another 15 miles to the west (GMEC 2019). According to EO 13990 (2021), ephemeral waterways with a significant nexus to traditional navigable waterways are considered WOTUS and will once again be regulated by the USACE. A nationwide permit is likely required for the PA within the OHWM of Madrid Arroyo. The AML Program will consult with the USACE and obtain the proper Nationwide Permit (#37; Emergency Watershed Protection and Rehabilitation) prior to project implementation (Appendix D).

3.4.3 Water Quality

To identify a baseline of water quality in Madrid, the AML Program conducted a water quality monitoring study in which existing stormwater runoff contaminants were analyzed and test levels were compared to state and federal regulations. As design plans for the PA would divert stormwater into Madrid Arroyo, the AML Program wanted to identify existing stormwater runoff quality on a reference site, coal waste gob piles (one of which was previously reclaimed), and discharge points (sites representing cumulative stormwater runoff within the APE). Monitoring constituents were determined by consultation with the NMED. Based on laboratory analysis, analytes from samples taken at the reference site and the reclaimed gob pile were either at the non-detection reporting limit or below the established Environmental Protection Agency (EPA) or NMED standards. Total dissolved solids (TDS) and dissolved manganese exceeded the NMED and/or EPA standards at discharge points, and dissolved aluminum exceeded standards at discharge points and at the unreclaimed gob pile. These monitoring results indicate past

reclamation efforts performed by the AML Program have made a positive impact on stormwater quality (GMEC 2019a).

3.5 Wildlife

During biological surveys (Conducted on May 22-23, 30-31 of 2019), forty-two (42) vertebrate species were recorded: thirty-seven (37) species of birds, two (2) species of mammals, and three (3) species of reptiles. Thirty-four (34) of the bird species documented during the surveys are federally protected under the Migratory Bird Treaty Act (MBTA) and likely breed within the area. The three (3) non-native species documented, Eurasian collared-dove (*Streptopelia decaocto)*, European starling (*Sturnus vulgaris)*, and house sparrow (*Passer domesitcus*), have no federal or state protection. One (1) active Cooper's hawk (*Accipiter cooperii*) nest was located along the arroyo in the northern portion of the APE (GMEC 2019b). Federally listed species and special status species are addressed in the following section. The exposed mine adit was only recently opened and unlikely to provide suitable bat habitat; it is a possible entrapment and injury/mortality hazard for wildlife species.

3.6 Special Status Species

The U.S. Fish and Wildlife Service (USFWS), New Mexico Department of Game and Fish (NMDGF), and New Mexico Rare Plant Technical Council (NMRPTC) databases were reviewed to determine potential occurrence of state or federal proposed, candidate, threatened, and endangered species (i.e., Special Status Species) in the APE. The USFWS Ecological Service's Information for Planning and Consultation (IPaC) website was used to determine the federally-listed species with potential to occur within the APE. The Biota Information System of New Mexico (BISON-M) database was searched for state-listed fauna species, and the NMRPTC website was searched for information on potential state threatened or endangered flora species within Santa Fe County. A review of Special Status Species likely to occur and/or with potential habitat in the APE was analyzed in detail within a separate Biological Assessment and Biological Evaluation (BA/BE) and the results summarized below (GMEC 2019b [Appendix E]). Special Status Species considered unlikely to occur and without suitable habitat in the APE were removed from further consideration.

3.6.1 Federally endangered, threatened, candidate, or proposed species

Due to the lack of federal critical habitat, general habitat, or occurrence, the following species analyzed in the BA/BE do not occur within the APE: Mexican spotted owl (*Strix occidentalis lucida*), New Mexico meadow jumping mouse (*Zapus hudsonius luteus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). No federally listed species or special status species were documented during the surveys (GMEC 2019b). Therefore, there would be No Effect to these species, and they will not be analyzed in further detail.

3.6.2 State endangered, threatened, or Species of Greatest Conservation Concern

Due to the lack of general habitat or occurrence, the following species analyzed in the BA/BE do not occur within the APE: spotted bat (*Euderma maculatum),* Pacific marten (*Martes caurina*), meadow jumping mouse*,* white-tailed ptarmigan (*Lagopus leucura*), bald eagle (*Haliaeetus leucocephalus),* prairie falcon *(Falco peregrinus*), least tern (*Sternula antillarum*), yellow-billed

cuckoo, boreal owl (*Aegolius funereus*), Mexican spotted owl, violet chinned hummingbird (*Amazilia violiceps*), southwestern willow flycatcher, Baird's sparrow (*Centronyx bairdii*), Lilljeborg's peaclam (*Pisidium lilljeborgi*), and Santa Fe cholla (*Cylindropuntia viridiflora;* GMEC 2019b). Therefore, there would be No Effect to these species, and they will not be analyzed in further detail.

One Special Status Species, the gray vireo (*Vireo vicinior*), has the potential to occur within the APE and will therefore be analyzed in further detail. The gray vireo is a state-threatened species, most often found in open pinyon-juniper woodland or juniper savannah with a shrub component of 35 – 45 percent. It also occurs in middle elevation montane shrub habitats with rocky slopes and scattered conifers (NMPIF 2007). Pinyon-juniper woodland is the dominant habitat type across the upper elevations of the APE and would constitute suitable vireo habitat. During biological surveys, no gray vireos or gray vireo nests were observed (GMEC 2019b).

3.7 Vegetation

Much of the APE has been developed, therefore lacking vegetation, with dispersed disturbed ditches acting as poor stormwater channels. Remaining native portions of the APE are dominated by two vegetative communities, Pinyon Juniper Woodland and Arroyo Riparian Habitat along the drainage, with interspersed coal gob piles (Dick-Peddie 1993). Dominant vegetation within the APE includes: one-seed juniper (*Juniperus monosperma),* winterfat (*Krascheninnikovia lanata*), two-needle pinyon (*Pinus edulis),* James' galleta (*Pleuraphis jamesii),* and Siberian elm (*Ulmus pumila)*. The arroyo riparian habitat located along the Madrid Arroyo consists of a mixture of cottonwood trees (*Populus* spp.) and upland vegetation (GMEC 2019b).

Four noxious weed species, as defined by the New Mexico Department of Agriculture (NMDA), were located during the biological surveys. Siberian elm (*Ulmus pumila*) and cheat grass (*Bromus tectorum*), both class C species, were frequently located throughout the APE along the drainages. Two small populations of bull thistle (*Cirsium vulgare*), a class B species, were documented in the southeast and northern section of the APE. Tamarisk (*Tamarix ramosissima*), a class C noxious weed was found sporadically along the arroyo banks in the northern section of the PA (GMEC 2019b).

