Environmental Assessment: Allison Mine Subsidence Mitigation Project, McKinley County, New Mexico AMLIS Key NM000069-PAD Allison

Prepared for

Abandoned Mine Land Program
Mining and Minerals Division
New Mexico Energy, Minerals, and Natural Resources Department
1200 South St. Francis Drive
Santa Fe, New Mexico 87505

In Cooperation with:
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Office of Surface Mining, Reclamation and Enforcement,
Western Region

Prepared by

Parametrix
9600 San Mateo Boulevard NE
Albuquerque, NM 87113
T. 505.821.4700 F. 1.855.542.6353
www.parametrix.com

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1. INTRODUCTION

The New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) Abandoned Mine Land (AML) Program, in partnership with the United State Department of Interior (USDI) Office of Surface Mining Reclamation and Enforcement (OSMRE), is proposing to mitigate existing and potential future sink holes and tension cracks within the community of Allison, McKinley County, New Mexico. The project is funded by the OSMRE, and the use of federal funds necessitates an environmental assessment (EA) for the project, in conformance with OSMRE guidance for compliance with the National Environmental Policy Act (NEPA): *Handbook on Procedures for Implementing the National Environmental Policy Act* (July 2019).

1.1 Summary of Proposed Action

Mitigating the subsidence risk, or risk of land that sinks or caves in, in Allison would involve a variety of actions, including installation of avoidance fencing and signage around existing and future subsidence features, backfilling existing subsurface voids, excavating and capping existing openings, and long-term monitoring of ground conditions. These measures would also require additional geotechnical investigations to better understand the condition of existing subsurface voids and refine mitigation details. Additionally, modern adjustments to historical drainage patterns in the community have contributed to increased erosion of subsurface voids and have exasperated the subsidence danger in the community. As such, the proposed action also involves various drainage improvements within the community to facilitate more efficient stormwater flow away from areas with known mine workings.

1.2 Project Location

The historic coal mining community of Allison, New Mexico is located at the southern end of a small canyon north of Interstate 40 (I-40), approximately 2.48 miles (4 kilometers [km]) west of Gallup, New Mexico in McKinley County (Appendix A). The study area encompasses 173.4 acres of private land within and around the community of Allison, which is located in the southern half of Section 18, Township 15 North, Range 18 West, and is found on the *Gallup West* United States Geological Survey 7.5-minute quadrangle map.

1.3 Purpose and Need for Proposed Action

The purpose of the proposed action is to mitigate existing and potential hazards to the health, safety, and property of residents within the community of Allison due to ongoing subsidence from previous mining activities.

The project is needed because of recent subsidence manifestations including multiple sink holes and tension cracks that developed within Allison between 2015 and 2021. These hazards are the result of underground coal mining that was historically conducted between the 1880s and 1930s in direct proximity to the community. The mine was abandoned in the 1930s and there is little documentation on the extent of mining activity or the status of mine closures and mitigation when it was abandoned.

The sudden formation of a sinkhole due to the instability of historical underground mine workings could cause serious injury or fatality and could also impact property such as building foundations or public

infrastructure critical to the community. Additional hazards could include the release of dangerous gasses such as methane, and/or the sudden discharge of fluid from tension cracks or sink holes. While these dangers are possible, the depth of the mine workings makes these hazards less likely, and the primary concern is physical injury or property damage related to the sudden appearance of subsidence features.

Current stormwater drainage in the area is also contributing to subsidence concerns. The natural drainage channels through the community have been altered and the existing drainage infrastructure is silted in and not draining efficiently or effectively. These conditions are slowing the flow of ephemeral stormwater through the area, resulting in water retention and detention throughout the community. This in turn increases water infiltration into existing subsurface voids, creating more erosion and contributing to the formation and widening of sinkholes and tension cracks.

1.4 Project History and Background

Historical records indicate that Allison was a company town of the Diamond Coal Company, and the mine at Allison was a room-and-pillar underground coal mine that was in operation from 1893 to 1939 (Hegberg and Cordero 2017). While some historical mine maps exist that describe the extent of the mining, the records are not complete, and the full extent of mining and status of any reclamation efforts are not completely known. As a result, the full extent of mining in the Allison area is not known.

In the 1980s AML undertook initial remediation efforts. This work involved exploratory drilling around the homes in the community and some backfilling of subsurface voids. However, project logs and documentation from this effort are sparse and while the investigations provide general information on the subsurface characteristics of the area, they are not detailed enough to provide insight into detailed mitigation needs for current effort (Golder Associates 2020).

In 2016, the AML Program prepared to abate hazardous conditions caused by newly opened subsidence features. In response to the appearance of these sudden sinkholes, an emergency project was completed to safeguard the sinkholes. This work included removal of loose soil and debris and backfilling of the sinkhole with rubblized concrete, covering the site with soil, and reestablishing the path of an existing channel. However, additional subsidence occurred within months of completing the emergency work (AML, EMNRD 2017). In 2018, a second emergency project involving additional geotechnical exploration and backfilling through drilling and injection grouting was completed to mitigate the new sink hole. This continued subsidence activity and the potential for on-going subsidence hazards is the cause for the current project.

1.5 Project Decision

This EA was prepared on behalf of the AML Program and discloses the environmental consequences of implementing the proposed alternatives, including the No-Action Alternative. This EA will be reviewed by the lead agency, OSMRE, and made available to the public for review, comment, and consideration. If appropriate, a Finding of No Significant Impact (FONSI) would then be prepared by the OSMRE describing the findings of the EA. The OSMRE Denver Field Branch Manager would be the “Deciding Official” for the action and the signatory of the FONSI if applicable.

1.6 Relevant Statutes and Regulations

The NEPA and its implementing regulations require federal agencies to consider potential environmental consequences of their proposed undertakings. The proposed action does not conflict with any known state or local planning or zoning ordinances. The following environmental laws and executive orders provide a broad regulatory and permitting context for NEPA compliance:

- 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.)
- Floodplain Management (Executive Order [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)
- Environmental Justice (EO 12898)
- Farmland Protection Act of 1981 (7 USC 4201 et seq.)
- Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 et seq.)

1.7 Public Involvement

Two public meeting were held to update stakeholders on the status of investigations, subsidence mitigation plans, and the environmental analysis of the various alternatives. The first meeting was held on October 24, 2019 at the Gallup Community Service Center. The purpose of the meeting was to provide the public with information regarding the most recent drilling and injection grouting in and around the Allison townsite; update the public on current work in the area; and request information about additional mining features that may be known to residents but unknown to AML. Twelve members of the public attended the meeting. Attendees commented on several subsidence features and the status of current investigations.

A second meeting was held on June 23, 2021. The meeting was held virtually due to health considerations associated with the Covid-19 pandemic. The purpose of the meeting was to present the purpose and need for the project, results of the environmental investigations, proposed mitigation measures, next steps in the process, anticipated project schedule, and to receive public comment. Thirteen people attended the virtual meeting. Comments received included questions about project funding, identification of specific subsidence features, and the level of coordination with the New Mexico Department of Transportation (NMDOT).

In addition to the two public meetings, AML staff have had several meetings with individual property owners and informational flyers were distributed throughout the community in December 2017.

No issues were raised through the public involvement process that required development of additional project alternatives. Summaries of the two public meetings are provided in Appendix B.

2. DESCRIPTION OF ALTERNATIVES

This section describes the alternatives developed to address the purpose and need for the project. Three alternatives are described below and considered throughout the EA. One of the alternatives, the No-Action Alternative, is also described below as it is considered throughout the environmental evaluation and provides a baseline from which to consider potential environmental consequences of the other alternatives.

2.1 Alternative 1 (Preferred)

Subsidence mitigation efforts would involve a combination of the following elements:

- **Fencing and Signage:** Avoidance fencing and warning signs could be installed around sink hole and tension crack locations. This could be used as a temporary measure pending implementation of more permanent mitigations or it could potentially be a long-term mitigation strategy for subsidence features located in low-risk areas away from occupied or heavily used locations.
- **Backfilling:** Backfilling is the most common method of remediation for abandoned underground workings. Depending on the characteristics of the void, backfilling could be achieved with several different material types including cemented materials, non-cemented materials, chemically bonded materials, or a combination of all three. The general backfilling method would involve drilling from the ground surface to the underground void level and injecting backfill through the drill string. Using this method, bulkheads to contain the backfill within the void would be constructed, followed by backfilling the remaining void spaces with the appropriate material type as the drill string is retracted from the borehole. Multiple boreholes are generally required for backfilling operations.
- **Capping:** Capping is commonly used to remediate vertical mine openings such as shafts. It generally uses reinforced concrete or steel. This could be the sole method of closure, or it could be completed in conjunction with backfilling. This action is most effective when the cap can be constructed in direct contact with a bedrock that is stable and not susceptible to weathering.
- **Monitoring:** Monitoring would involve periodic observation of the ground conditions in the area of a subsidence hazard to note signs of instability such as tension cracks, settlement, disrupted drainage, damage to structures, and other characteristics. In general, mitigation efforts that do not result in elimination of the hazard such as avoidance fencing and signage, backfilling with non-cemented materials, and capping when the underlying void was not backfilled would require long-term monitoring.

Prior to implementing these elements, a series of geophysical investigations and exploratory drilling/test pit excavations would be completed to better understand the location and nature of the underground

voids. This information would be used to refine the mitigations and inform the exact prescription of the efforts described above. See Appendix C, Figures 1 and 2 for preliminary locations of geophysical testing and drilling (Golder Associates 2020).

Addressing the drainage concerns described above in the Purpose and Need section would involve the following stormwater drainage system improvements (WSP 2020):

- **Fill Pad:** There is a man-made "fill pad" in the western portion of the project area that obstructs flows of an ephemeral tributary of the main north/south drainage in the area. To restore appropriate and functional drainage through the fill pad, the drainage would be re-established along the northern portion of the fill pad by creating an open trapezoidal channel that is 4 feet (ft) (1.2 meters [m]) in depth and 12 ft (3.7m) bottom width with 2.5:1 slopes.
- **Drainage Channel:** The main storm drain channel for the community runs roughly north/south and is located along the western edge of the main development. Proposed improvements include establishing the drainage as a trapezoidal channel with a 12-ft (3.7-m) wide bottom, 4-ft (1.2-m) minimum depth, and 2.5:1 slopes. Two culverts, sized approximately 12 x 4 ft (3.7 x 1.2 m) and made of concrete or aluminum, would be required to pass water along the channel beneath road crossings. See Appendix C, Figure 4 for additional details.
- **Channel Lining Options:** In order to avoid potential maintenance challenges associated with riprap-lined channels three different channel lining options may be implemented as appropriate:
    - **Option 1:** Non-wire enclosed riprap plating with a 6” sand layer and a geosynthetic clay liner. This option would likely require manual labor to be maintained as equipment such as skid steers would be difficult to use due to the angular nature of riprap.
    - **Option 2**: Wire enclosed riprap along the channel banks with gabion baskets along the toe of the embankment and a compacted earth channel bottom. The channel would be lined with the geosynthetic clay liner, and it is recommended that gabion baskets are installed in the channel bottom every 300 feet. Mechanical equipment could be used on the channel bottom only. Handheld equipment would be used to clean the side slops to avoid disturbing the riprap.
    - **Option 3:** flexible concrete block revetments that line the channel banks and bottom with borrow material placed in the voids. The concrete blocks provide enough stability for mechanical equipment to be used for channel maintenance.
- **Commercial/Residential Area Improvements:** The existing drainage ditches and culverts in the commercial and residential areas of Allison would be cleaned and reestablished. Ditches would be between 2.5 and 3-ft (0.8 and 0.9 m) in depth with 24-to-30-inch (61-to-76 cm) corrugated metal culverts at driveway crossings. See Appendix C, Figure 5 for additional details.

To increase stormwater drainage efficiency all the way to the Rio Puerco, the water will need to pass beneath Interstate 40 (I-40). The WSP drainage report (2020) indicates the current I-40 drainage structures are sufficient to pass stormwater flows but as a best practice, NMDOT should appropriately maintain the existing structures to sustain efficient drainage beneath the interstate.

2.2 Alternative 2

Alternative 2 includes implementing all mitigation efforts from the preferred alternative with the exception of the drainage work. This alternative would only partially address the Purpose and Need for the project in that on-going erosion of subsurface voids would still need to be addressed. However, Alternative 2 could function independently from the drainage improvements and would provide some benefit to the health, safety, and property of Allison residents. As such, Alternative 2 is considered a viable alternative and is considered throughout the EA.

2.3 No-Action Alternative

Under the No-Action Alternative, no mitigation of the subsidence hazards would take place and general maintenance and emergency work would occur when sinkholes or tension cracks developed in residential and commercial areas of the community. This alternative would not satisfy the purpose and need for the project and would involve continued and unreasonable maintenance needs. The No-Action Alternative is considered in this EA as a baseline existing condition.

3. AFFECTED ENVIRONMENT

This section describes the existing environmental conditions and resources within the project area.

3.1 General Project Setting

The general project setting and additional information concerning the natural resources within the project area is largely taken from the Biological Assessment/Biological Evaluation (BABE) completed for the project (Parametrix 2018). The complete BABE is presented in Appendix D. The project area falls within the Semiarid Tablelands subregion of the Arizona/New Mexico Plateau ecoregion (USGS 2011a, b). This area consists of mesas, plateaus, cliffs, and valleys with some ephemeral and intermittent streams. The elevation range for the Semiarid Tablelands is 5,200 ft to 8,748 ft (1,585 m to 2,666 m) above mean sea level (amsl).

The general project area encompasses the town of Allison and the base of the foothills that surround the canyon it is located in. The Allison project area, as defined for this EA covers 173.4 acres (70.2 hectares) and includes one unnamed drainage that runs north and south through the canyon and drains to the Rio Puerco south of I-40. The project area encompasses a 0.25-mile (0.4 km) buffer surrounding all proposed project activities.

The primary land use in Allison is low-density residential with approximately twenty-five dwellings and a few industrial/commercial properties. Land use surrounding the project area consists of public recreation to the north where a dirt two-track runs north and south beyond the residential area. The two-track is primarily used by All Terrain Vehicles (ATVs) traveling north of the canyon to where a recreational trail exists.

3.2 Socioeconomic Conditions and Environmental Justice

This information on socioeconomic conditions was derived from the EPA's Environmental Justice Screen tool (https://ejscreen.epa.gov/mapper/, accessed June 22, 2022) and verified through the Justice40 Initiative screening tool (https://screeningtool.geoplatform.gov/en/#11.96/35.5648/-108.72283, beta version accessed June 22, 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), implemented by the Biden-Harris Administration to "…deliver 40 percent of the overall benefits of federal investments in climate and clean energy, including sustainable transportation, to disadvantaged communities", 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 ACS data from the EJ screening tool and CEJST was from 2015-2019 and an area encompassing one mile beyond the project limits was investigated.

3.2.1 Employment and Income

Between 2015-2019, the population of the project area that was 16 or older was estimated at 347, approximately 77% percent of the total population. Of the population that was 16 or older, 166 (48%) are in the labor force and none were unemployed. The additional 181 (52%) residents over 16 were not in the labor force. A total of 94 houses are present within the project area, 19 (21%) had an annual income of less than $15,000, 14 (14%) had an income between $15,000 and $50,000, and 61 (65%) had an income over $50,000.

3.2.2 Demographic Trends

With a total population of approximately 451, about 175 (39%) identified as American Indian, 156 (35%) percent are reported as two or more races, 109 (24%) identified as White. The remaining 11 (2%) percent identify as "other race". Additionally, 56 (12%) individuals of the population identify as being of Hispanic ethnicity. There are a total of 94 households in the project area of which 10 (~11%) are linguistically isolated.

3.2.3 Environmental Justice and Disadvantaged Communities

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

Based on US Census data and ACS data from the EJ Screening tool presented above, low-income and American Indian populations are located within the project area. The low-income and American Indian populations are higher in the project area than average values for the state of New Mexico but are similar to the values across McKinley County.

In addition to the EJ Screening Tool, the CEJST was used to identify potential disadvantaged communities in the project area. To be classified as a disadvantaged community, a census tract must be

above the threshold for one or more environmental or climate indicators and it must be above the threshold for socioeconomic indicators.