3.8 Soils

The PA is located within the north central New Mexico valleys/mesas and conifer woodlands and savanna. The northern half of the APE lies within the north central New Mexico valleys and mesas, characterized as mostly pinyon pine and juniper savanna with slightly cooler temperatures and greater precipitation than the lower valleys and mesas. The south half of the APE is within the conifer woodlands and savannas, exhibiting a cooler and wetter climate than the north central New Mexico valleys and mesas and is seen as a transition community supporting both pinyon-juniper and ponderosa pine (Griffith et al. 2006).

The APE is dominated by four major soil types: Oelop-Charalito complex, 1 to 3 percent slopes; Kech-Cerropelon-Rock outcrop complex, 5 to 50 percent slopes; Devargas-Riovista-Riverwash complex, 0 to 5 percent slopes; and Puertecito-Paraje complex, 15 to 50 percent slopes; with dispersed other minor components (GMEC 2019b).

The Oelop-Charalito complex occurs throughout town and within the primary Madrid arroyo and typically occurs in stream terraces and flood-plain steps. They are well-drained soils and have none to rare frequency of flooding or ponding. Runoff classification ranges from very low to low. Depth to water table is typically greater than 80 inches.

Kech-Cerropelon-Rock complex occurs on the lower half of eastern hillside of Madrid and typically occurs on the hillsides ranging from the summit to backslope. They are well drained soils and have no frequency of flooding or ponding. Unlike the Oelop-Charalito complex, these soils have a medium to high runoff classification. Depth to water table is typically greater than 80 inches.

The Devargas-Riovista-Riverwash complex occurs primarily within the Madrid arroyo and along stream terraces and floodplains. They are well-drained to excessively drained soils and generally have rare frequency of flooding or ponding. Runoff classifications range from none to very low. Depth to the water table is typically greater than 80 inches.

The Puertecito-Paraje complex occurs on the upper half of the eastern hillside of Madrid and typically occurs on the shoulder and backslope of low hills. They are well drained soils and have no frequency to flooding or ponding. Similar to the Kech-Cerropelon-Rock complex, they have a med to high runoff classification, and a depth to groundwater greater than 80 inches.

The historical gob piles present in Madrid are comprised of waste material left over from coal mining operations. Because they are comprised of shale, low-grade coal, and other impurities, the piles are non-economical to process. They have become part of the historical mining landscape and are regarded as valuable to the ambience of Madrid. However, they are unvegetated and are significant sources of flooding and erosion throughout the APE. An additional source of soil erosion within the APE is the current water tank for the fire suppression system which is leaking and causing bank erosion.

3.9 Human Health and Safety

Stormwater conveyances and the existing fire suppression system are currently inadequate within Madrid. Flooding and erosion are exacerbated from the historically highly modified topography and highly erodible soils in the valley. Flooding has caused roads to become de facto stormwater channels and subsequently caused severe erosion and deposition in roadways and ditches. During large precipitation events, lower levels of houses and businesses have become filled with sediment. The current fire suppression system is leaking and has an undersized gravity pipeline which limits its ability and future ability to provide sufficient fire safety. The current stormwater and fire system inadequacies pose threats to human health and safety. The recently opened mine adit feature is a potential fall hazard.

3.10 Socioeconomic Conditions and Environmental Justice

This information on socioeconomic conditions was derived from the EPA's Environmental Justice Screening tool (https://ejscreen.epa.gov/mapper/, accessed April 2022) and verified through the Justice40 Initiative screening tool (https://screeningtool.geoplatform.gov/en/#13.71/35.40199/-

106.15155, beta version accessed July 2022). The EJ screening tool uses American Community Survey (ACS) and US Census data to provide environmental and demographic characteristics of a designated area. The Justice40 Climate and Economic Justice Screening Tool (CEJST) identifies census blocks that meet qualifications to be classified as disadvantaged. Both tools use the most recent available US Census Bureau data at the block-group level to identify demographic characteristics of a study area defined by the user. For this project area the most recent ACS data from the EJ Screening tool and CEJST was from 2015-2019.

3.10.1 Demographic Trends

The population of Madrid has fluctuated between 120 residents in 2013 and 247 in 2020 (Census 2010 and 2020). Unlike other mining reclamation projects, population fluctuations in Madrid are not caused by mining activity but rather influences from Santa Fe and Albuquerque.

While demographic data of Santa Fe County shows 5 of every 10 people in the county as Hispanic (CDC 2019), the majority of Madrid's population is of Caucasian ethnicity. A total of 86 percent of the population are White, 4 percent are Black or African American, 2 percent identify as American Indian, and 8 percent are reported as two or more races (Census 2020).

3.10.2 Employment and Income

Between 2016-2020, the population of the area that was 16 or older was estimated at approximately 89.7% percent of the total population. A total of 29 percent of this population was in the labor force and 2 percent were considered to be unemployed. The additional 70 percent of the population were not in the labor force. A total of 71 percent of households had an annual income of less than $15,000, 9 percent had an income between $15,000 and $50,000, and 20 percent had an income over $50,000. Therefore, 69 percent of the population had income below poverty level (Census 2016-2020).

With over forty shops and art galleries, tourism is Madrid's most important economic contributor and is likely to remain the most important economic sector due to the distance from significant employment opportunities (Madrid Merchants Association 2022). Madrid's economy is increasingly dependent upon the richness of its historic and natural resources, and the historic mining features continue to be a major draw for tourists. Another economic consideration is Madrid's appeal as a filming location. Numerous movies such as Easy Rider (1969), Sam Cade (1972), The Man Who Fell to Earth (1976), and more recently Wild Hogs (2007), Engine House (2013) and the Storms of Sons (2016) were attracted to Madrid's old mining scenery and historic buildings for filming purposes. Keeping historic aspects intact is important to ensure tourists and film production crews continue to find Madrid appealing as a destination and remain economic contributors to the town.

3.10.3 Environmental Justice and Disadvantaged Communities

The CEJST identifies areas as disadvantaged if they are above the threshold for one or more environmental/climate indicators and above both socioeconomic indicator thresholds. Environmental/climate categories considered include climate change, clean energy and energy efficiency, clean transit, affordable and sustainable housing, reduction and remediation of legacy pollution, critical clean water and wastewater infrastructure, health burdens, and training and

workforce development. Socioeconomic indicators include low income, higher education non-enrollment, and high school degree non-attainment. The CEJST does not identify the Madrid area as disadvantaged in any of the above stated categories. The only environmental indicator above threshold is expected agriculture loss rate; the socioeconomic indicator of higher education non-enrollment is also above threshold. Data is currently not available for the wastewater discharge indicator.

Of the 12 Environmental Justice indices listed on the EPA Environmental Justice Screening and Mapping Tool (EPA 2022), Madrid is at or above the 50th percentile compared to the rest of the country for 7 of the 10 indices for which there is data (for two indices, there is no data); however, compared to the rest of NM, Madrid is in relatively low percentiles for all indices for which there is data available, except Underground Storage Tanks (Table 3).

Table 3. *EPA EJScreen Report*[1] *for Madrid*

Environmental Justice Indexes	State Percentile	EPA Region Percentile	USA Percentile
EJ Index for Particulate Matter 2.5	11	35	50
EJ Index for Ozone	8	22	34
EJ Index for 2017 Diesel Particulate Matter*	17	37	54
EJ Index for 2017 Air Toxics Cancer Risk*	14	37	52
EJ Index for 2017 Air Toxics Respiratory HI*	15	38	53
EJ Index for Traffic Proximity	N/A	N/A	N/A
EJ Index for Lead Paint	3	10	31
EJ Index for Superfund Proximity	15	32	49
EJ Index for RMP Facility Proximity	18	40	56
EJ Index for Hazardous Waste Proximity	18	36	53
EJ Index for Underground Storage Tanks	40	47	63
EJ Index for Wastewater Discharge	N/A	N/A	N/A

[1]EJScreen is a screening tool for pre-decisional use. Please see EJScreen documentation for discussion of data limitations.

In order to meet the NEPA goal of early and meaningful public participation in the decision process, the CEQ requires agencies to make diligent effort to involve the public at multiple stages of the NEPA process (CEQ 1997). Efforts to include the public, specifically the residents of Madrid, throughout the development of this project are outlined in Appendix A.

3.11 Transportation

The main access into and through Madrid is NM-14. NM-14 runs approximately 54 miles from Albuquerque to Santa Fe and is the primary route used by tourists to visit the town as well as the quickest route for residents seeking services from larger cities in the area. Many Madrid businesses and attractions are accessible from NM-14 as it runs through downtown. NM-14 is recognized as the Turquoise Trail National Scenic Byway (ISTEA 1991). The Turquoise Trail is considered a national scenic byway for its intrinsic scenic quality (FHWA 2022), derived from both the natural

and manmade elements of the area (FHWA 2019). As the PA, Alternative B, and NAA would all cause no major changes to the scenic quality along the Turquoise Trail National Scenic Byway and would not conflict with the goals of the Turquoise Trail Corridor Management Plan, NM-14 as a National Scenic Byway will not be discussed in further detail (Turquoise Trail Association 2006).

There is a low point that occurs on Highway 14 near Madrid that experiences frequent flooding, and heavy rain events can lead to sediment runoff from mining areas, particularly gob piles, causing road blockage and clogging stormwater infrastructure. In September of 2013, a major flooding event caused a gob pile to blowout and led to a clogged culvert and drop inlet. Emergency construction took place to install protective barriers below the blown-out gob pile and above the Museum, grade and install base course at impacted driveways, and rock line roadside ditches to protect driveways (NM AML 2017).

Except for the NM-14, which is paved, all other roads in town are unpaved with either crusher fines or dirt surfacing. Ice House Road, Cave Road, Bridge Street, and Firehouse Lane Road all connect to NM-14 and provide access for many private drives and residential streets. Current stormwater prevention on these roads is insufficient and water is often diverted onto private driveways, leading to flooding on private land. Red Dog Road comes off Firehouse Lane and both roads lie within an area of uncontrolled stormwater runoff and sediment deposits from eroding gob piles. Sediment transport along these roads has washed into basements of local homes and blocked driveways.

3.12 Recreation

The APE contains private, state, and county owned lands which provide various recreational opportunities to residents and visitors. An informal trail system spans from the Coal Mining Museum south of town to the historic Oscar Huber Memorial Ball Park north of town. The Madrid Open Space, within the APE, contains 57 acres of open land including dirt trails that can be used for a multitude of passive recreation including hiking, walking, bird watching/wildlife viewing, dog-walking, horse-back riding, and running.

4. ENVIRONMENTAL IMPACTS

This section evaluates the potential impacts of Alternative A: PA, Alternative B, and Alternative C: NAA to the affected environment.

4.1 Cultural Resources

4.1.1 Alternative A

Construction would take place within the MHD. Most project activities are proposed along existing areas of disturbance. Implementing improvements outlined in the PA would direct stormwater and associated sediment away from areas in the APE containing historic resources. Proposed road upgrades and stormwater conveyances were designed to blend into the natural or historic environment. Certain construction actions or elements may be seen by the casual observer;

however, project designs have incorporated natural and historic designs to ensure no more than a weak visual contrast is maintained. Minimal, temporary effects to the mining landscape and resources eligible for NRHP inclusion may occur. Overall, the PA would reduce or prevent future damage to historic resources during precipitation events. Under the PA, fire suppression capabilities would be improved and the threat of fire to historic resources would be decreased, further reducing potential damage to historically significant resources. During construction of the proposed improvements, mitigation measures would be used to ensure avoidance and/or minimal disturbance to resources of concern (Section 6.1).

The OSMRE, AML Program, and the SHPO have determined that the PA may adversely affect the Madrid Historic District (SR 356; NRHP No. 77000928) and eight archaeological sites (LA108551, LA 115534, LA 117777, LA 170805, LA 195467, LA 197066, LA 197068, and LA 197067) within the APE. In addition to the inter-agency consultations, the AML Program initiated consultation with potentially concerned tribes pursuant to 36 C.F.R. Part 800, the regulations implementing Section 106 of the NHRP (54 U.S.C. § 100101); none of the tribes have identified properties having religious and cultural significance within the APE.

No further archaeological investigations, testing, or other documentation is required within the APE for resources determined not eligible for listing in the NRHP, or for noncontributing elements to the MHD. Moving, altering, collecting, or unauthorized removal of archaeological or historic resources within the APE is prohibited by contractors, subcontractors, or oversight personnel. Collections by a qualified archaeologist are strongly discouraged except in cases where an artifact is likely to be lost through illegal collection (NMR 2005).