The study area (1-mile buffer from project area) is in census tract 35031945200, a classified disadvantaged community. Census tract 35031945200 is identified as disadvantaged in the Climate Change category due to a high population loss rate.

3.3 Cultural Resources

In 2017, the Office of Contract Archaeology (OCA) completed an archaeological survey of the entire project area. In all, seven sites (LA 188339-188345) and 21 historic architectural properties (HCPI 43727-43746) were recorded within the project area. LA 188343 and LA 188345, the Allison mine and company town, are recommended as eligible for inclusion in the National Register of Historic Places (NRHP) under Criterion D for their potential to contribute significant data regarding historic patterns and their potential to contain intact subsurface cultural resources. LA 188339, 188341, and 188342 are recommended as not eligible to the NRHP. LA 188340 and LA 188344 are recommended as potentially eligible to the NRHP. Most of the historic buildings have been modified and expanded over time. Only HCPI 43731 and HCPI 4373 have had minimal modifications and are the most intact dwellings remaining in the community. As such, these two buildings are recommended as eligible and potentially eligible for listing to the NRHP under Criterion A for their association with coal mining and the economic development of the Gallup area. The remaining historic buildings are not eligible to the NRHP.

3.4 Water Resources

Water resources within the project area include surface waterways, wetlands, and floodplains as described below.

3.4.1 Waterways

On December 20 and 21, 2018, Parametrix senior scientists surveyed the entire project area. During that survey the field crews identified and delineated the main waterway that flows south through the project area, and smaller waterways along the eastern and western boundaries. In 2016 and 2022 the AML consulted with the US Army Corps of Engineers (USACE) to determine if these drainages are considered jurisdictional Waters of the US (WOUS) regulated under the CWA. In 2015 the USACE provided a jurisdictional determination concluding that these drainages were not jurisdictional. Then, in the spring of 2022, the USACE again confirmed that the project area does not contain any “navigable waters of the US” under the Rivers and Harbors Act (RHA) and does not have any jurisdictional WOUS regulated under the CWA. The channelized arroyo located in the project area was assessed and no significant connection to interstate commerce was determined. As such, the waterway does not meet the definition of a WOTUS (AJD February 2022). The USACE did advise that potential WOTUS exist in the vicinity of the project and that it is incumbent on the AML to monitor changes of the program regulations and contact the office should the project plans change in a way that might affect WOTUS.

3.4.2 Wetlands

One wetland was mapped in the southeastern corner of the project area in May 2018. This wetland encompasses 1.23 acres (0.50 hectares) and occurs in a broad, shallow swale, connected to the other waterways via culverts under I-40 and the bridge under the Allison access road. The US Fish and Wildlife Service (USFWS) classification system identifies this wetland as a palustrine emergent system (USFWS 2017b). The wetland is dominated by common spike rush (*Eleocharis palustris*), broadleaf cattails (*Typha latifolia*), and Baltic rush (*Juncus balticus*), with scattered coyote willow (*Salix exigua*).

3.4.3 Floodplains

The project area is located on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel Number 35031C1520E (FEMA 2018). This panel indicates portions of the project area are categorized as Flood Hazard Zone X, meaning the area is subject to minimal flooding hazards.

3.5 Vegetation

Nine different plant communities were identified in the project area, as indicated below (USGS 2011a).

- Inter-Mountain Basins Greasewood Flat: 45.5 acres (18.41 hectares) including species such as black greasewood (*Sarcobatus vermiculatus*) and big sagebrush (*Artemisia tridentata*).
- Inter-Mountain Basins Mat Saltbush Shrubland: 39.95 acres (16.16 hectares) including winterfat (*Krascheninnikovia lanata*), western wheatgrass (*Pascopyrum smithii*), squirreltail (*Elymus longifolia*), blue grama (*Bouteloua gracilis*), nodding buckwheat (*Eriogonum cernuum*), James' buckwheat (*E. jamesii*), and saltmeadow plantain (*Plantago argyrea*).
- Colorado Plateau Pinyon-Juniper Woodland: 32.92 acres (13.32 hectares) including species such as pinyon pine (*Pinus edulis*), one-seed juniper (*Juniperus monosperma*), sagebrush species (*Artemisia spp.*), cliffrose (*Purshia tridentata*), James' galleta (*Pleuraphis jamesii*), western wheatgrass (*Pascopyrum smithii*), and muttongrass (*Poa fendleriana*)
- Inter-Mountain Basins Semi-Desert Shrub Steppe: 27.95 acres (11.31 hectares) including species such as sagebrush (*Artemisia tridentata*), Greene's rabbitbush (*Chrysothamnus greenei*), rubber rabbitbrush (*Ericameria nauseosa*), gray horsebrush (*Tetradymia canescens*), winterfat (*Krascheninnikovia lanata*), Indian ricegrass (*Achnatherum hymenoides*), blue grama (*Bouteloua gracilis*), muttongrass (*Poa fendleriana*), alkali sacaton (*Sporobolus airoides*), needle-and-thread (*Hesperostipa comata*), galleta (*Pleuraphis jamesii*), and cheatgrass (*Bromus tectorum*).
- Inter-Mountain Basins Mixed Salt Desert Scrub: 2.67 acres (1.08 hectares) including species such as pale wolfberry (*Lycium pallidum*), shadscale (*Atriplex confertifolia*) and fourwing saltbush (*Atriplex canescens*).
- Rocky Mountain Subalpine-Montane Riparian Shrubland: 2.46 acres (1.00 hectares) including various willow species (*Salix spp.*).
- North American Warm Desert Bedrock Cliff and Outcrop: 2.17 acres (0.88 hectares) of barren and sparsely vegetated cliffs with species such as Grama grasses (*Bouteloua spp.*) and galleta (*Pleuraphis jamesii*).

- Madrean Encinal: 1.33 acres (0.54 hectares) including species such as pinyon (*Pinus edulis*) and juniper (*Juniperus monosperma*), cliffrose (*Purshia stansburiana*), antelope bitterbush (*P. tridentata*), and blue grama (*Bouteloua gracilis*)
- Developed Land Cover Ecological Systems: 18.50 acres (7.49 hectares) consisting of the area in Allison and along the I-40 right-of-way boundaries.

Noxious weeds were also identified within the project area. One Class B noxious weed, bull thistle (*Cirsium vulgare*), occurred in the small wetland at the southeastern end of the project area. Four Class C noxious weeds including cheatgrass (*Bromus tectorum*), musk thistle (*Cernuus natans*), Siberian elm (*Ulmus pumila*), and saltcedar (*Tamarix chinensis*) were also found in the project area. Siberian elm and cheatgrass were concentrated on disturbed soils around the abandoned mine workings and in the town. Musk thistle occurs on the road shoulder near the culvert and wetland at the southeastern edge of the project area, and a saltcedar was observed in the wetland at the southeastern edge of the project area.

3.6 Wildlife

During field surveys in December 2017 a bobcat (*Lynx rufus*) was observed running north on the western slope of the project area. In addition, desert cottontail (*Sylvilagus audubonii*) and jackrabbits (*Lepus californicus*) were observed throughout the project area, and coyote (*Canis latrans*) tracks were observed at the north end of the project area. In the southeastern corner of the project area a large Gunnison's prairie dog (*Cynomys gunnisoni*) colony, approximately 490 ft (149.35 m) long and 300 ft (91.44 m) wide from just north of the right-of-way at I-40 north that spreads north to an identified wetland that is just south of the salvage yard west of Allison Road. The colony was active in May 2018; when revisited in July 2018, the colony was inactive and denuded of vegetation. Additionally, a migratory species, the loggerhead shrike (*Lanius ludovicianus*), was identified during a field reconnaissance conducted in November 2017.

3.7 Special-Status Species

Special-status species include plants and animals that are listed as threatened, endangered, candidate, or experimental populations or as Species of Greatest Conservation Need (SGCN) or Species of Economic and Recreational Importance (SERI) under state or federal regulations. Birds protected under the MBTA are also considered in this section. This section describes the state-listed plants and animals considered in the project area, federally listed plants and animals, as well as critical habitat.

3.7.1 State-listed Plants

Two state-listed endangered species (Zuni fleabane [*Erigeron rhizomatus*] and Parish's alkali grass [*Puccinellia parishii*]) [USFWS 2017a, 2018; NMEMNRD 2017] have the potential to occur in the project area. Based on field investigations, the state-listed threatened Gooding's onion (*Allium gooddingii*) does not have the potential to occur in the project area due to the lack of habitat (steep slopes and spruce-fir habitat) in the project area. None of these three protected plant species were detected in the project area.

There are 17 plants listed as New Mexico rare plants for McKinley County. Two of these plants, Zuni fleabane (*Erigeron rhizomatus*) and Parish's alkali grass (*Puccinellia parishii*), are also listed as state

endangered and discussed above. Two other New Mexico rare plants, Navajo muhly (*Muhlenbergia arsenei*) and threadleaf blazingstar (*Mentzelia filifolia*), were identified during the field surveys conducted in December 2017 and May 2018. None of the remaining New Mexico rare plants were identified during field surveys.

3.7.2 State-listed Animals

Of the 15 state-listed species, there is potential for two state-listed threatened/SGCN species (gray vireo [*Vireo vicinior*] and spotted bat [*Euderma maculatum*]), three SGCN species (Gunnison's prairie dog [*Cynomys gunnisoni]*, juniper titmouse [*Baeolophus ridgwayi*], and loggerhead shrike [*Lanius ludovicianus*]), and two SERI species (cougar [*Puma concolor*] and mule deer [*Odocoileus hemionus*]) with potential to occur in the project area. These species are further evaluated below:

- Gray vireos (*Vireo vicinior*) were not noted during field surveys but could potentially migrate through the northern reaches of the canyon within the project area in the spring or fall.
- Juniper titmice (*Baeolophus ridgwayi)* were not noted during field surveys but could travel into the proposed project area.
- Loggerhead shrikes (*Lanius ludovicianus)* were not noted during field surveys but could travel into the proposed project area.
- Most of the suitable habitat for the spotted bat (*Euderma maculatum)*, rock outcrops and crevices, are located in the northern portion of the canyon, away from potential construction areas in Allison.
- The known Gunnison's prairie dog (*Cynomys gunnisoni)* town is located outside the town of Allison, away from locations where construction activities are anticipated to occur. Gunnison's prairie dogs declined from a few active mounds in May 2018 to no active mounds in July 2018.
- If cougars (*Puma concolor*) travel into the project area, they would be able to avoid construction activity.
- If mule deer (*Odocoileus hemionus*) travel into the project area, they would be able to avoid construction activity.

3.7.3 Federally listed Plants

One federally listed threatened plant species (Zuni fleabane [*Erigeron rhizomatus*]) has the potential to occur in the project area but was not observed during field surveys. The Zuni fleabane is also listed as a state-endangered species and was discussed in Section 3.6.1 above.

3.7.4 Federally listed Animals

Four federally listed animal species were considered during the biological assessment and evaluation conducted for the current project. They include:

- Mexican spotted owl (*Strix occidentalis lucida*) (threatened)
- Southwestern willow flycatcher (*Empidonax traillii extimus*) (endangered)
- Yellow-billed cuckoo (*Coccyzus americanus*) (endangered)
- Zuni bluehead sucker (*Catostomus discobolus yarrowi*) (endangered)

The project area does not contain suitable habitat for these species, and they were not observed during field studies.

3.7.5 Critical Habitat

No critical habitat is located within the project or action area (USFWS 2017a, 2018; NMDGF 2018a). The nearest critical habitat occurs in the Rio Nutria for the Zuni bluehead sucker (*Catostomus discobolus yarrowi*) and in the Zuni Mountains for the Mexican spotted owl (*Strix occidentalis lucida*), both located approximately 20 miles (32.19 km) southeast of Allison (USFWS 2017a, 2018; NMDGF 2018a).

3.8 Geology/Soils

Geology consists of Quaternary colluvium with valley-fill alluvium, basalt flows colluvium, and discontinuous aeolian deposits; Cretaceous, Jurassic, and Triassic sedimentary rocks of sandstone, shale, and mudstone; and some areas of Tertiary and Quaternary volcanic fields (USGS 2011b).

Soils in the Allison project area consist of a variety of loam soil types (Soil Survey Staff, NRCS, USDA 2018). These include Mentmore loam, Eagleye-Atchee-Rock outcrop complex, and Breadsprings and Nahodish soils. Parent material for Breadsprings and Nahodish soils is stream alluvium derived from sandstone and shale, fan and slope alluvium derived from sandstone and shale for Mentmore loam soils, and Eagleye-Atchee outcrop complex is derived from slope alluvium over weathered from shale.

The Farmland Protection Act, 7USC, Section 4201, defines existing farmland. For this project area, no prime farmland is present (Soil Survey Staff, NRCS, USDA 2018).

3.9 Mineral/Paleontological Resources

The Allison area Is located in the Crevasses Canyon Formation from the Phanerozoic eon, Mesozoic era, and Cretaceous period. The primary mineral consideration would be the coal that was originally mined from the Allison area, although the mine was eventually abandoned due to limited commercial viability. Coal-bearing units are the Dilco and Gibson Coal Members consisting of Bartlett Barren, Dalton Sandstone and Borrego Pass Sandstone (USGS Mineral Resources On-Line Spatial Data 2017). Additionally, as the geologic deposits are from the Cretaceous period, paleontological resources are at least possible, although none were noted in the project area.

3.10 Visual Resources

The visual character of the area is a combination of developed land and a more natural context. Within the community of Allison, the viewshed is characterized by residential and commercial developments with a salvage yard and informal stockpiling of equipment, discarded vehicles, and informal debris intermixed with residential properties. Outside of the community, the project area is undeveloped with views of natural landforms including the canyon where Allison is located, and associated sandstone cliffs and mesas.

3.11 Air Quality

The air quality in the surrounding area is rated satisfactory (Air Now 2018), meaning the air pollution poses little or no risk to the residents of Allison. McKinley County also has attainment status to National Ambient Air Quality Standards (NAAQS) for all criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide .

3.12 Human Health and Safety

Subsidence features due to abandoned mines throughout the project area present serious threats to human health and safety. The sudden formation of a sinkhole due to the instability of historical underground mine workings could cause serious injury or fatality. Additional hazards could include the release of dangerous gasses such as methane, and/or the sudden discharge of fluid from tension cracks or sink holes. While these dangers are possible, the depth of the mine workings makes these hazards less likely, and the primary concern is with physical injury related to the sudden appearance of subsidence features.

4. ENVIRONMENTAL IMPACTS

This section evaluates the impacts of the proposed alternatives to the affected environment described above.

4.1 Cultural Resources

As described earlier in Section 3.2, archaeological sites LA 188343, LA 188345 are eligible for listing to the NRHP, and LA 188340 and LA 188344 are potentially eligible. Additionally, historic buildings HCPI 43741 and HCPI 43737 are eligible and potentially eligible to the NRHP.

Both Alternative 1 (Preferred) and Alternative 2 would have the same impacts to the cultural resources. Both alternatives would avoid the features of LA 188340, LA 188343, LA 188344, and LA 188345 that contribute to their eligibility or potential eligibility. The NRHP-eligible historic buildings, HCPI 43741 and HCPI 43737, would similarly be avoided by all construction activity.

The No Action Alternative would have no effect to any cultural resources eligible for listing to the NRHP; however, this alternative would not satisfy the project purpose and need.

4.2 Water Resources

As described in Section 3.3 above, the project area contains ephemeral waterways, as well as a wetland in the southeast corner. Alternative 1 (Preferred) would involve improvements to the main north/south drainage and its ephemeral tributary at the west end of the project area. However, in 2016 the USACE provided a jurisdictional determination concluding that these drainages were not jurisdictional. A follow-up consultation with the USACE in spring of 2022 confirmed that these drainages were not jurisdictional. Additionally, the drainage improvements would be designed to avoid the wetlands at the southeast end of the project area. Alternative 1 (Preferred) would therefore have no impacts to water resources.