The PA is anticipated to have adverse effects to the MHD and NRHP eligible properties during project implementation. The AML Program has executed a MOA and proposed a mitigation plan to address adverse effects to historic properties. Adverse effects will be mitigated through adherence to the MOA and SHPO consultations. A description of the site, specific activities causing effects, and mitigation treatments are discussed in Table 4 (Section 6.1). With periodic maintenance, the PA is expected to have long-term, beneficial effects to historic resources. Long-term beneficial effects to historic structures are expected to preserve, maintain, and protect historic resources from structural decay, fire hazards, destruction, catastrophic precipitation events, and natural weathering processes.

4.1.2 Alternative B

Under Alternative B, more intensive stormwater prevention and erosion control measures would occur. These measures would provide the highest level of flood protection to historic resources. Similar effects and mitigation measures discussed in the MOA and displayed in Table 4 (Section 6.1) would occur. However, the construction design of Alternative B features would be more visually intrusive with a higher level of visual contrast for the casual observer and detract from the historic setting of the MHD. Effects from installation of a new fire suppression system on historical resources would be similar to those described in Alternative A. Therefore, Alternative B would have long-term, beneficial effects to some historic resources in the form of structural protection, but have long-term, adverse effects to the historic setting of the MHD.

4.1.3 Alternative C
Under Alternative C, NAA, no new stormwater prevention, or erosion control measures would occur. Periodic flooding during large precipitation events would continue to cause damage and potential collapse of historic resources. Fire suppression capabilities would remain inadequate. Therefore, the NAA would have long-term, adverse effects to historic resources as they would continue to deteriorate at the present rate, and flooding and fire would continue to be a threat to historically significant resources.

4.2 Visual Resources

4.2.1 Alternative A
Short-term, adverse impacts would occur to visual resources during construction activities with the presence of heavy machinery, traffic cones, and storage of materials for proposed structures that would not be easily disguised or blend in well with Madrid's current setting.

In designing stormwater prevention and control features, visual impact of these structures on Madrid's mining landscape was taken into consideration. Stormwater prevention structures installed under the PA would minimally detract from the mining aesthetic of Madrid while preventing flooding and improving soil infiltration. Upgrades to Ice House Road, Cave Road, and Firehouse Lane under the PA would leave the roads as gravel and include regrading and shaping of the road to better drain water. Using cobble/rock for structures such as channel storm drains, swales, and rundowns, though visibly noticeable, would look more natural than alternatives such as concrete and would not negatively impact the viewshed. In areas where concrete would be utilized, such as the three intercept channels at Ice House Road and concrete box culverts used in the Cave Road crossing of the arroyo, the features would be placed in a way to be hidden from view as much as possible (Dekker/Perich/Sabatini 2021). Therefore, there would be minimal to no long-term effect on visual resources.

Given the proposed blending of stormwater and erosion control features to the natural and historic aesthetic of the town, the PA would have no long-term effect on the scenic quality of the Turquoise Trail National Scenic Byway. Short-term, adverse effects may occur during construction.

4.2.2 Alternative B
Under Alternative B, improvements such as paving or asphalting the roads and building channel storms drains, swales, and rundowns out of concrete would alter and detract from the historic character of the town, resulting in long-term adverse impacts to visual resources and potential minor effects to the National Scenic Byway. As construction would take longer under this alternative, the short-term adverse impacts from the presence of construction material and equipment would be greater than the PA. Using more intense stormwater improvements would result in the need for less frequent maintenance of the structures, so there would be fewer instances of machinery presence needed for upkeep of installed structures (Dekker/Perich/Sabatini 2021).

4.2.3 Alternative C
The NAA would allow the current viewshed of Madrid to remain and there would be no visible alterations to the mining landscape. Continual flooding and sediment movement under the NAA

may negatively impact Madrid's visual resources as damage to historic features and businesses occur (WRCM 2021). No effect to the National Scenic Byway is expected.

4.3 Water Resources

4.3.1 Alternative A

Waterways:

The PA would modify Madrid Arroyo by re-grading the streambed and installing three different grade control structures. A Pre-Construction Notification for NWP 37 was submitted to the USACE for these actions in Madrid Arroyo, to ensure proposed modifications meet the requirements put forth in Section 404 of the CWA (Appendix D). Additionally, the Madrid Arroyo would be redirected back into its historical channel just upstream of the Cave Road crossing, east of the current channel. This section of the proposed channel lacks any WOTUS characteristics and therefore would not be part of the NWP (GMEC 2019b). As the waterway would be returning to its historic channel, the hydrologic regime would be expected to return to a more normal condition with more natural overbanking and less flooding to the residences near the arroyo. Stormwater and erosion control features installed throughout the APE would reduce runoff and sedimentation entering the arroyo. Short-term, adverse impacts may occur to the waterway during construction and installation of the PA. Best Management Practices (BMP) utilized during project activities would limit adverse impacts (Section 6.3). The naturalization of the channel and reduced runoff and sedimentation would result in long-term, beneficial impacts to waterways. The waterline for the fire suppression system would be installed under Madrid Arroyo via horizontal drilling. Therefore, there may be short-term, adverse impacts during construction, but no long-term impacts are anticipated.

Water Quality:

Stormwater and erosion control features installed throughout the APE would slow surface runoff and improve infiltration. Short-term, adverse impacts to water quality may occur during construction and installation of the PA. BMPs utilized during project activities would limit adverse impacts (Section 6.3). Past reclamation efforts performed by the AML Program have made a positive impact on stormwater quality, and the PA is expected to have similar effects (GMEC 2019a). As long as PA features are maintained, the PA would have long-term, beneficial impacts to water quality.

4.3.2 Alternative B
Alternative B would utilize the same mitigation measures as the PA (Section 6.3) while providing more arroyo capacity and a higher level of stormwater and erosion control services. Similar but greater short- and long-term impacts to waterways and water quality are expected.

4.3.3 Alternative C
Under the NAA, no stormwater, erosion control, or re-contouring waterways would occur. The Madrid Arroyo and adjacent areas would continue to erode. Flooding and erosion within the APE would occur at the same rate and continue to damage properties. Water quality would remain at substandard quality (I.e. total dissolved solids (TDS), dissolved manganese, and dissolved aluminum exceeding NMED and/or EPA standards). Therefore, the NAA would have short- and long-term adverse impacts to water resources.

4.4 Wildlife

4.4.1 Alternative A
Direct impacts to wildlife habitat, including habitat removal or degradation, would be limited to areas designated for stormwater, erosion, and fire suppression tasks of the PA implementation and not throughout the entire APE. Impacts would largely occur in areas currently disturbed by development or stormwater and erosional issues. Existing roads would be utilized to the extent possible, minimizing impacts to habitat. Tree removal may occur in localized areas to permit access for heavy machinery and would be limited to single trees rather than stands. Short-term, adverse impacts to habitat would occur during project implementation. Long-term, adverse impacts to wildlife habitat are not anticipated; reducing habitat degradation caused by stormwater and erosional issues within the APE may provide long-term, beneficial impacts to wildlife habitat. Closing the mine adit feature would have long-term, beneficial impacts by removing the entrapment and injury/mortality hazard for wildlife.

Wildlife may be temporarily displaced during project implementation. Displaced wildlife could temporarily relocate to suitable, undisturbed habitat in the surrounding area. The PA would not cause long-term avoidance of the APE. Small mammals and reptiles could become trapped in trenches left during construction. One active Cooper's hawk nest was documented during the wildlife surveys and additional migratory birds likely breed within the APE (GMEC 2019b). Construction during the avian breeding season (March 31 to August 15) could result in avoidance, nest abandonment, decreased productivity, and/or mortalities. If construction activities occur outside the breeding season, no impact to avian breeding success would occur.

Therefore, the stormwater, erosion, and fire suppression tasks of the PA would cause short-term, minor adverse impacts to wildlife but are not expected to have long-term impacts. The mine adit closure may cause similar minor adverse impacts but would have long-term beneficial impacts. Implementation of measures described in Section 6.4 would mitigate effects to migratory birds, including the Cooper's hawk nest, and other wildlife within the APE.

4.4.2 Alternative B
Alternative B would have similar impacts on wildlife as the PA and utilize the same mitigation measures (Section 6.4). Short-term impacts may be greater given the longer and more intensive construction activity.

4.4.3 Alternative C
Under the NAA, wildlife habitat would remain in its current state within the APE. No short- or long-term adverse or beneficial impacts to wildlife would result from stormwater, erosion, and fire suppression tasks of the PA. The mine adit would remain an entrapment and injury/mortality hazard for wildlife and potential long-term adverse impact.

4.5 Special Status Species

4.5.1 Alternative A
Federally endangered, threatened, candidate or proposed species:
The PA would have no effect on any federally listed species (GMEC 2019b).

State endangered or threatened:
The gray vireo, state threatened, is the only state listed species with the potential to occur within the APE. Direct impacts to gray vireo habitat, including habitat removal or degradation, would be limited to areas designated for PA implementation and not throughout the entire APE, largely in areas currently disturbed by development or stormwater and erosional issues. Existing roads would be utilized to the extent possible, minimizing impacts to habitat. Tree removal may occur in localized areas to permit access for heavy machinery and would be limited to single trees rather than stands. Short-term, adverse impacts to habitat would occur during project implementation. Long-term, adverse impacts to habitat are not anticipated; reducing habitat degradation caused by stormwater and erosional issues within the APE may provide long-term, beneficial impacts to habitat.

Gray vireos may be temporarily displaced during project implementation. Displaced gray vireos could temporarily relocate to suitable, undisturbed habitat in the surrounding area. The PA would not cause long-term avoidance of the APE. Construction during the gray vireo breeding season (March 31 to August 15) could result in avoidance, nest abandonment, decreased productivity, and/or mortalities. If construction activities occur outside the breeding season, no impact to breeding success would occur.

Therefore, the PA would cause short-term, minor adverse impacts to special status species (gray vireo) but is not expected to have long-term impacts. Implementation of measures described in Section 6.5 would mitigate effects to gray vireo within the APE.

4.5.2 Alternative B
Alternative B would have similar impacts to special status species (gray vireo) as the PA and utilize the same mitigation measures (Section 6.5). Short-term impacts may be greater given the longer and more intensive construction activity.

4.5.2 Alternative C
Under the NAA, special status species (gray vireo) habitat would remain in its current state within the APE. No short- or long-term adverse or beneficial impacts would occur.

4.6 Vegetation

4.6.1 Alternative A
Many activities associated with the PA would take place in existing disturbed or developed areas. Existing roads would be utilized to the extent possible, minimizing impacts to vegetation. Outside of these areas, vegetation may be removed where stormwater or erosional features are proposed. Tree removal may occur in localized areas to permit access for heavy machinery and would be limited to single trees rather than stands. Existing weed infestations within the APE could spread by construction equipment and establish on disturbed soils. Proposed mitigation strategies would reduce or eliminate these effects (Section 6.6). Therefore, there may be minimal short-term adverse impacts to vegetation in areas disturbed during construction and minimal long-term adverse impacts to vegetation within the project footprint. Seeding Madrid Arroyo with native seed would provide a long-term, beneficial impact to vegetation in this portion of the APE.

4.6.2 Alternative B
Mitigation strategies and impacts on vegetation under Alternative B would be similar to the PA. More landscaping and plantings would occur in Madrid Arroyo, resulting in a greater, long-term beneficial impact on vegetation.

4.6.3 Alternative C
Under the NAA, no adverse or beneficial impacts to vegetation would occur.

4.7 Soils

4.7.1 Alternative A
Many of the areas directly within the project footprint are already disturbed by stormwater and erosional issues within the APE. These areas with some additional undisturbed areas may be disturbed or compacted during project construction. The waterline for the fire suppression system would be installed within existing right of way and under Madrid Arroyo through horizontal drilling which would limit the impact area. Impacts from project installation would be short-term, localized, and minor. Proposed mitigation strategies would reduce or eliminate these effects (Section 6.7).

The PA would install features to lessen stormwater, sedimentation, and erosional issues. The leaking water tank would be replaced to stop the current bank erosion. With proper maintenance, these actions would result in long-term, beneficial impacts to more stabilized soils throughout the APE.

4.7.2 Alternative B
Mitigation strategies and impacts on soils under Alternative B would be similar to the PA. More intensive stormwater controls requiring less maintenance would occur, resulting in a greater, long-term beneficial impact on soils.

4.7.3 Alternative C
Under the NAA, stormwater control within the APE would remain inadequate. Disturbance to soils within flooding areas would continue at the present rate. This would result in long-term, adverse impacts to soils. No beneficial impacts to soils would occur.