Alternative 2 involves all of the elements of Alternative 1 (Preferred) except for the drainage improvements. Since Alternative 2 would involve no work within jurisdictional waterways or wetlands, the alternative would have no effect to water resources.

The No Action Alternative would have no effect to any jurisdictional waterways or wetlands; however, this alternative would not satisfy the project purpose and need.

4.3 Vegetation

The developed portion of the project area contains very little vegetation while the rest of the project area has a sparse vegetative cover consistent with sedimentary geologic substrates. Alternative 1 (Preferred) would have a minor impact on vegetation due to ground disturbance associated with construction; disturbed areas would need to be reseeded with a native seed mix.

Alternative 2 has a smaller footprint than Alternative 1 (Preferred) due to the absence of the drainage improvements and would therefore have slightly less of an impact on vegetation.

Both alternatives would avoid the spread of noxious weeds through best management practices such as cleaning construction equipment upon arrival at the construction site and before leaving the site.

The No Action Alternative would have no effect to vegetation, although it would not satisfy the project purpose and need.

4.4 Wildlife

As described in Section 3.5 above, wildlife observations or sign in the general area included bobcat, desert cottontail, jackrabbits, and coyote. Neither Alternative 1 (Preferred) nor Alternative 2 would substantially decrease wildlife habitat. Increased noise and construction activity associated with both alternatives may discourage wildlife from occupying or traveling through the project area during construction. However, these impacts are minor and temporary and there is sufficient habitat outside the construction zone to accommodate wildlife.

The No Action Alternative would have no effect to wildlife, although it would not satisfy the project purpose and need.

4.5 Special-Status Species

Both Alternative 1 (Preferred) and Alternative 2 would have similar impacts on special-status species, including:

- Federally and state-listed plants: the two New Mexico rare plants (Navajo muhly and threadleaf blazingstar) that were noted during field survey would be avoided by construction activity. No other federally or state-listed plant species would be affected by either alternative.
- State-listed animals: SERI-designated species such as the cougar and mule deer would experience only minor and temporary impacts similar to those described above for wildlife. The Gunnison's prairie dog (SGCN) colony in the southeast corner of the project area would be avoided by all construction activity. The spotted bat (state threatened and SGCN) would not be affected because suitable habitat is only located in the rocky outcrops outside of the project

area. Affects to state-listed birds such as the gray vireo (threatened), loggerhead shrike (SGCN), and juniper titmouse (SGCN) would be similar to those for migratory birds described below.

- Federally listed animals and critical habitat: neither alternative would affect federally listed animal species or critical habitat.
- Migratory birds: migratory birds were observed in the Siberian elms surrounding and other trees within the project area. If construction activity would require tree removal during the nesting season (March 15 through September 15), then potential impacts to migratory birds could occur.

The No Action Alternative would have no effect to special-status species, although it would not satisfy the project purpose and need.

4.6 Geology/Soils

Both Alternative 1 (Preferred) and Alternative 2 would have similar impacts to the geology and soils of the project area as they relate to testing and subsidence mitigation efforts. Temporary ground disturbance would be limited to the immediate site area of the testing and mitigation locations and a disturbance buffer of approximately 40 ft (12 m) around the testing or mitigation area is typical for this type of efforts. Existing access routes would be utilized to the greatest extent possible and overland travel would be utilized only when absolutely necessary. Limited overland access by construction equipment would cause localized and minor impacts, such as soil compaction and increased potential for surface runoff and soil erosion. Additional geological and soil disturbance would be associated with the drainage improvements included in Alternative 1 (Preferred); however, as with the testing and mitigation, these disturbances would be temporary in nature and limited in scope.

The No Action Alternative would have no effect to geology and soils, although it would not satisfy the project purpose and need.

4.7 Mineral/Paleontological Resources

Both Alternative 1 (Preferred) and Alternative 2 would have similar impacts to the minerals and paleontological resources of the project area. Undocumented fossils may be present within the project area; however, neither alternative would be likely to impact possible sites. The area has previously experienced extensive disturbance related to the construction of the mine and townsite. Additionally, there has been no active mineral exploration or extraction since the coal mine was closed in the 1930s and neither alternative would impact minerals.

The No Action Alternative would have no effect to minerals and paleontological resources, although it would not satisfy the project purpose and need.

4.8 Visual Resources

While in general, the project area does not contain unique visual attributes, a substantial change in the viewshed of the area should still be avoided. The testing and mitigation efforts of both Alternative 1 (Preferred) and Alternative 2 would have little impact on the visual resources or viewshed of the area. The drainage improvements associated with Alternative 1 (Preferred) would provide a slight change to

the visual character of the area. However, as the improvements would largely be to reestablish and formalize existing drainage channels, the visual change is considered minor.

Under the No Action Alternative, the visual character of the project area would not change. However, the No Action Alternative would not address the project purpose and need.

4.9 Air Quality

Both Alternative 1 (Preferred) and Alternative 2 would have similar impacts to the air quality of the project area. Both alternatives would involve a temporary increase in vehicle access and use of construction equipment within the project area. Gasoline and diesel-powered vehicles and construction equipment would generate emissions and fumes, but these levels are anticipated to be low and in compliance with local and federal emission standards. Access to the area is primarily via dirt roads and fugitive dust may be generated by vehicle travel and during construction. However, construction would occur at a pace to allow resettling of particulate matter within the immediate vicinity of the project. Localized impacts to air quality are expected during construction, although these impacts would be temporary in nature and limited in scope.

The No Action Alternative would have no effect to air quality; however, the purpose and need of the project would remain unaddressed.

4.10 Human Health and Safety

Alternative 1 (Preferred) would best address human health and safety by mitigating known subsidence hazards and improving area stormwater drainage in order to minimize concerns with future subsurface void erosion.

Alternative 2 would also improve human health and safety. However, without addressing drainage needs, the possibility exists for future subsidence hazards to occur due to stormwater drainage entering subsurface voids and contributing to continued erosion.

The No Action Alternative would not address human health and safety related to existing and future potential subsidence hazards.

4.11 Summary of Environmental Impacts

As described above, the No Action Alternative would have the fewest environmental impacts of all the alternatives evaluated in this EA. However, the No Action Alternative fails to address the project purpose and need and is considered in the EA largely as a baseline from which to compare environmental impacts of other alternatives.

Of the remaining options, Alternative 1 (Preferred) has slightly more environmental impacts than Alternative 2, particularly in the areas of vegetation, geology and soils, and visual resources. However, these impacts are not substantial and can be minimized through the mitigation actions described below in Section 6.

5. CUMULATIVE IMPACTS

Cumulative impacts are defined as the incremental effects of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Past activities in the APE include coal mining at the Allison mine, which led to the development of the Allison community. Additional associated development and land uses include the construction of I-40 and Allison road, the expansion of the Gallup urban area over previous decades, and ranching/livestock grazing in the general vicinity. Also, the *City of Gallup Growth Management Master Plan Update* (2016) and the *McKinley County Comprehensive Plan Update* (2012) both identify growth along the Carbon Coal Road alignment directly north of Allison and along the US 491 corridor directly east of Allison.

Stabilizing the mine-related subsidence in and around the community of Allison would not constitute a cumulative impact to the environment.

6. MITIGATION/AVOIDANCE

This section recommends measures to mitigate or avoid potential adverse impacts of Alternative 1 (Preferred) as described in Section 2.1. No mitigation measures are required for general wildlife, geology and soils, minerals and paleontological resources, visual resources, or human health and safety. The mitigation measures for additional resource considerations are presented below.

6.1 Cultural Resources

Historic buildings HCPI 43741 and HCPI 43737 should be avoided by all construction activity. Additionally, all archaeological features that contribute to the NRHP eligibility or potential eligibility of sites LA 188340, LA 188343, LA 188344, and LA 188345 should be avoided by construction activity. An archaeologist should monitor construction activity near important resources in order to avoid accidental damage to contributing elements of the sites and to identify any potential unanticipated subsurface cultural deposits. If these proposed mitigation and avoidance measures are followed, no adverse effects to NRHP-eligible properties would occur during the proposed action.

6.2 Water Resources

The project should be designed to completely avoid the wetland located near the south end of the main north/south drainage. Temporary protective fencing should be installed along the western boundary of the wetland to avoid accidently trespass or damage during construction. If these proposed mitigations are followed, there would be no impacts to water resources.

As the proposed action would involve disturbance over 1 acre in size, a NPDES permit under Section 402 of the CWA would be required. Implementing the erosion-control measures identified in the NPDES permit would avoid erosion and pollution from rain events that may occur during construction.

6.3 Vegetation

Following construction, site reclamation efforts would involve native seeding and mulching to reestablish the native vegetative community. All seed, mulch, matting, straw, and/or hay used would be certified weed-free of invasive and/or noxious weeds. Additionally, vehicles and construction equipment would be inspected and cleaned before and after use to limit potential for spread of noxious weeds.

6.4 Special-Status Species

If construction cannot be completed outside of the bird breeding season, defined as March 15 to September 15, a pre-construction nest survey would be conducted prior to construction activity in compliance with the MBTA. If active nests are located during the pre-construction survey, consultation with the USFWS would occur; to avoid disturbance, construction activities at the nest sites would be delayed until fledging occurs, or a nest removal permit is obtained from the USFWS.

The two New Mexico rare plants (Navajo muhly [*Muhlenbergia arsenei*] and threadleaf blazingstar [*Mentzelia filifolia*]) would be avoided by construction activity. For detailed location information, refer to *Biological Assessment and Biological Evaluation for the Allison Mine Subsidence Project, McKinley County, New Mexico* (Parametrix 2018).

The Gunnison's prairie dog (SGCN) colony in the southeast corner of the project area would be avoided by all construction activity. For detailed locational information, refer to *Biological Assessment and Biological Evaluation for the Allison Mine Subsidence Project, McKinley County, New Mexico* (Parametrix 2018).

6.5 Air Quality

To limit the amount of fugitive dust generated by increased vehicle access and construction activities within the project area, dust-control measures would be implemented. Dust-control measures may include but would not be limited to speed restrictions for vehicle access, binding particles by wetting access roads and exposed soils during construction, and stipulations to avoid access and construction during high-wind days.

7. AGENCY CONSULTATION

As indicated in the Section 4 above, there would be no effects to designated critical habitat or species that are protected under the ESA and, as such, no consultation with the USFWS was undertaken. Consultation with the USACE concerning the jurisdictional determination of the drainages in the project area; coordination with the NMDOT concerning drainage maintenance at I-40 culvert crossing; Section 106 of the NHPA consultation with the State Historic Preservation Officer (SHPO); and tribal consultation are all summarized below, and copies of relevant consultation letters are attached in Appendix E.

7.1 US Army Corps of Engineers

On September 8, 2016, the USACE conducted a field visit of the Allison project area. A letter referring to Action No. SPA-2016-00322, and approved jurisdictional determination were received by AML on December 13, 2016, stating that based on the approved jurisdictional determination there were no WOTUS present in the project area (Appendix E). The intermittent channel that flows through Allison has been heavily manipulated by local residents over time and was considered an isolated waterway in the project area. In 2021, the AML reinitiated consultation with the USACE to confirm that the jurisdictional status of the drainage has not changed since the 2016 determination. On February 4, 2022, the USACE performed a field visit to reevaluate the Allison project area to confirm the jurisdictional status of the 2016 analysis. On April 19, 2022, a letter for the Action No. SPA-2022-00068 and the corresponding Approved Jurisdictional Determination were received by AML reiterating the determination that no WOTUS are present in the project area (Appendix E)

7.2 NMDOT

As indicated earlier in Section 2, stormwater drainage through the project area drains southward, passing beneath I-40 before out-falling to the Rio Puerco. While existing I-40 drainage structures are sufficient to pass stormwater flows, drainage efficiency would be maximized through regular maintenance of the existing structures by the NMDOT. Throughout project development, the AML has regularly coordinated with representatives from the NMDOT District 6 office concerning drainage improvement plans and any potential concerns with I-40 drainage.

7.3 State Historic Preservation Officer

The AML completed consultation with the SHPO per Section 106 of the NHPA. The AML and OSMRE determined that the proposed project would not adversely affect cultural resources and the SHPO concurred on June 14, 2021. See the attached consultation letter in Appendix E for additional details.

7.4 Tribal Consultation

Consistent with the 2021 county-by-county Native American consultation list from the New Mexico Historic Preservation Division, the following Native American tribes were consulted to determine if they had any traditional use or other concerns with the proposed project: Acoma Pueblo, Hopi Tribe, Isleta Pueblo, Laguna Pueblo, Navajo Nation, Tesuque Pueblo, and Zuni Pueblo. To date, no concerns have been expressed.

8. LIST OF PREPARERS

Jeff Fredine, NEPA Specialist/Public Involvement
Parametrix
9600 San Mateo Boulevard NE
Albuquerque, NM 87113

Steve Albert, Wildlife Biologist
Parametrix
9600 San Mateo Boulevard NE
Albuquerque, NM 87113

Ethan Kalosky, Cultural Resources Specialist
Parametrix
9600 San Mateo Boulevard NE
Albuquerque, NM 87113

Tyler Pennington, Cultural Resources Specialist
Parametrix
9600 San Mateo Boulevard NE
Albuquerque, NM 87113

James Hollen, NEPA Coordinator
Abandoned Mine Program, Mining and Minerals Division
New Mexico Energy, Minerals, and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