4.8 Human Health and Safety

4.8.1 Alternative A
The PA would reduce hazardous flooding conditions that arise from monsoon rains and flash flooding throughout the streets and waterways of Madrid. The PA would improve traffic safety and safety to homes and businesses by reducing erosion/deposition and flooding damages. Stormwater and erosion controls features of the PA would have long-term, beneficial impacts on human health and safety. With regular maintenance of PA features, no adverse effects are anticipated.

Fire suppression capabilities would be enhanced with greater capacity and consistency due to expanded waterlines and increased storage in the 125,000-gallon water tank. Fire suppression improvements would have long-term, beneficial impacts on the health and safety of the entire community by providing more stable and dependable services. No adverse effects are anticipated.

The PA would safeguard the public from a hazardous abandoned mine feature, which would have long-term beneficial impacts to human safety.

4.8.2 Alternative B
Under Alternative B, more intensive stormwater and erosion control features would be installed, requiring less maintenance. Beneficial impacts to human health and safety would be greater than the PA as they would more adequately address the erosion and flooding issues. Effects from the fire suppression system and mine adit closure would be the same as the PA.

4.8.3 Alternative C
Under the NAA, flooding and erosion within the APE would continue its current trend causing threats to human health and safety. The existing fire suppression system would remain inadequate, and the abandoned mine feature would present a continued risk to public safety. The NAA would have long-term, adverse effects to human health and safety.

4.9 Socioeconomic Conditions and Environmental Justice

4.9.1 Alternative A
As Madrid's population experiences detrimental impacts from past mining activity to their surrounding environment, improvements proposed under the PA, including upgraded stormwater conveyances, fire suppression system, and erosion control measures, would address current human health and safety concerns. Construction throughout town may cause temporary, adverse impacts to socioeconomics related to tourism as there may be increased noise from equipment and possible restricted access to visitors in some areas under construction. There would be no effect or a positive impact long-term, as Madrid would be able to promote the historical value of the town and count on the safety of visitors to the area with improved fire suppression facilities and stormwater control.

Long-term socioeconomic benefits to residents also include decreased insurance rates for Madrid property owners as a result of a fire suppression system that would meet NFPA standards and Insurance Service Offices flow rate requirements (Weston Inc. 2019). An improved fire suppression system would also reduce potential cost of property and structure loss from structural or wildfire. Madrid property owners would also have long-term socioeconomic benefits from erosion and stormwater improvements by reducing or eliminating the risk of roads and structures being adversely impacted from uncontrolled sediment transport and/or flooding that can damage residences and businesses.

The PA would also be the most appropriate alternative considering environmental justice as this alternative was designed based on input from the Madrid community. By offering various public opportunities for comment and discussion during the project development (Appendix A), the PA meets requirements outlined in the CEQ Environmental Justice Guidance under NEPA (CEQ 1997).

4.9.2 Alternative B

The socioeconomic impacts of Alternative B would be similar to those of the PA. Addressing flooding and erosion issues and improving the fire suppression system under Alternative B would also provide benefits such as reduced insurance rates from reduced risk of fire hazard and potential for less cost from property/structure damage or loss.

There is some possibility that Alternative B would have negative socioeconomic impacts. Since the historic, mining characteristics bring economic benefits of tourism and movie production, proposed upgraded improvements could detract from these characteristics and cause a negative socioeconomic impact.

Alternative B would have similar impacts to environmental justice as the PA. However, the community indicated during public scoping they were less in favor of the more intense erosion and flooding control measures which could negatively impact the visual resources of Madrid and detract from the mining nature of the town.

4.9.3 Alternative C

The NAA would allow erosion, flooding, and insufficient fire suppression abilities to affect the community of Madrid. The current, historic character would remain as a draw to tourism and movie industries. However, threats to human health and safety and negative impacts to other environmental resources that contribute to quality of life for Madrid's population would remain. Therefore, the NAA would likely give rise to adverse impacts to the low-income or disadvantaged population of the town**.**

4.10 Transportation

4.10.1 Alternative A

The PA would have short- and long-term impacts on transportation in Madrid. Activities implemented under the PA would take place primarily on or around the main roads, temporarily limiting access and causing closures of certain roads. NM-14 would have one-lane closures during installation, completed during warmer summer months. Construction activities requiring road

closures or limited access would be coordinated by NMDOT and private landowners to ensure residences would still be accessible (Dekker/Perich/Sabatini 2021). This disruption to current traffic flow would have an adverse impact; however, it would be short-term and mitigated as much as possible to allow continued access to businesses and homes. With regular maintenance, long-term impacts under the PA would be beneficial. Multiple roads would be improved for use from their current state with regrading and the addition of base coarse materials. Improved stormwater management would improve transportation conditions, especially during heavy precipitation events that previously flooded low areas in town (NM AML 2017). Erosion control would help keep sediment off NM-14, which can be dangerous and potentially require large machinery and road closures to clean up after rain events. Erosion control features would also help prevent sediment from being deposited on private drives and blocking access to residential homes (Dekker/Perich/Sabatini 2021).

4.10.2 Alternative B

Alternative B includes more rigorous road and stormwater improvements such as paved roads and concrete culverts, which would provide a higher level of service and require less maintenance (Dekker/Perich/Sabatini 2021). Multiple roads would be improved to a higher and more permanent degree than the PA. Construction would occur in the same areas as the PA, but be more intensive than under the PA. With features requiring less frequent maintenance, there would be fewer instances of maintenance activity disrupting traffic. Short-term adverse impacts and long-term beneficial impacts to transportation would be similar but greater under Alternative B than the PA.

4.10.3 Alternative C

Under the NAA, flooding and erosion would continue to have negative impacts on transportation, and road conditions would remain in their current state, continuing to deteriorate over time. Traffic would not be impacted by construction activities related to installing new stormwater structures or road upgrades but would continue to be disrupted by flooding and closures from presently inadequate stormwater features.

4.11 Recreation

4.11.1 Alternative A

The PA would reduce hazards to public health and safety caused by flooding and erosion issues, therefore provide residents and visitors with improved conditions to enjoy recreational opportunities. During project implementation, there may be temporary closures or blocked access to areas containing recreational trails, which would have an adverse impact on recreation in Madrid. Closures and blocked access would be short-term and construction activities could be coordinated to allow at least limited access to recreational trails.

4.11.2 Alternative B

Impacts to recreation under Alternative B would be similar to the PA.