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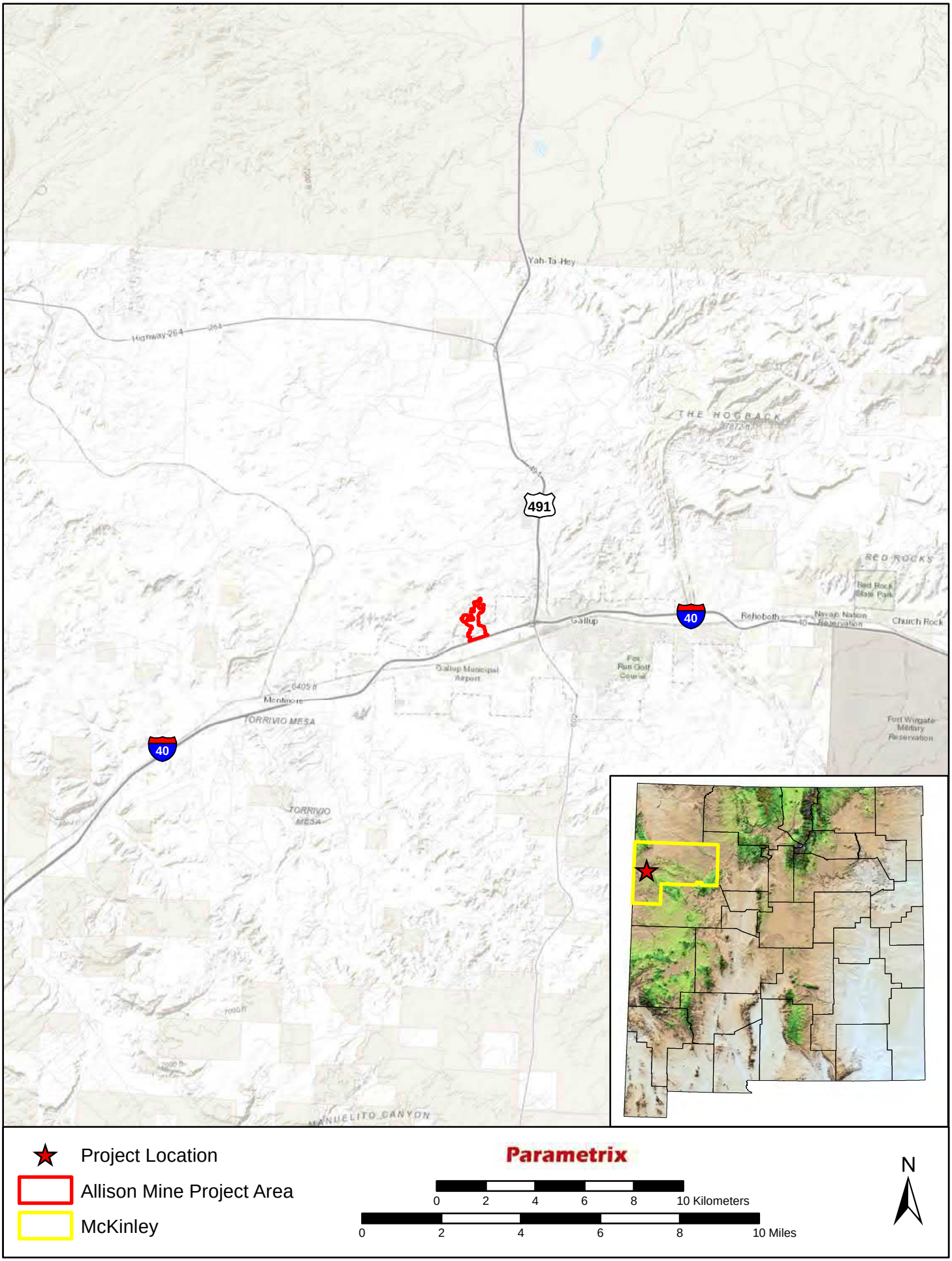
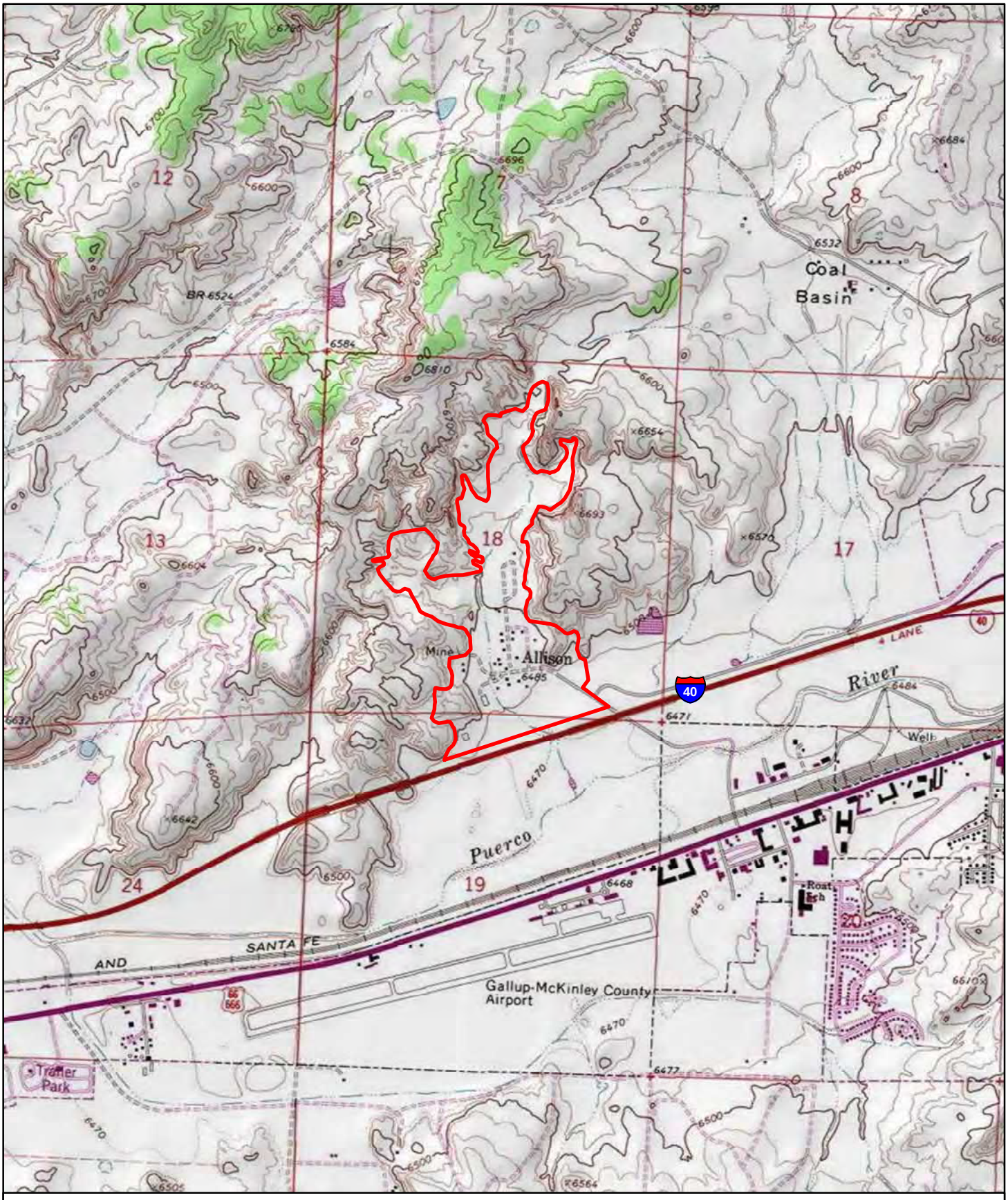
APPENDIX A

Project Area Maps



Project vicinity map



USGS 7.5-minute (1:24,000 scale) quadrangle map depicting project area

Aerial view of project area

APPENDIX B

Public Meeting Summary

Public Information Meeting

Allison Mine Subsidence Project, Allison, NM

Summary

June 23, 2021 – Virtual Public Meeting

The Abandoned Mine Lands (AML) program held a public meeting for the Allison Mine Subsidence project on Wednesday, June 23, 2021. A virtual public meeting was held due to the State's Public Health Orders related to the COVID-19 pandemic. A link to the Zoom meeting was included in a public meeting notice that was mailed to property owners in the vicinity of the project area and advertised in the Gallup Independent on June 11, 2021 (see Attachment 1). The purpose of the meeting was to provide the public with information regarding proposed mitigation measures for subsidence concerns in and around the Allison townsite.

Thirteen members of the public and other stakeholders attended the meeting either via Zoom or telephone. The meeting began with introductions of key project personnel, followed by a PowerPoint presentation (see Attachment 2).

The presentation started at approximately 6:00 PM and covered the following topics:

- An introduction of Project Team members.
- Overview of the AML mission and meeting purpose.
- The purpose and need of the project.
- An overview of the project history, including a description of the emergency work recently completed in the area.
- A summary of the environmental investigations that have been recently completed for this project.
- Proposed/ongoing mitigation efforts at the Allison Mine, including:
    - Geotechnical exploration
    - Ground improvements (e.g., fencing, backfilling, capping, monitoring)
    - Main channel drainage improvements and maintenance
    - Fill pad drainage improvements
- Project schedule and next steps.

A "question-and-answer/comment" session was held after the presentation.
The following comments and questions were discussed at the meeting. Design team responses are indicated in the indented bullets. All statements and responses have been lightly edited.

- So the schedule assumes the mining mitigation law will be renewed this year? If it is not, will that be the end of this project?
    - *Response: Although the funding is set to expire this September, there's a possibility it will be renewed. However, we already have funds secured for this project, so it will move forward regardless of the reauthorization.*

- As you are doing the studies, there is an area that continues north on Coronado Blvd. where there used to be townsites and housing sites where you can still the foundations in that area, towards the Mauer property and past that. Will any of that be included in the study and also in taking care of the drainage?
  - *Response: That particular area you're talking about, it is within our project area, but whenever a resident notices a hole in the ground or a low area, ground cracks, we always like to know about that so that we can let our consultants know and they can target that area with geotechnical exploration. I will follow up with you to see where that problem area is you are talking about.*

    As far as the drainage improvements, we have proposed to take that all the way up Coronado Blvd. to where it makes that curve to the east and goes to the last house at the far north end of town. So that would be the limits of our drainage improvements.
- Is there coordination with NMDOT, specifically regarding the probable future I-40 interchange exit impact?
  - *Response: Yes, we are coordinating with DOT. We've been in touch with DOT representatives as well as their design consultant Bohannon-Huston, for the Allison DOT project and we have a future meeting planned where our consultants and the DOT's consultants, along with DOT representatives, can get together and talk about the two projects and see how we can combine the two, because we do share at least one common structure, the big box culvert under I-40, where we eventually want our drainage to end up. We also want to make the DOT aware of the locations of areas with shallow mine workings for proposed structures that they have as well.*
- There are a few other sinkholes on the property that we had pointed out right where the road crosses the bridge, on the north side, between the road and where you guys previously worked. Does that need to be grubbed off and are they going to be doing work there?
  - *Response: We'd like to take a look at that area again so we can make sure to get a coordinate on those holes that you're talking about and share that with our consultants and they can drill a bore hole there if they feel it's an area of concern. If ground improvement is necessary, it will be similar to the emergency project where we'll need an area cleared, and then the bigger drill rig can come in and drill and inject. We don't necessarily expect it to be as large of a cleared area. It might be smaller, more discrete cleared areas. But, we will work with the landowners to define those needs and with what works for you as well.*
  - Follow-up comment: Throughout the property there's numerous places but there's no mine activity in a lot of it.
  - *Response: Our consultants had noticed holes that had opened up in town that were actually associated with AML program's 1980s drilling effort, so there will be some backfilling of those old exploration drill holes. There are areas in town where the mine map doesn't show any mine workings, but we know that there are missing years from that map. So there may be mine workings that were advance but that we just don't have a record of. That will be part of our consultant's exploration efforts*.
  - Follow-up comment: Right behind my house where the water tank is…when I get runoff off the house, it seems like it goes under the concrete. It's a never-ending tunnel. It takes water and the water never comes up anywhere. And, from what I'm gathering from the

maps that I looked at, about 30 to 40 ft in front of the house there was a deep incline shaft. I'm wondering if that's where it's going. I don't know if that was ever buried or not or if it was filled in.

  - *Response: In the 1980s AML Program, the previous landowner had backfilled some of those mine features. But I believe we had done that main one in the 80s, but we will follow up on that one. We want to take note of your drainage observations and water entering the ground so we can include that in our exploration area.*

- Do you anticipate future maintenance of culverts, particularly labor, to be the responsibility of individual landowners, or landowners providing access for one maintenance entity to do it?
  - *Response: The way the AML program is funded and structured, we can build these improvements and construction projects. But for the future, our funding is contingent on the federal government reauthorizing our funding year after year. So there will be a time in the future when the AML program is no longer, and because of that reason, we do not do perpetual maintenance on projects. But while our program is active and funded, we do maintenance. For drainage infrastructure however, the maintenance would be the sole responsibility of the landowners. They would be responsible for all the labor and following the maintenance schedule that we develop in order for these structures to preform they way they are designed.*

    Getting agreement from the landowners is crucial for getting a commitment for the maintenance. If we construct these drainage improvements the are not maintained, we can't move forward with construction because their design life will be greatly reduced. We expect to engage with the community in the coming months to build consensus, especially with some of the major landowners whose properties cover the larger drainage structures, to get some agreements where they commit to the maintenance.
  - Follow-up question: Could we approach the County for future maintenance?
  - *Response: We have approached the County and have had a lot of discussions. However, due to very low funding in the County, it is our understanding that they are not able to take on additional projects and fund them. There is always a possibility where the community could make a pitch to the County to try to convince them to take on this maintenance and develop an easement. But because it is on private property, they tend to rely on property owners to conduct the maintenance.*

The meeting ended at approximately 7:30 PM. All meeting participants were encouraged to send any additional written comments or questions to AML via email, telephone, or US Postal Service. However, AML received no additional comments or questions beyond those provided at the meeting.

ATTACHMENT 1

Public Information Meeting

Newspaper Advertisement and Public Information Flier

Nation in brief

Man mistaken for intruder fatally shot by best friend

DINWIDDIE, Va. (AP) — A man mistook his best friend for an intruder outside his Virginia home and fatally shot him, authorities said.

Matthew Sharpf and his family were asleep in their home Tuesday night when Jonathan Hankins showed up unexpectedly, Sheriff's Maj. William Knott told The Richmond Times-Dispatch.

Hankins "came banging around to the door and the side of the house," Knott said. "I don't know whether it was to shock him, or whether it was a joke or prank."

Sharpf went to the door with a handgun and saw the silhouette of a person outside, Knott said. A shot fired through the front door struck and killed Hankins, he said.

"I don't think he intended to shoot," Knott said of Sharpf. "The gun discharged; it may have been an accident."

Hankins, who apparently went to Sharpf's house in Dinwiddie County for a visit, didn't announce who he was while outside Sharpf's home, Knott said. The men, both 37, had been best friends for years, Knott said.

Although the incident remains under investigation, Knott said there are no signs of a quarrel.

A member of Sharpf's family called the sheriff's office, and deputies found Hankins dead.

Sharpf was charged with voluntary manslaughter and released on an unsecured bond. He was arraigned Thursday and a preliminary hearing was set for July 26.

Judge pauses loan forgiveness program for farmers of color

MILWAUKEE (AP) — A federal judge has halted a loan forgiveness program for farmers of color in response to a lawsuit alleging the program discriminates against white farmers.

U.S. District Judge William Griesbach in Milwaukee issued a temporary restraining order Thursday suspending the program for socially disadvantaged farmers and ranchers, the Milwaukee Journal Sentinel reported.

The program pays up to 120% of direct or guaranteed farm loan balances for Black, American Indian, Hispanic, Asian American or Pacific Islander farmers. President Joe Biden's administration created the loan forgiveness program as part of its COVID-19 pandemic relief plan.

Minority farmers have maintained for decades that they have been unfairly denied farm loans and other government assistance. Federal agriculture officials in 1999 and 2010 settled lawsuits from Black farmers accusing the agency of discriminating against them.

Conservative law firm Wisconsin Institute for Law and Liberty filed suit in April arguing white farmers aren't eligible, amounting to a violation of their constitutional rights. The firm sued on behalf of 12 farmers from Wisconsin, Minnesota, South Dakota, Missouri, Iowa, Arkansas, Oregon and Kentucky.

Wisconsin man criminally responsible for grandparent deaths

APPLETON, Wis. (AP) — A jury has ruled that a 19-year-old Wisconsin man who pleaded guilty to fatally shooting his grandparents in 2019 is criminally responsible for the deaths.

The jury ruled Thursday that Alexander Kraus, of Neenah, is mentally ill but could still understand his actions were wrong, WLUK-TV reported. He now faces two life prison terms when he's sentenced Aug. 16.

Law enforcement struggles to recruit since killing of Floyd

By Stephanie Dazio, Jake Bleiberg and Kate Brumback
Associated Press

Law enforcement agencies across the country experienced a wave of retirements and departures and are struggling to recruit the next generation of police officers in the year since George Floyd was killed by a cop.

And amid the national reckoning on policing, communities are questioning who should become a police officer today.

Mass protests and calls for reforming or defunding the police, as well as the coronavirus pandemic, took their toll on officer morale. The rate of retirements at some departments rose 45% compared with the previous year, according to new research on nearly 200 law enforcement agencies conducted by the Washington-based Police Executive Research Forum and provided to The Associated Press. At the same time, hiring slowed by 5%, the group found.

The wave comes as local lawmakers have pledged to enact reforms — such as ending the policies that give officers immunity for their actions while on-duty — and say they're committed to reshaping policing in the 21st century. And recruiters are increasingly looking for a different kind of recruit to join embattled departments.

AP photo/John Minchillo, file

In this April 14 file photo law enforcement officers clear an area of demonstrators during a protest over Sunday's fatal shooting of Daunte Wright during a traffic stop, outside the Brooklyn Center Police Department in Brooklyn Center, Minnesota.

Brain vs. brawn

Years ago, a candidate's qualifications might be centered around his — yes, his — brawn. Now, police departments say they are seeking recruits who can use their brain. And they want those future officers to represent their communities.

"Days of old, you wanted someone who actually had the strength to be more physical," Atlanta Police Chief Rodney Bryant said. "Today's police officers, that's not what we're looking for. We're looking for someone who can actually relate to the community but also think like the community thinks."

But the climate today, coupled with increases in crime in some cities, is creating what Chuck Wexler, the head of the Police Executive Research Forum, called a "combustible mixture."

It's creating "a crisis on the horizon for police chiefs when they look at the resources they need, especially during a period when we're seeing an increase in murders and shootings," Wexler said. "It's a wake-up call."

The data from Wexler's organization represents a fraction of the more than 18,000 law enforcement agencies nationwide and is not representative of all departments. But it's one of the few efforts to examine police hiring and retention and compare it with the time before Floyd's killing in Minneapolis on May 25, 2020. Former officer Derek Chauvin, who pressed his knee on Floyd's neck while Floyd was handcuffed behind his back, was convicted of murder and is awaiting sentencing.

Researchers heard from 194 police departments last month about their hires, resignations and retirements between April 1, 2020, and March 31, 2021, and the same categories from April 1, 2019, to March 31, 2020.

By comparison, the changing public attitude on policing is well documented. In the past year, as many as half of American adults believed police violence against the public is a "very" or "extremely" serious problem, according to one poll conducted by The Associated Press-NORC Center for Public Affairs Research.

"It's hard to recruit the very people who see police as an opposition," said Lynda R. Williams, president of the National Organization of Black Law Enforcement Executives, who previously worked on recruitment efforts for the Secret Service.

Bryant knows firsthand. In the weeks after Floyd's death, a white officer, Garrett Rolfe, shot and killed Rayshard Brooks, a Black man, in the parking lot of a Wendy's.

In quick succession, Rolfe was fired, the chief resigned and the local district attorney announced charges, including felony murder, against Rolfe — a rare step in police shootings. Some cops left the force, which currently has about 1,560 officers — about 63% of the force is Black, 29% white and 5% Latino.

Then came the "Blue Flu" — when a high number of police officers called out sick in protest. Bryant, then the department's interim chief, acknowledged that it had occurred in Atlanta after Rolfe was charged.

'Some may feel abandoned'

"Some are angry. Some are fearful. Some are confused on what we do in this space. Some may feel a bit abandoned," Bryant said last summer in an interview at the height of the crisis.

But it hasn't shaken the resolve of some, like Kaley Garced, a hairdresser-turned-police officer in Baltimore who graduated from the academy last August. Despite the protests and attitudes toward law enforcement, she stayed with her career choice with a plan to interact with residents.

"Earning their trust" leads to better policing, she said. Citizens who trust officers will not be afraid to "call upon you on their worst day" and ask for help.

Williams said she believes the next generation of law enforcement will bring a new outlook and move the profession forward by making departments more diverse and inclusive.

"They are the change that they want to see," Williams said.

Recruitment is still a challenge. In some cities like Philadelphia, departments are spending more time scouring a candidate's social media to hunt for possible biases. In others, pay disparities — a longtime problem — still exist, making it difficult to attract would-be officers and keep newly trained recruits when a neighboring jurisdiction offers more money and benefits.

In Dallas, city leaders spent much of the last decade struggling to draw candidates and stem the outflow of officers frustrated by low pay and the near collapse of their pension fund.

Despite those efforts, the force now stands at about 3,100 officers — down from more than 3,300 in 2015 — a loss at a time when the city's population has grown to more than 1.3 million. The force is about 44% white, 26% Black and 26% Latino. This means officers handle more calls and detectives more cases, all amid increased racial tension.

In 2016, five officers were killed in Dallas by a sniper who was seeking revenge for police shootings elsewhere that killed or wounded Black men. Two years later, an off-duty officer fatally shot her neighbor in his home. She was fired and later was sentenced to a decade in prison for murder.

Mike Mata, president of the Dallas Police Association, said the national political climate and local pay and pension issues have been compounding challenges to hiring in Dallas.

Realignment of resources

In 2019, however, a consulting firm Dallas hired to review its department found that it needed not simply more officers but also a "realignment of strategy, goals, mission, and tactics." That finding rings true to Changa Higgins, a longtime community organizer.

"You don't need to focus on hiring more officers," Higgins said. "You need to focus on how you got these guys allocated."

In Los Angeles, the department is fighting against a decadelong image of scandal and racial strife from the Watts riots in 1965 to the bloodshed in 1992 after a Simi Valley jury's acquittal of officers who brutally beat motorist Rodney King.

Capt. Aaron McCraney, head of the Recruitment and Employment Division, and Chief Michel Moore ticked off the issues facing the 48 new recruits — more than half of whom were women — last year, noting that the pandemic, civil unrest and economic uncertainty were just some of the challenges the new officers would face.

"Even though these are tough times, these are difficult times, these are interesting times," McCraney said, "these times will pass, and we'll get on to things better."

Trump DOJ seized data from House Democrats in leaks probe

By Mary Clare Jalonick and Michael Balsamo
Associated Press

WASHINGTON — The Justice Department under former President Donald Trump seized data from the accounts of at least two members of the House Intelligence Committee in 2018 as part of an aggressive crackdown on leaks related to the Russia investigation and other national security matters, according to a committee official and two people familiar with the investigation.

Prosecutors from Trump's Justice Department subpoenaed Apple for the data, according to the people, who were granted anonymity to discuss the secret seizures first reported by The New York Times.

The records of at least twelve people connected to the intelligence panel were eventually shared, including Chairman Adam Schiff, who was then the top Democrat on the committee. California Rep. Eric Swalwell was the second member, according to spokeswoman Natalie Edelstein. The records of aides, former aides and family members were also siezed, including one who was a minor, according to the committee official.

Apple informed the committee last month that their records had been shared, but did not give extensive detail. The committee is aware, though, that metadata from the accounts was turned over, the official said. The records do not contain any other content from the devices, like photos, messages or emails, one of the other people said. The third person said that Apple complied with the subpoena, providing the information to the Justice Department, and did not immediately notify the members of Congress or the committee about the disclosure.

While the Justice Department routinely conducts investigations of leaked information, including classified intelligence, opening such an investigation into members of Congress is extraordinarily rare.

The Trump administration's attempt to secretly gain access to data of individual members of Congress and others connected to the panel came as the president was fuming publicly and privately over investigations — in Congress and by then-special counsel Robert Mueller — into his campaign's ties to Russia. Trump called the probes a "witch hunt," regularly criticized Schiff and other Democrats on Twitter and repeatedly dismissed as "fake news" leaks he found personally harmful to his agenda. As the investigations swirled around him, he demanded loyalty from a Justice Department he often regarded as his personal law firm.

House Speaker Nancy Pelosi, D-Calif., said in a statement that "these actions appear to be yet another egregious assault on our democracy" waged by the former president.

"The news about the politicization of the Trump Administration Justice Department is harrowing," she said.

Schiff, now the panel's chair, confirmed in a statement Thursday evening that the Justice Department had informed the committee in May that the investigation was closed. Still, he said, "I believe more answers are needed, which is why I believe the Inspector General should investigate this and other cases that suggest the weaponization of law enforcement by a corrupt president."

The Justice Department told the intelligence panel then that the matter had not transferred to any other entity or investigative body, the committee official said, and the department confirmed that to the committee again on Thursday.

The panel has continued to seek additional information, but the Justice Department has not been forthcoming in a timely manner, including on questions such as whether the investigation was properly predicated and whether it only targeted Democrats, the committee official said.

It is unclear why Trump's Justice Department would have targeted a minor as part of the probe. Swalwell, confirming that he was told his records were siezed, told CNN Thursday evening that he was aware a minor was involved and "I believe they were targeted punitively and not for any reason in law."

Another Democrat on the intelligence panel, Illinois Rep. Mike Quigley, said he did not find it even "remotely surprising" that Trump went after committee members' records during the Russia probe.

"From my first days as part of the Russia investigation, I expected that eventually, someone would attempt this – I just wasn't sure if it would be a hostile government or my own," Quigley said.

There's no indication that the Justice Department used the records to prosecute anyone. After some of the information was declassified and made public during the later years of the Trump administration, there was concern among some of the prosecutors that even if they could bring a leak case, trying it would be difficult and a conviction would be unlikely, one of the people said. Federal agents questioned at least one former committee staff member in 2020, the person said, and ultimately, prosecutors weren't able to substantiate a case.

The news follows revelations that the Justice Department had secretly seized phone records belonging to reporters at The New York Times, The Washington Post and CNN as part of criminal leak investigations. Following an outcry from press freedom organizations, the Justice Department announced last week that it would cease the practice of going after journalists' sourcing information.

NEW MEXICO emnrd Energy, Minerals and Natural Resources Department

Public Information Meeting

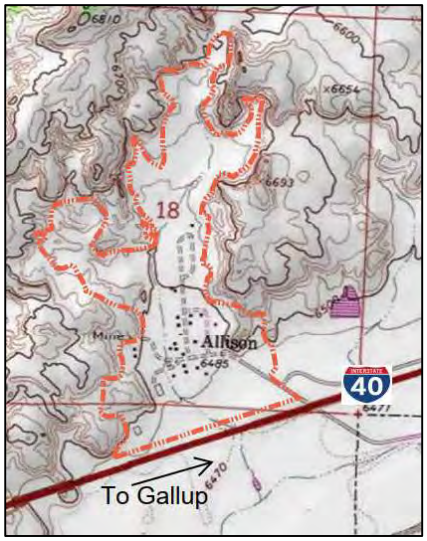
Allison Mine Subsidence Project, Allison, NM

The Abandoned Mine Land (AML) Program will hold a virtual public meeting to discuss AML's upcoming subsidence mitigation work planned for the Allison Townsite. The discussion is limited to areas in and around the Allison townsite.

Wednesday, June 23rd 6:00PM – 7:30PM
You may attend the virtual public meeting via telephone at 1-669-900-6833, Webinar ID code 995 5122 6249, Passcode 5468543, or

Participate online via Zoom at https://tinyurl.com/2uunfcpt

The purpose of this virtual meeting is to provide the public with information regarding proposed mitigation measures for subsidence concerns in and around the Allison townsite. In 2015 and 2016, sink holes were reported in the townsite and emergency mitigation measures were implemented in 2016 through 2018 to stabilize the sinkholes and tension cracks. After the emergency project, AML performed engineering studies to identify the underlying causes of the sinkholes and to and develop a long-term mitigation plan. This meeting will report the results of these studies, proposed mitigation measures, invite public input, and identify next steps in the process.



If you have questions about the meeting and/or the project, please contact:

Meghan McDonald, P.E., Project Engineer, Abandoned Mine Land Program, (505) 629-9872, Meghan.mcdonald@state.nm.us

Written comments will be accepted during the meeting or can be mailed or emailed to Jeff Fredine, Parametrix, 9600 San Mateo Blvd NE, Albuquerque, NM 87113; jfredine@parametrix.com.

To request Americans with Disabilities Act (ADA) related accommodations for this meeting or request a translator, please contact Jeff Fredine with Parametrix at (505) 280-8154 at least two days before the meeting.

ATTACHMENT 2
Public Information Presentation

Allison Mine Subsidence Project

VIRTUAL PUBLIC INFORMATION MEETING

JUNE 23, 2021

ALLISON, NEW MEXICO

Meeting Agenda

- Zoom Expectations
- Introductions
- AML Mission and Meeting Purpose
- Mining History in Allison
- Project Purpose and Need
- Proposed Mitigation Measures
- Environmental Investigations
- Project Schedule and Next Steps
- Public Comment

Zoom Expectations

- All participants will be muted until the end of the presentation
- Please join audio by either phone or computer, not both
- We will answer Questions at the end of the meeting
- We will provide instructions on how to ask a question for both call-in participants and web participants at the end of the presentation

Introductions

Presenters:

- Meghan McDonald, AML Project Engineer
- Jeff Fredine, Parametrix
- Brent Hamlin, Parametrix

Technical Team Representatives:

- Mike Tompson, AML Program Manager
- Joe Vinson, AML Project Manager
- Lloyd Moiola, AML Environmental Manager
- James Hollen, AML NEPA Coordinator
- Rick Wessel, Cultural Resources Manager
- Ethan Kalosky, Parametrix

Mission and Meeting Purpose

The AML Mission is to address public health and safety risks posed by abandoned mines throughout New Mexico. Specifically, the work of the AML program addresses the hazards and environmental degradation left behind by abandoned coal mines. The program is funded through a fee on current coal production. The funding has constraints as to how it can be spent. The law authorizing this fee is set to expire September 30, 2021, unless it is renewed by Congress sometime this year.

The Meeting Purpose is to update the public on work being done in Allison, identify additional project needs, and discuss on-going efforts and next steps.

Project History

- Allison was established in late 1800s to support coal mining in the area
  - Much of the community is established on top of the mines
  - Mining was abandoned in the 1930s but maps and plans of the mines are limited
- Mitigation efforts were undertaken by the AML Program in the 1980s
  - Records of this effort are limited
- Recent Developments
  - Sinkholes and ground cracks have developed in the community above abandoned mine workings
  - Two emergency projects have been completed between 2015 and 2018

Project Purpose and Need

Purpose of the project is to mitigate existing and potential hazards to health, safety, and property of Allison residents due to ongoing subsidence from previous mining activities.

Need for the project is based on:

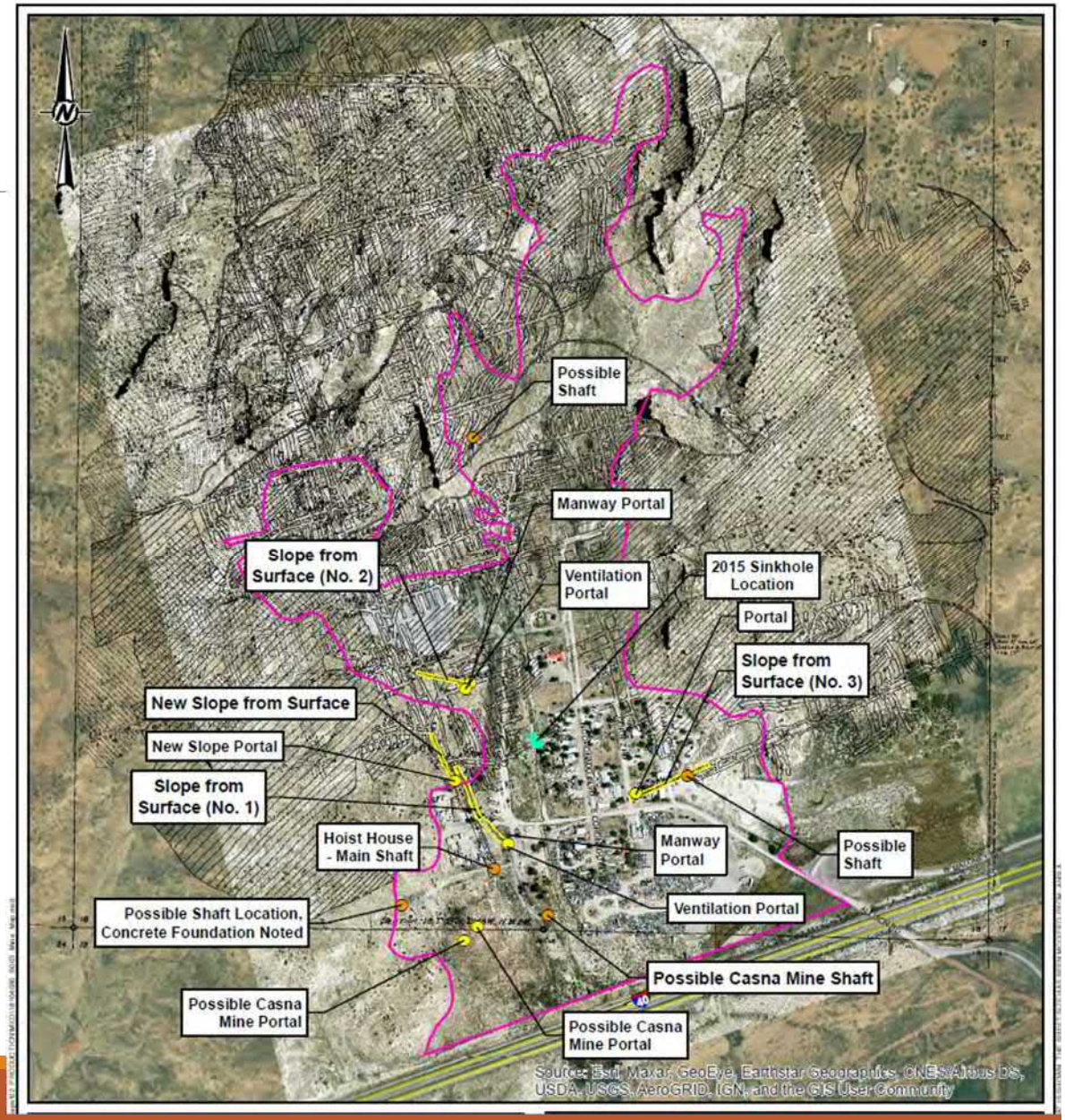
- Recent sinkholes and tension cracks in the Allison area
- Extent of historic mining is not well understood, and additional unstable voids are possible
- Sudden sinkhole formation could cause serious injury or fatality and could impact property and infrastructure
- Discharge of water and gases such as methane is possible
- Stormwater drainage is increasing subsurface erosion and void instability

Mitigation Measures—Geotechnical Exploration

Based on historic mine maps and depths to bedrock, geotechnical investigation is needed to understand and quantify the level of risk in areas of the community. This will include:

- Borehole Drilling
- Test Pits
- Geophysical Exploration

Some geotechnical efforts were completed in 2020; however additional information is needed to refine the mitigation strategies.