4.11.3 Alternative C

Under the NAA, hazards to public health and safety caused by flooding and erosion issues would continue to pose health and safety risks to the public. Continual erosion under the NAA would impact trails used for recreational activities.

5. CUMULATIVE IMPACTS

Under NEPA, cumulative impacts are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. The OSM requires potential cumulative impacts from each alternative be identified for each of the resource values to not overlook any impact resulting from the "fragmentation" of actions. Past actions within the APE include its mining history and previous actions involving AML projects within Madrid. Beyond the PA, no other major present or future actions are anticipated at this time. The APE and surrounding areas are largely privately owned which makes determining future activities difficult. Therefore, cumulative impacts to resources will consider the mining history, previous AML actions, and the alternatives presented.

There are no outstanding short-term effects from past actions. Short-term, cumulative effects to all resources under each alternative would be the same as previously addressed in Chapter 4. As no long-term impacts to wildlife or special status species resources would occur as a result of the PA or Alternative B, no cumulative effects would occur.

Past mining in Madrid has left long-term, negative impacts to water, vegetation, soils, human health and safety, transportation, and recreation resources. Past AML actions to address these issues have had varying success, but overall have had positive impacts. Implementation of the PA and Alternative B would add to the beneficial impacts to these resources, with a greater impact expected from Alternative B.

The historic mining in Madrid has had a long-term, positive impact on the cultural, visual, and socio-economic resources of the area as it gave the features their historic significance, the distinctive visual and historic setting, and provided a basis for the tourist destination. Past AML actions have had adverse, positive, and/or no impacts to these resources. Some historic mining features have been altered or removed to address substantial human health and safety concerns resulting in adverse impacts to these resources. Other AML actions similar to the PA either did not affect or helped to protect these resources from hazardous conditions. The PA would add to the cumulative beneficial impacts to these resources, while Alternative B would likely result in both adverse and beneficial cumulative impacts.

Madrid residents experience both positive and negative impacts from Madrid's past mining activity. Previous AML actions did not undergo the level of public involvement that occurred under the development of the PA. Therefore, there would be a beneficial impact to environmental justice under the PA and Alternative B, with a greater impact expected from the PA as that was the more desired alternative from the community. There may be an adverse cumulative effect from the NAA as Madrid's population would remain affected by the current hazardous environmental conditions.

The NAA would result in no cumulative impacts to all other resources besides environmental justice.

6. MITIGATION/AVOIDANCE

This section recommends measures to mitigate or avoid potential adverse impacts of the PA (Section 2.1) and Alternative B (Section 2.2). No mitigation measures are proposed for Alternative C (Section 2.3), as that is the No Action Alternative.

6.1 Cultural Resources

Avoidance is recommended as a BMP for cultural properties determined eligible for listing in the NRHP or listed on the State or National Registers. If avoidance cannot be accomplished, it is recommended to implement measures to mitigate potential adverse effects to historic properties. The OSMRE, AML Program, and the SHPO have agreed that the PA will be implemented in accordance with stipulations provided in the MOA. These stipulations were developed to consider the effects of the PA on historic properties and to mitigate any potential adverse effects. Adverse effects and mitigation treatment measures are summarized below in Table 4 for properties the OSMRE, AML Program, and the SHPO have determined the PA may adversely affect. These treatments include further documentation, testing and data recovery excavations, monitoring, reducing the construction footprint and height of retaining walls, and matching color palettes to blend with existing materials. The construction contractor and AML Program Project Manager should adhere to avoidance practices to prevent any unauthorized collection or removal of known or undocumented cultural resources.

Table 4. *Madrid Stormwater and Erosion Control Project Archaeological Site NRHP Eligibility Determinations, Potential Effects, and Proposed Mitigation Treatments*

Resource No.	HPD Eligibility Determination HPD Log 114885	Potential Project Effects	Proposed Mitigation Treatment
SR 365 (Madrid Historic District)	SR and NRHP Listed Property	Adverse; trenching along the Santa Fe County fire hydrant waterline system and stormwater conveyance from SR 14 may result in inadvertent discoveries of cultural resources	Monitor construction and document discoveries
LA 108851	Eligible, A & D	Adverse; slope limits of drainage structure	Document historic drainage structure and conduct Testing and Data Recovery within the new channel footprint

Resource No.	HPD Eligibility Determination HPD Log 114885	Potential Project Effects	Proposed Mitigation Treatment
LA 115534	Eligible, A & D	Adverse; Cave Road realignment, widening, and trenching may result in inadvertent discovery of buried cultural resources	Monitor construction and document cultural discoveries
LA 117777	Eligible, A & D	Adverse; drainage channels, potential retaining walls, Bethlehem Pool, Cave Road Realignment, culvert	Monitor construction and document discoveries; reduce height of retaining walls to four feet or less and use color palette to blend into gob; contain plunge pool activities to channel; reduce slope limits and use low vibration equipment
LA 170805	Eligible, A & D	Adverse; may require excavation into Arroyo Channel bank; Firehouse Channel may require excavation; capping railroad grade may alter the character of the feature	Design not to affect Arroyo Channel bank slope; design to confine Firehouse Channel disturbance to channel bottom; design match capping materials to existing railroad grade material
LA 195467	Eligible D	Adverse; water tower pad construction will impact site	Data recovery within construction footprint
LA 197066	Eligible A & B	Adverse; Bethlehem Road construction	Reduce slope limits and monitor vibration
LA 190767	Eligible A & C	Adverse; Icehouse Road construction	Monitor construction and document discoveries

Designated avoidance buffers should be established and extend a minimum 50 feet from all site boundaries for eligible, contributing segments, or listed properties. This may include installing a four (4) feet tall temporary, high-visibility barrier fencing (or other approved barrier) to help prevent inadvertent site entry or damage when ground disturbing activities occur near cultural resources.

In the unlikely event that actual or suspected human remains are encountered, all construction within 100-ft of the discovery should immediately cease. The remains will be protected from further disturbance and the AML Program will notify the local law enforcement agency, the Office of the Medical Investigator (OMI), the state land managing agency, and the SHPO. If OMI determines that the remains are without medico-legal significance, OMI will terminate jurisdiction and the SHPO, in consultation with AML Program and the state land managing agency, will determine the steps to be taken to protect or remove the remains in accordance with the Cultural Properties Act, NMSA 1978, Section 18-6-11.2 and implementing 4.10.11 NMAC. If the human remains cannot be left in place, recovery of the individual(s) and associated funerary objects will be conducted in conformance with Rule 4.10.11 NMAC. Human remains or funerary objects with lineal descendants to Native American groups will be subject to the Native American Graves Protection and Repatriation Act (NAGPRA) regulations.