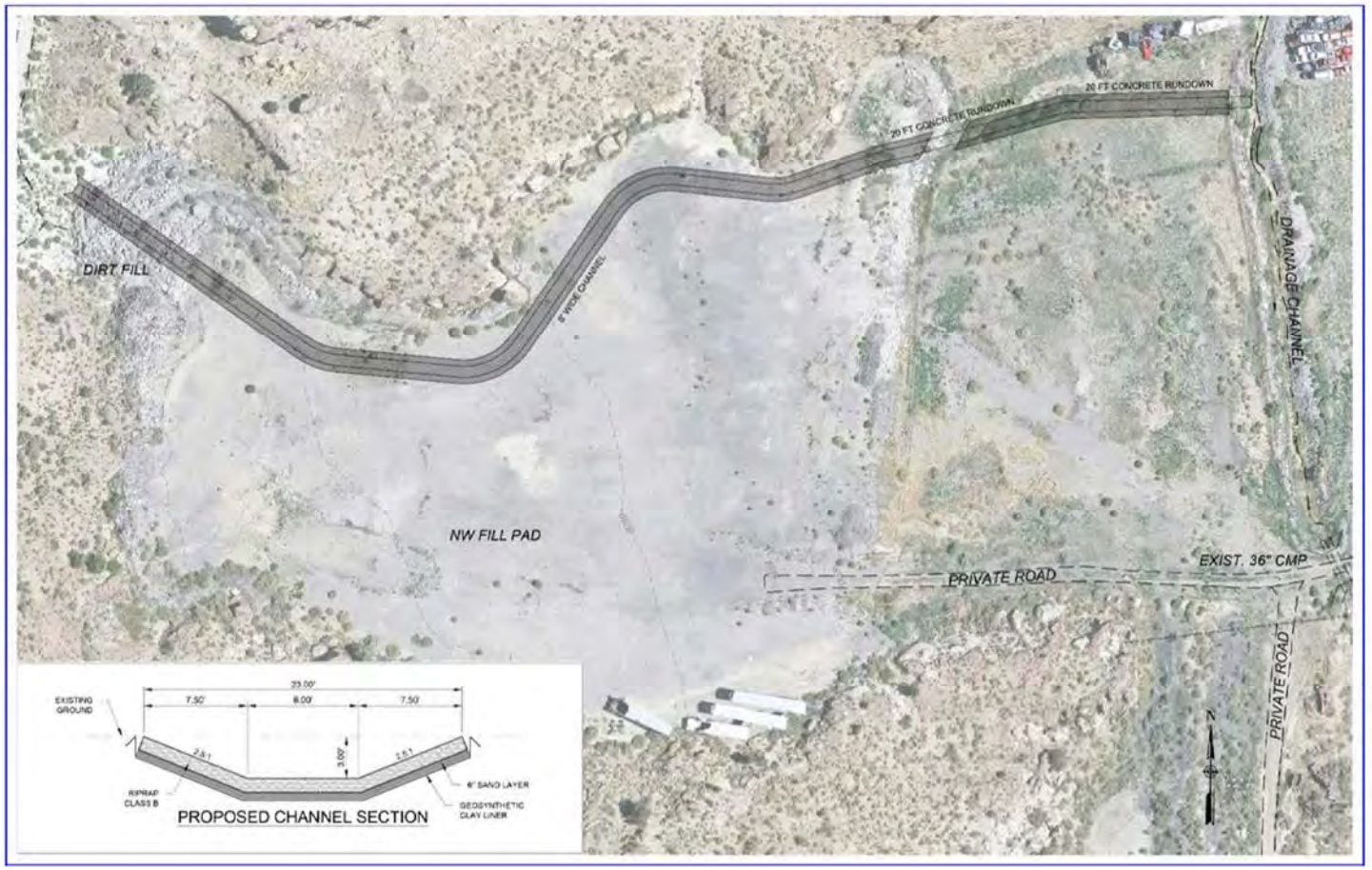


Mitigation Measures—Ground Improvements

- **Fencing:** Avoidance fencing and warning signs could be installed around sinkholes and tension cracks.
- **Backfilling:** Backfilling of abandoned underground workings by drilling and injection of stabilizing material.
- **Capping:** Capping is the closure of vertical mine openings such as shafts using concrete or steel.
- **Monitoring:** Any mitigation efforts aside from backfilling with cemented materials will likely need long-term monitoring.

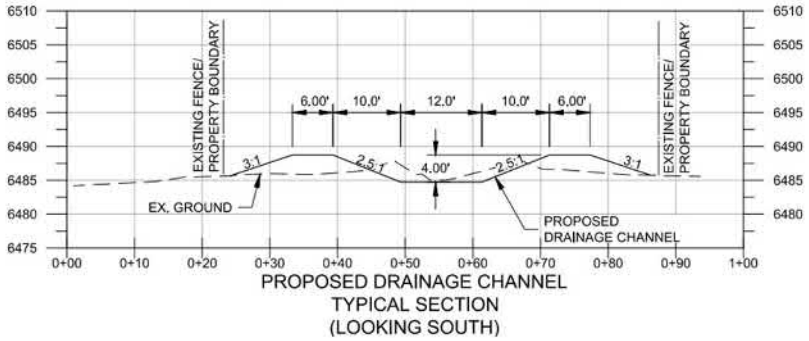
Mitigation Measures—Fill Pad Drainage Improvements

- **Fill Pad:** There is a man-made "fill pad" in the western portion of the project area that obstructs flows of an ephemeral tributary of the main north/south drainage in the area. The drainage would be re-established along the northern portion of the fill pad.

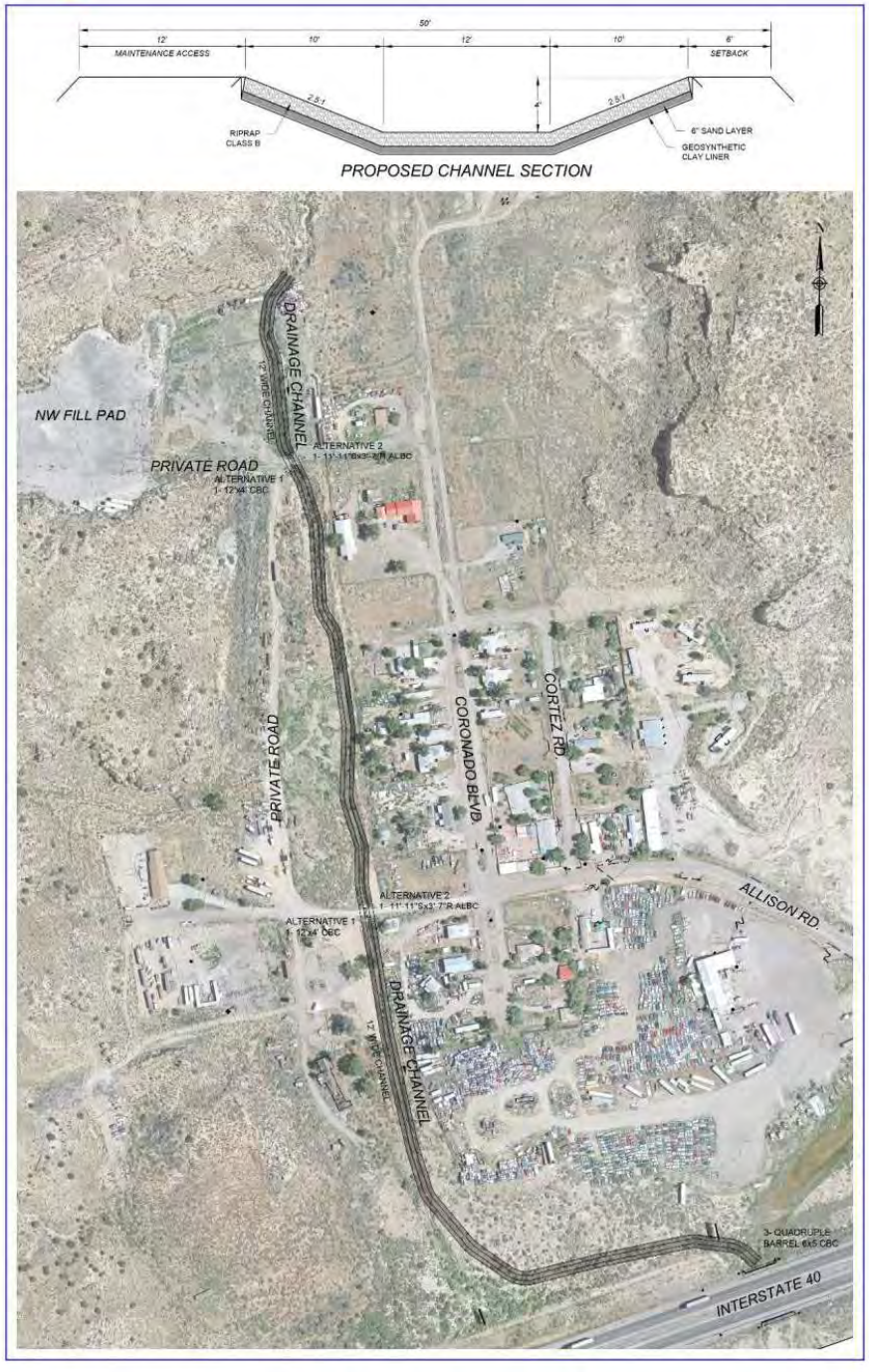


Mitigation Measures—Main Channel Drainage Improvements

- **Drainage Channel:** The main storm drain channel for the community runs roughly north/south and is located along the western edge of the main development. The drainage would be re-established as a trapezoidal channel. Concrete box culverts or aluminum box culverts under road crossings will be installed to pass drainage beneath road crossings.

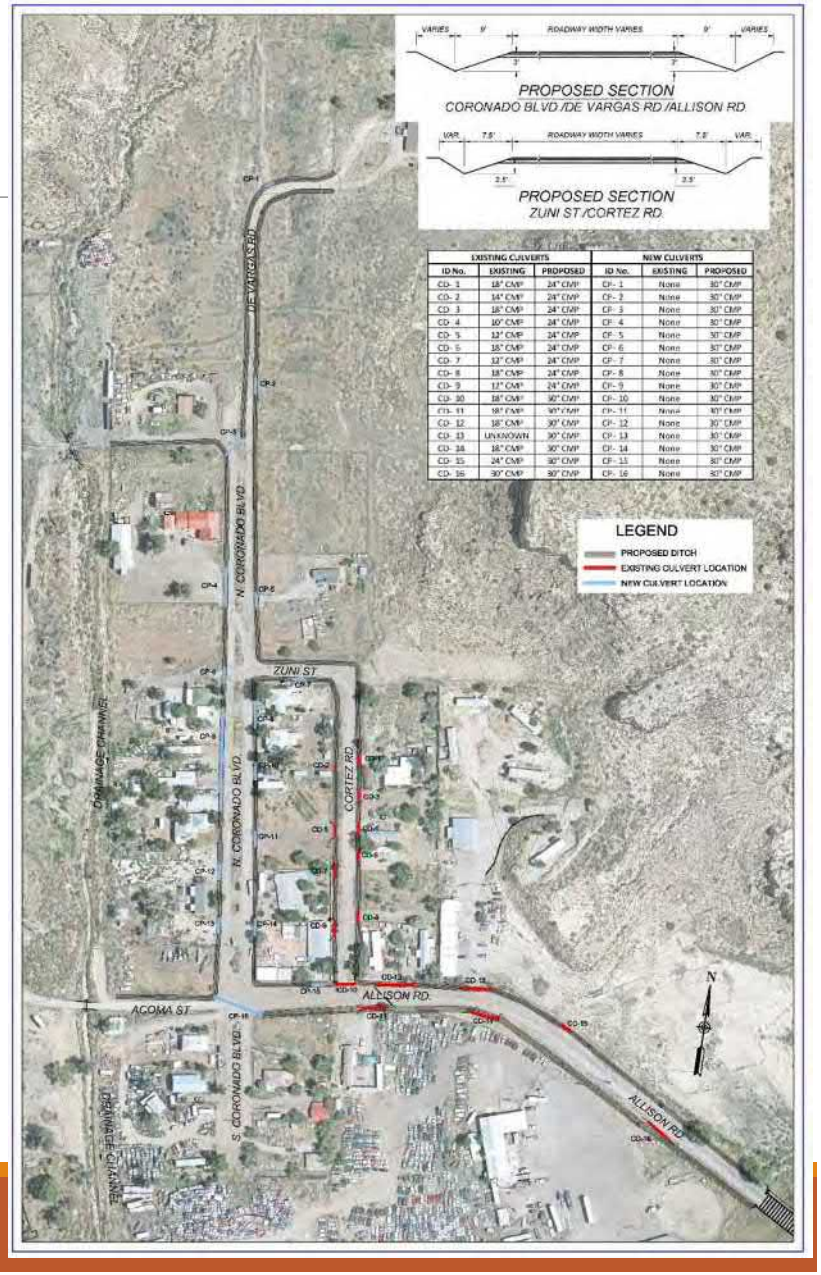


PROPOSED DRAINAGE CHANNEL
TYPICAL SECTION
(LOOKING SOUTH)



Mitigation Measures—Residential Area Improvements

- **Commercial/Residential Area Improvements:** The existing drainage ditches and culverts in the commercial and residential areas of Allison would be cleaned and re-established. Ditches would be between 2.5 and 3-ft in depth with 24-to-30-inch corrugated metal culverts at driveway crossings.



Drainage Channel Maintenance

- To be maintained: 1) Main trapezoidal channel; 2) Box culverts (concrete or metal) under road crossings; 3) Residential/Commercial area small ditches/culverts
- Visually inspect structures after large rain or snow melt runoff events and every 3 – 4 months.
- Cleaning after every seasonal flow is recommended. Seasonal flows increase chance of blockage by debris and silt. Anticipated regular cleaning every 6 – 8 months, when a structure has 20% silt accumulation at its location (i.e., almost ¼ filled).
  - Use backhoe tractor attachment, bobcat, compact excavator/digger, or similar
  - Hand shovels for smaller structures

Environmental Investigations—NEPA

- The project will use federal funds from the US Department of the Interior, Office of Surface Mining Reclamation and Enforcement (OSMRE).
- Because of this, the project will require an evaluation under the National Environmental Policy Act (NEPA).
- This analysis involves an Environmental Assessment (EA) supported by a cultural resources survey, biological survey, and public involvement.
- A Finding of No Significant Impact (FONSI) is anticipated but no decision will be made until at least August 2021.

Environmental Investigations—Cultural Resources

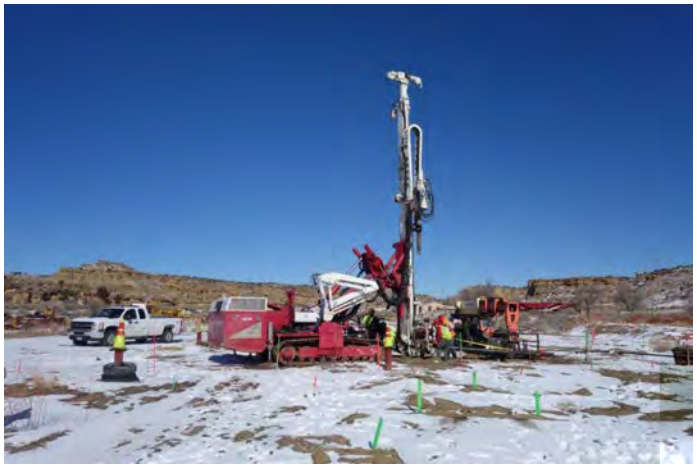
- Cultural Resources Survey was completed for the entire project area.
- Allison is a mining town established in the late 1800s to support coal mining operations.
- The townsite is eligible for listing in the National Register of Historic Places.
- Several historic features including artifacts, buildings, and mine openings are present.
- Important features will be avoided during mitigation activities.
- An Archaeologist will monitor activity in sensitive areas.

Environmental Investigations—Biology

- No species or habitat protected by the Endangered Species Act is present.
- The main north/south drainage may be regulated under the Clean Water Act (CWA). Consultation with the US Army Corps of Engineers is on-going.
- There is a large wetland at the southeast corner of the project area, adjacent to the main north/south drainage. The wetland will be avoided and will not be impacted by the project.
- Wetlands are protected by the CWA and Executive Order 11990, *Protection of Wetlands*.

Project Schedule and Next Steps

- NEPA Clearance: Summer 2021
- Geotechnical Exploration/Drilling: 2022
- Ground and Drainage Final Design: 2022
- Ground Improvements Construction: 2022-2023
- Drainage Improvements Construction: 2022-2023
- Additional Public Involvement to be scheduled in 2022 as design advances



How to Ask Questions or Comment

Phone Calls:

- Press *9 to raise your hand and the moderator will call on you to ask a question
- Press *6 to "unmute" and comment or ask your question
- Please state your name and affiliation (if applicable) before commenting or asking your question

Online:

- Comment/ask a question using the Q&A button or verbally
- To use the Q&A button, select the button, type your comment/question and hit "Send"
- To comment/ask your question verbally, please "raise your hand" using the button
  - The moderator will call on you
  - You will be prompted to unmute
- Please state your name before commenting or asking your question

Public Comment

- Comment now at the Virtual Public Meeting
- Comment later via Email, Phone, or Mail:

Jeff Fredine
Parametrix
9600 San Mateo Blvd.
Albuquerque, NM 87113
505-998-5552
Jfredine@parametrix.com

- Please provide comments by July 16, 2021

Thank you for your Input!

APPENDIX C

Geotechnical Maps and Drainage Improvement Plans

Figure 1: Seismic Refraction Locations (From Golder 2020).

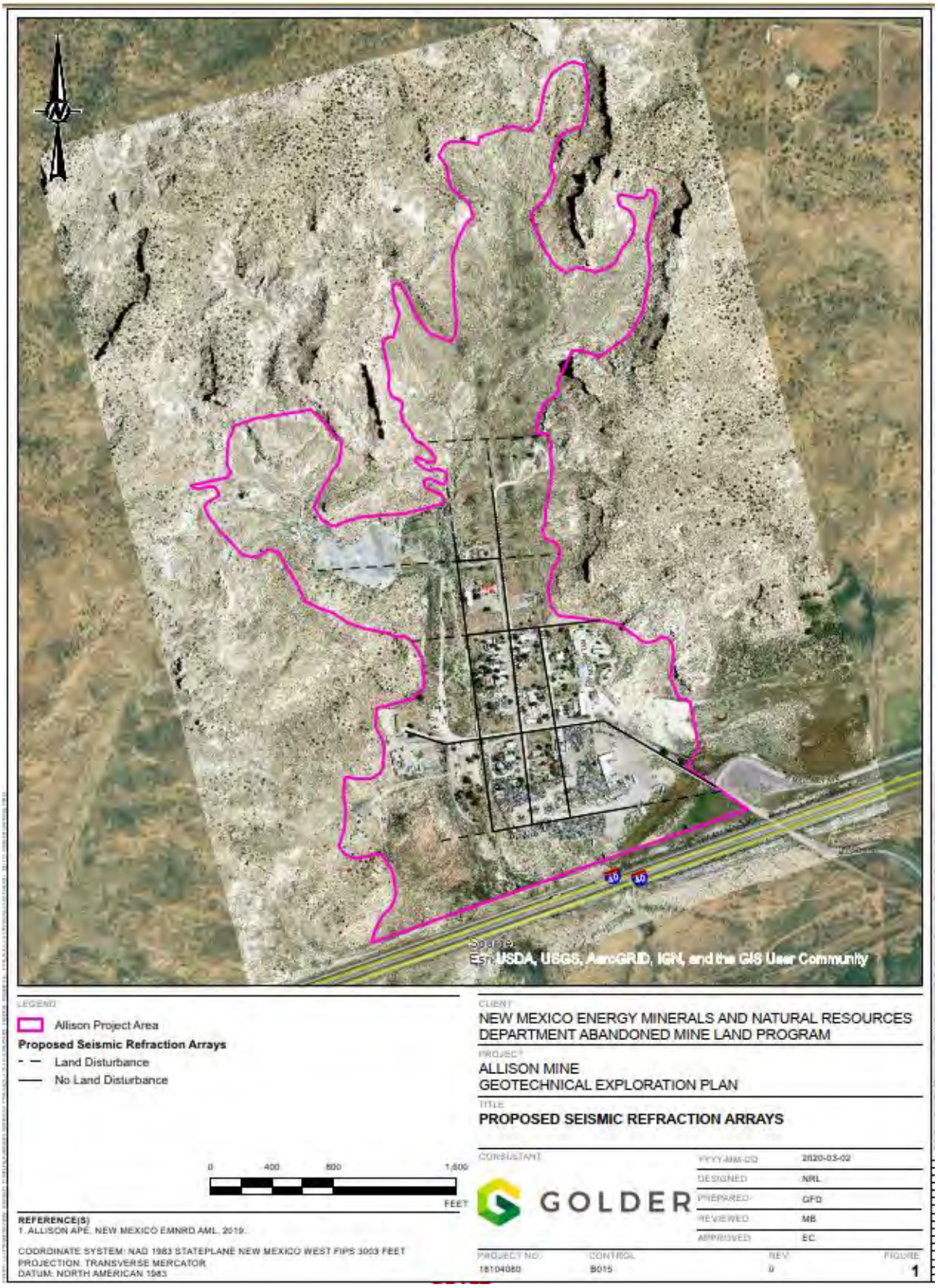
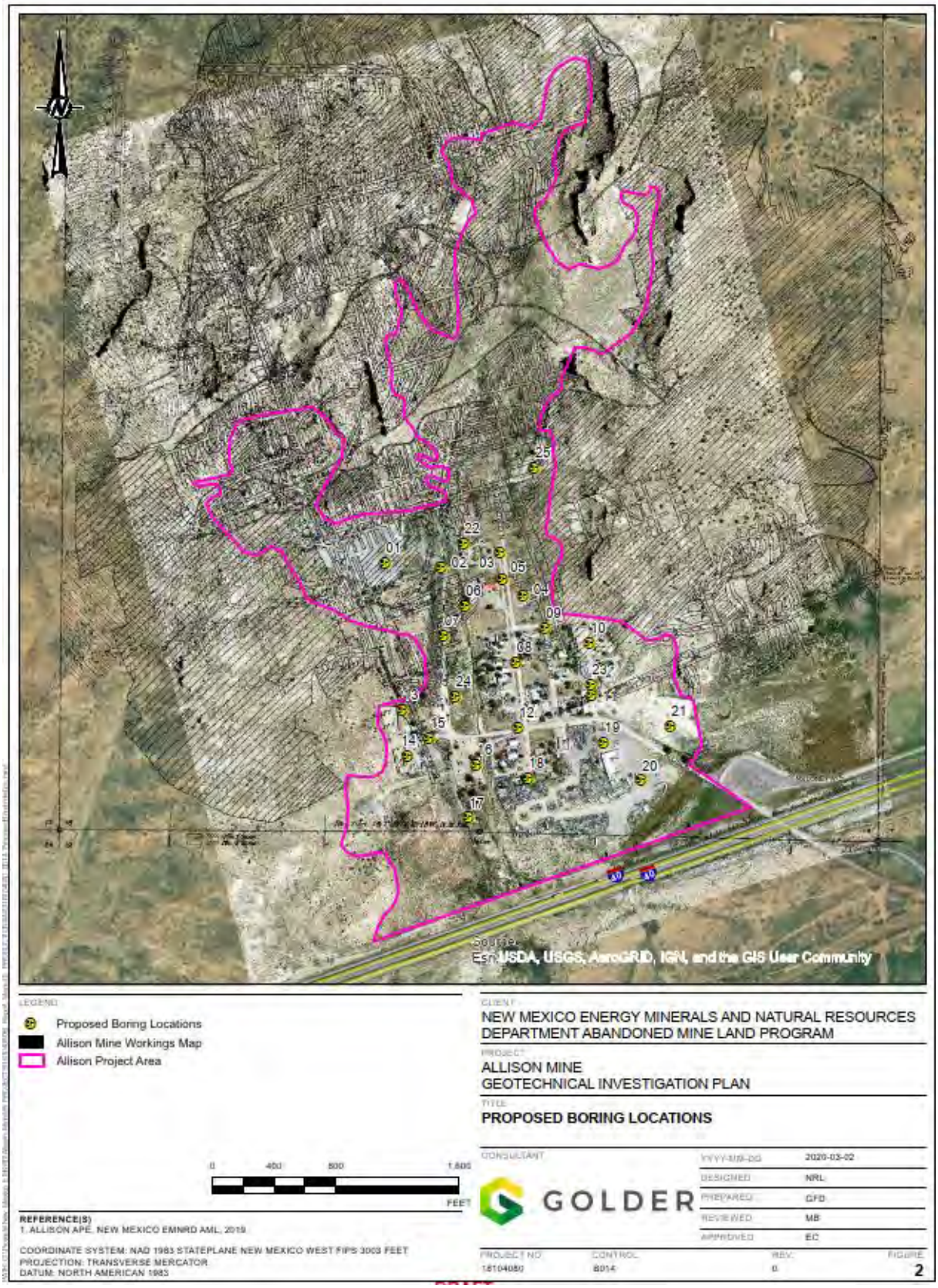
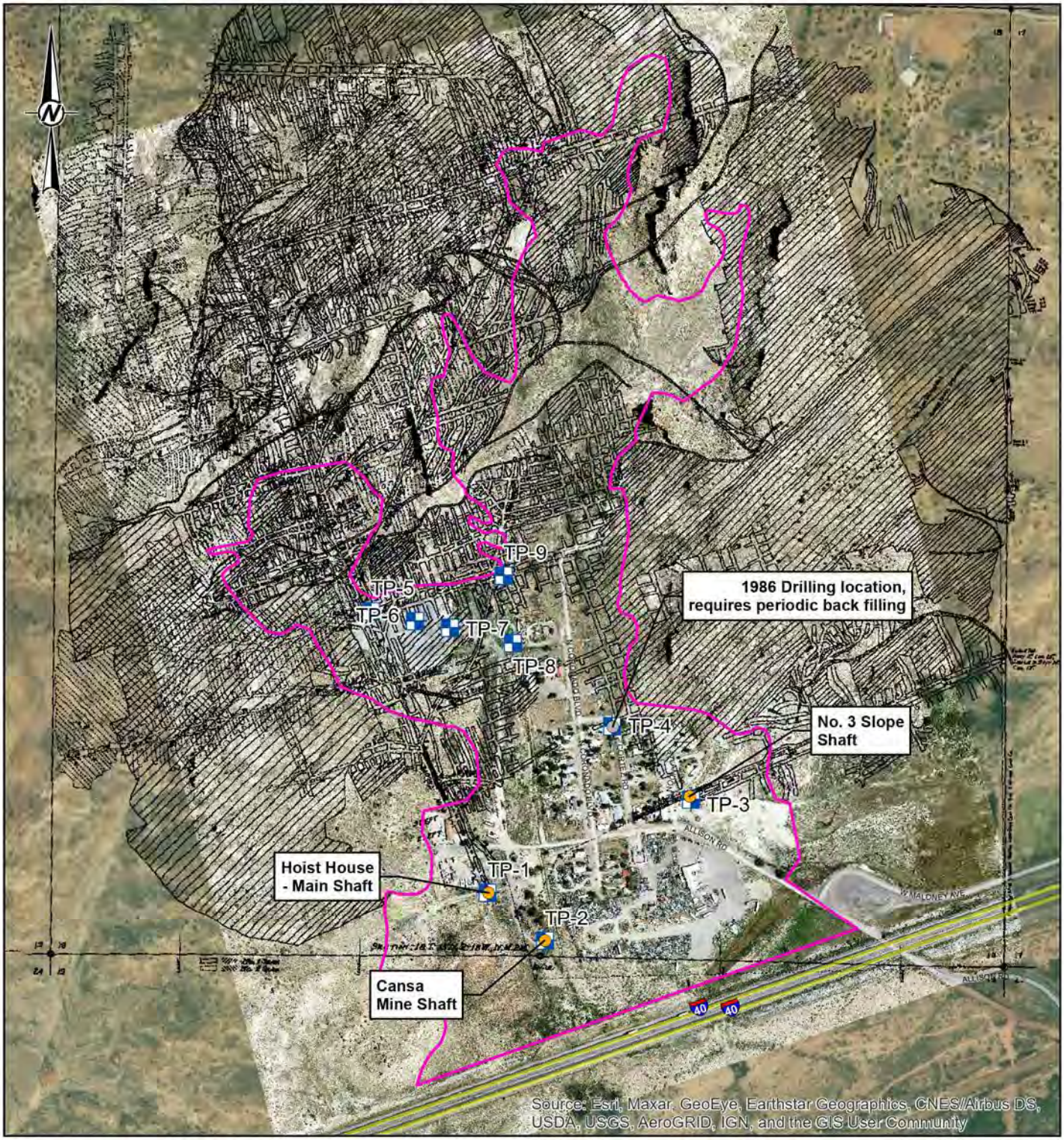


Figure 2: Initial Test Pit Locations (From Golder 2020).





LEGEND

- Test Pit Locations
- Allison Mine Workings Map
- Allison Project Extents (APE)

Field Findings

- Drill Hole
- Possible Shaft

0 400 800 1,600

FEET

REFERENCE(S)

1. ALLISON APE, NEW MEXICO EMNRD AML, 2019.
2. ALLISON MINE WORKINGS, MM-CO-00124 G; 4323; M2-2G3; H9; ALLISON; 1932U; G3; D5 MAP NO. 1533, NEW MEXICO BGMR & NEW MEXICO EMNRD AML

COORDINATE SYSTEM: NAD 1983 STATEPLANE NEW MEXICO WEST FIPS 3003 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
NEW MEXICO ENERGY MINERALS AND NATURAL RESOURCES DEPARTMENT ABANDONED MINE LAND PROGRAM

PROJECT
ALLISON MINE
GEOTECHINCAL EXPLORATION PLAN

TITLE
PROPOSED TEST PIT LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-22
DESIGNED	NRL
PREPARED	NRL
REVIEWED	JP
APPROVED	JC

PROJECT NO	CONTROL	REV.	FIGURE
18104080	B016	0	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

Figure 3: Fill Pad Channel (From WSP 2020).