The PA will have the potential to cause adverse effects to the MHD and NRHP eligible properties within the APE. Adverse effects will be mitigated through adherence to the MOA and SHPO consultations. Alternative B would use similar mitigation measures discussed above; these would be less effective due to the more visually obtrusive actions of Alternative B.

6.2 Visual Resources

No mitigation measures for visual resources are proposed for the PA or Alternative B.

6.3 Water Resources

To minimize impacts to water resources during implementation of the PA or Alternative B, construction contractors would be responsible for preparing a stormwater pollution prevention plan (SWPPP). In accordance with the SWPPP, appropriate BMPs would be installed to limit erosion and the transportation of sediment. The construction contractor would also be responsible for acquiring a National Pollutant Discharge Elimination System (NPDES) permit from the EPA as required by the CWA. A Preconstruction Notification for Nationwide Permit #37 would be completed prior to any activities within the OHWM of WOTUS (Madrid Arroyo). NWP #37 would also have BMPs and recommendations to mitigate negative impacts from the construction activities.

Following construction activities, disturbed areas would be reclaimed. Reclamation may include, but is not limited to live plantings, mulching and seeding disturbed areas with a native seed mix approved by the County. Once the disturbed area has been stabilized, any temporary erosion controls would be removed.

6.4 Wildlife

The following are potential mitigation measures which would be applied as applicable to the PA or Alternative B:

- Disturbed areas would be seeded with a native seed mix approved by the County following construction to re-establish the vegetative community.
- Trenching activities would utilize applicable conservation measures as outlined by NMDGF (2022) to avoid trapping small animals.

- Implement proposed construction outside the migratory bird breeding season (September - February).
- For the identified Cooper's hawk nest, USFWS recommends a 0.25-mile spatial buffer around any active nests during breeding season (March – August).
- If project activities would take place during the migratory bird breeding season (March – August), pre-construction nest surveys may be completed to avoid direct impacts to avian species. If active nests are located, consultation with the USFWS and NMDGF would occur. To avoid disturbance, construction activities near nest sites would be delayed until fledging occurs, or a nest removal permit would be obtained from the USFWS.

6.5 Special Status Species

The following are potential mitigation measures which would be applied as applicable to the PA or Alternative B for protection of the gray vireo:

- Implement proposed construction outside the breeding season (September - February).
- If project activities take place during the breeding season (March – August), pre-construction nest surveys may be completed to avoid direct impacts to gray vireo. If active gray vireo nests are located, consultation with the USFWS would occur. To avoid disturbance, construction activities near nest sites would be delayed until fledging occurs, or a nest removal permit would be obtained from the USFWS.

6.6 Vegetation

The following are potential mitigation measures which would be applied as applicable to the PA or Alternative B for vegetative resources:

- Disturbed areas would be seeded with a native seed mix approved by the County to establish new vegetation, reduce erosion potential, and reduce potential for noxious weed colonization.
- Vehicles and construction equipment would be inspected and cleaned before and after use to limit potential spread of weeds.
- During the project construction phase, disturbed areas would be monitored for invasive/noxious weeds; if weeds are identified, the landowners would be notified so that BMPs can be identified and utilized for invasive species control.

6.7 Soils

To minimize impacts to soil resources during implementation of the PA or Alternative B, construction contractors would be responsible for utilizing appropriate BMPs to limit erosion and the transportation of sediment. Project vehicles would not create unnecessary routes, shortcuts, or parking areas, and existing access routes would be used to the greatest extent possible.

Although rock outcroppings may be encountered during grading, no significant changes would be made to the grading plans without the support of private landowners. If hillside scarring occurred, it would be mitigated using concentrated stabilization practices.

Following construction activities, disturbed areas would be reclaimed. Reclamation would include, but not limited to live native plantings, mulching and seeding disturbed areas with a native seed mix approved the County. Once the disturbed area has been stabilized, any temporary erosion controls would be removed.

6.8 Human Health and Safety

During the construction phase of the PA or Alternative B, any spills from vehicles or equipment would be cleaned, disposed of, and reported. Generation of hazardous materials is not anticipated, but safety measures such as fire safety precautions during heavy equipment operation, would be in place during construction. Due to past mining operations and processing, hazardous waste or contaminated soil may be encountered during the construction phase. If encountered, appropriate agencies would be notified, and the waste would be disposed of in the manner specified by local, state, and federal regulations and requirements.

6.9 Socioeconomic Conditions and Environmental Justice

Certain construction activities associated with Alternative A and B would take place during warmer summer months. However, activities less dependent on season could be completed during winter to minimize disruption to businesses during tourist season. Temporary visual and/or sound screening methods could be used to minimize impacts during the tourist season.

6.10 Transportation

During the construction phase of Alternative A or Alternative B, temporary road closures would be required while road upgrades are taking place. During Icehouse Road improvements, the construction contractor would work closely with private landowners to allow access to homes. Rerouting the traffic around Icehouse Road would take place to allow others to pass through. During Cave Road improvements, a temporary crossing of Madrid Arroyo would be built to allow landowners to access their properties. NM 14 would be reduced to one lane during the construction on the highway but would not be closed entirely during construction. The NM-14 one lane construction would take place during summer; however, other activities could be completed during less busy tourist seasons to minimize traffic and access impacts.

6.11 Recreation

To mitigate the impacts to recreation during the construction phase of Alternative A or Alternative B, the construction contractors may equip construction equipment with noise reduction systems, such as exhaust mufflers. Once construction is completed, disturbed areas would be revegetated to blend in the surrounding environment.

7. AGENCY CONSULTATION

The following public agencies and tribal entities were contacted or consulted with during the development of this EA (in alphabetical order):

- Environmental Protection Agency

- Madrid Landowners Association
- Madrid Merchants Association
- Madrid Water Coop
- Madrid Volunteer Fire Department
- New Mexico Department of Game and Fish
- New Mexico Department of Transportation
- New Mexico Rare Plant Technical Council
- New Mexico State Historic Preservation Office
- Office of Surface Mining Reclamation and Enforcement
- Santa Fe County
- U.S. Army Corps of Engineers, Albuquerque District, Regulatory Division
- U.S. Fish and Wildlife Service, Ecological Services Field Office

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