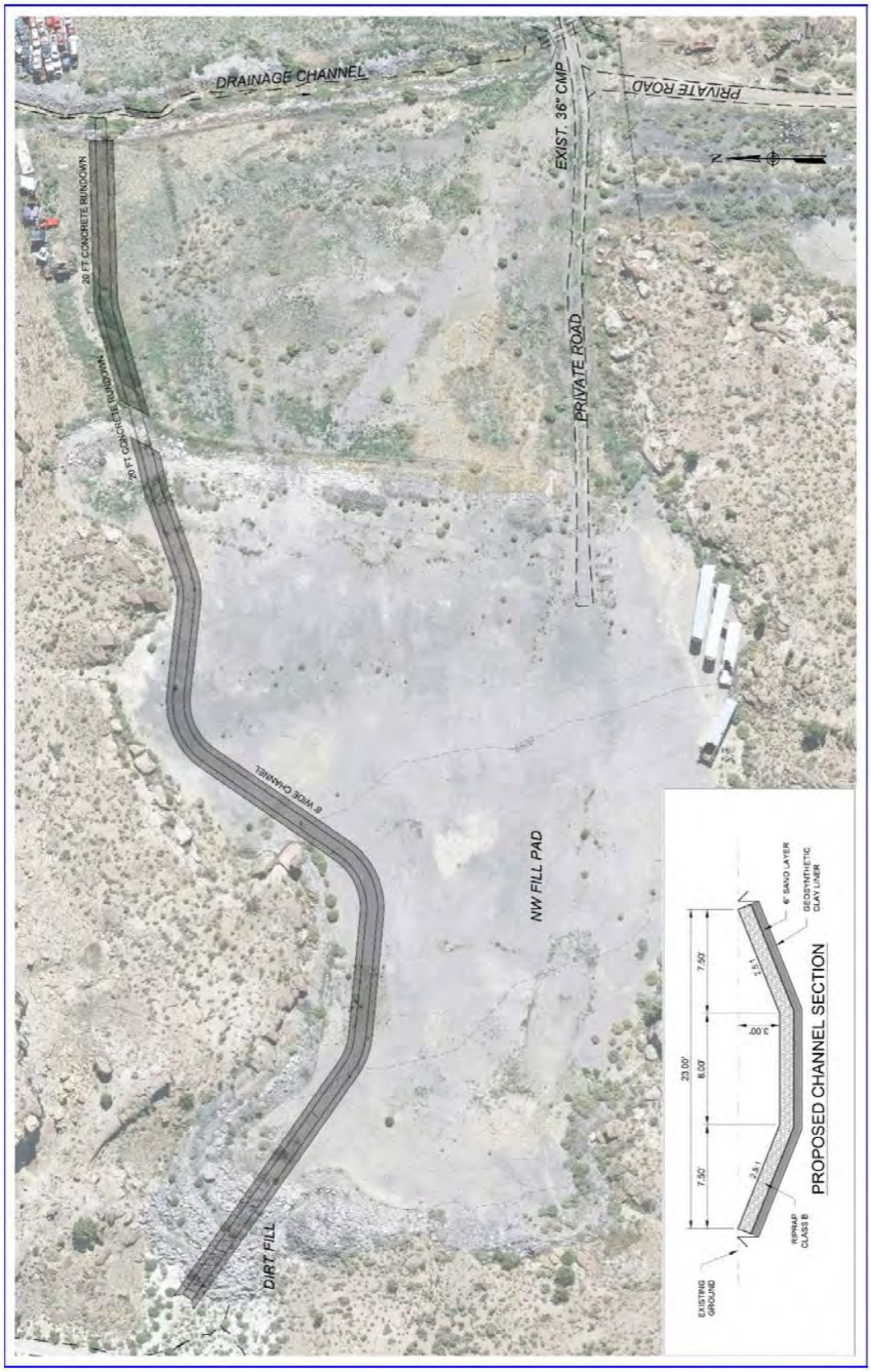


Figure 4: Main Drainage Channel (From WSP 2020).

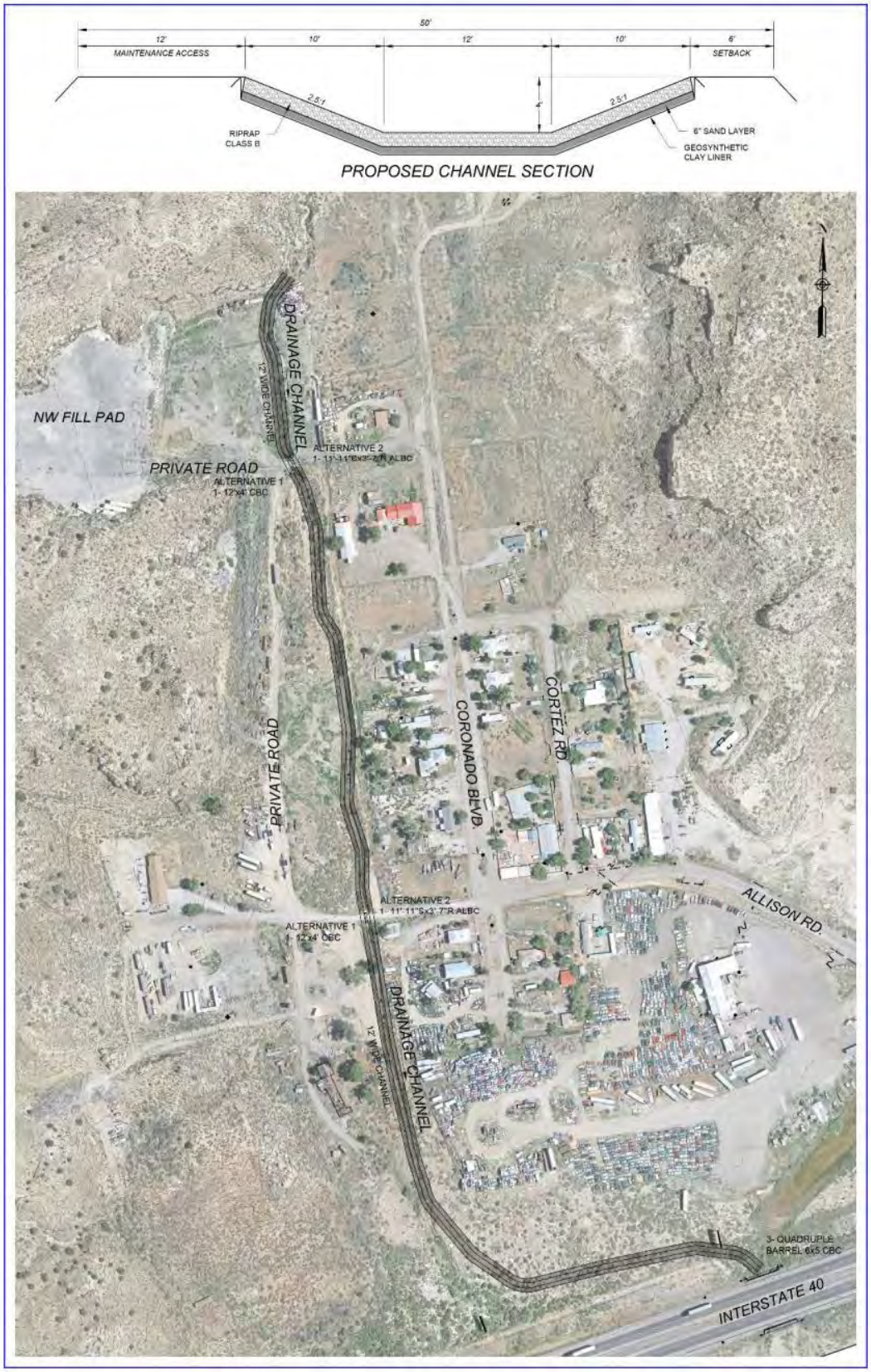
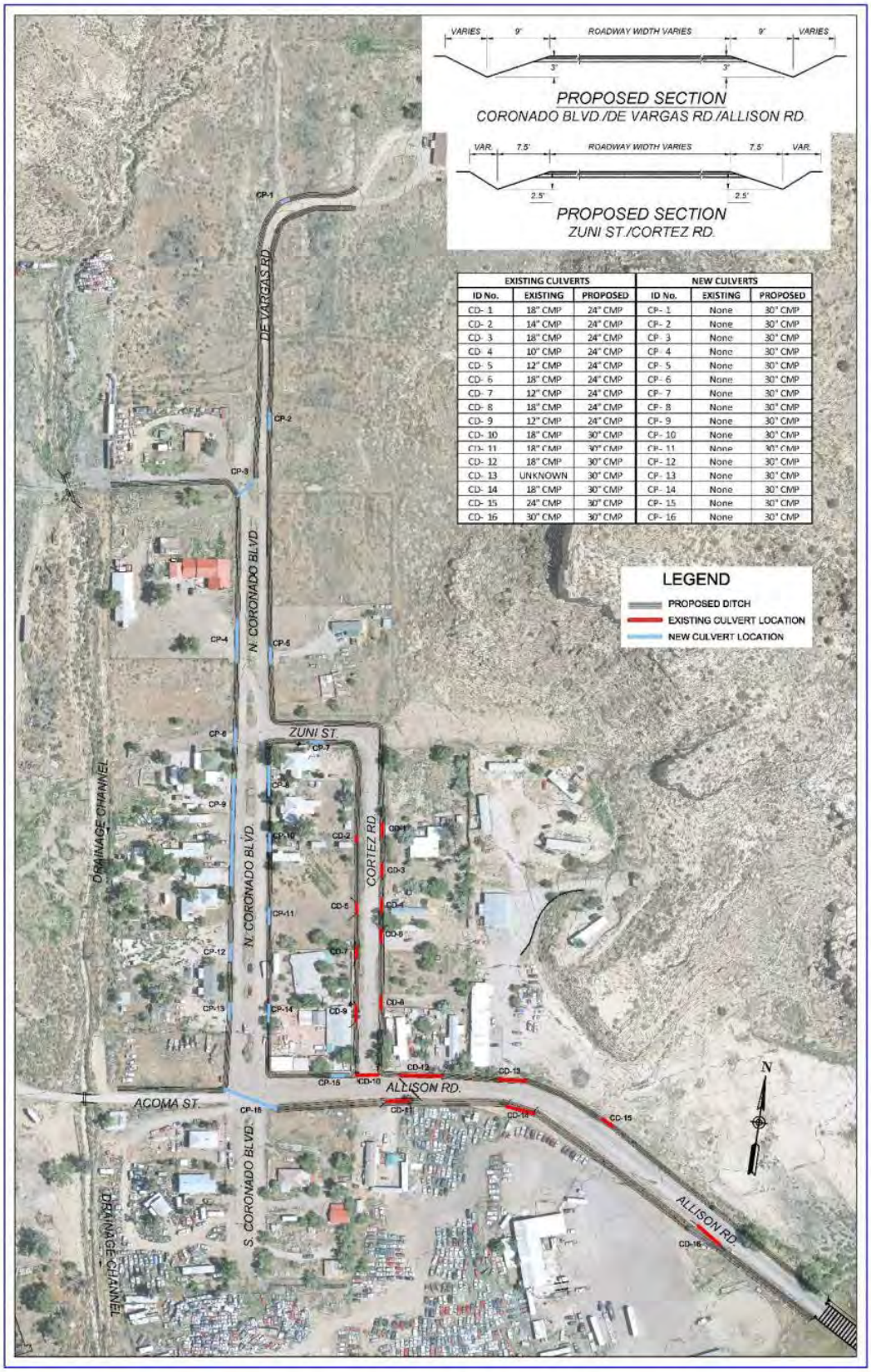


Figure 5: Culverts and Roadway drainage Locations (From WSP 2020).



EXISTING CULVERTS			NEW CULVERTS		
ID No.	EXISTING	PROPOSED	ID No.	EXISTING	PROPOSED
CD- 1	18" CMP	24" CMP	CP- 1	None	30" CMP
CD- 2	14" CMP	24" CMP	CP- 2	None	30" CMP
CD- 3	18" CMP	24" CMP	CP- 3	None	30" CMP
CD- 4	10" CMP	24" CMP	CP- 4	None	30" CMP
CD- 5	12" CMP	24" CMP	CP- 5	None	30" CMP
CD- 6	18" CMP	24" CMP	CP- 6	None	30" CMP
CD- 7	12" CMP	24" CMP	CP- 7	None	30" CMP
CD- 8	18" CMP	24" CMP	CP- 8	None	30" CMP
CD- 9	12" CMP	24" CMP	CP- 9	None	30" CMP
CD- 10	18" CMP	30" CMP	CP- 10	None	30" CMP
CD- 11	18" CMP	30" CMP	CP- 11	None	30" CMP
CD- 12	18" CMP	30" CMP	CP- 12	None	30" CMP
CD- 13	UNKNOWN	30" CMP	CP- 13	None	30" CMP
CD- 14	18" CMP	30" CMP	CP- 14	None	30" CMP
CD- 15	24" CMP	30" CMP	CP- 15	None	30" CMP
CD- 16	30" CMP	30" CMP	CP- 16	None	30" CMP

APPENDIX D

Biological Assessment/Biological Evaluation

BIOLOGICAL ASSESSMENT AND BIOLOGICAL EVALUATION FOR THE ALLISON MINE SUBSIDENCE PROJECT, MCKINLEY COUNTY, NEW MEXICO

Prepared for:

Abandoned Mine Land Program
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Office: 505-476-3590

Prepared by

Parametrix
9600 San Mateo Boulevard NE
Albuquerque, NM 87113
T. 505.821.4700 F. 1.855.542.6353
www.parametrix.com

December 2018 | 563-6341-004

Biological Assessment and Biological Evaluation for the Allison Mine Subsidence Project, McKinley County, New Mexico

Prepared for
Abandoned Mine Land Program
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Ph: 505-476-3590

Prepared by
Parametrix
9600 San Mateo Blvd. NE
Albuquerque, NM 87113
Ph: 505-821-4700
www.parametrix.com

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APPENDICES

ACRONYMS

AML	Abandoned Mine Land
BA	Biological Assessment
BE	Biological Evaluation
BABE	Biological Assessment and Biological Evaluation
BISON-M	Biota Information System of New Mexico
BS	Bachelor of Science
C	Celsius
CFR	Code of Federal Regulations
cm	Centimeters
EA	Environmental Assessment
ESA	Endangered Species Act
F	Fahrenheit
FEMA	Federal Emergency Management Agency
ft	Feet
I-40	Interstate 40
IPaC	Information for Planning and Consultation
km	Kilometers
m	Meters
MS	Master of Science
NEPA	National Environmental Policy Act
NHD	National Hydrology Dataset
NM	New Mexico
NMACP	New Mexico Avian Conservation Partners
NMAMLP	New Mexico Abandoned Mine Land Program
NMDA	New Mexico Department of Agriculture
NMDGF	New Mexico Department of Game and Fish
NMEMNRD	New Mexico Energy, Minerals and Natural Resources Department
NMERT	New Mexico Department of Game and Fish's Environmental Review Tool
NMRP	New Mexico Rare Plants
NMRPTC	New Mexico Rare Plant Technical Council

ACRONYMS (CONTINUED)

NWI	National Wetland Inventory
NRCS	Natural Resources Conservation Service
OSMRE	Office of Surface Mining Reclamation and Enforcement
PRISM	Parameter-elevation Regressio on Independ Slopes Model
Parametrix	Parametrix, Inc.
SERI	Species determined as those of Economic and Reactional Importance
SGCN	Species of Greatest Conservation Need
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1. INTRODUCTION AND OVERVIEW OF PROPOSED PROJECT

1.1 Scope of the Biological Assessment/Biological Evaluation

The New Mexico Abandoned Mine Land Program (NMAMLP) contracted with Parametrix, Inc. (Parametrix) to prepare this Biological Assessment and Biological Evaluation (BABE) to address future, non-emergency mine remediation activities that will be conducted at the abandoned underground coal mine at Allison, New Mexico. Major construction activities considered to be federal actions that significantly affect the quality of the human environment, as referred to in the National Environmental Policy Act (NEPA) of 1969 (42 US Code 4332[2][C]), must be evaluated in a Biological Assessment (BA). This document therefore complies with Section 7(a)(2) of the Endangered Species Act (ESA), which requires that these actions be evaluated to determine whether they are likely to jeopardize the continued existence of federally listed species including threatened, endangered, or proposed federal species, or result in the destruction or adverse modification of any critical habitat (Title 50 Code of Federal Regulations [CFR] 402.01). This report also provides information on the project area and action area, and evaluates potential effects of the proposed action on listed species and their habitats (50 CFR 402.02). As a combined BA and Biological Evaluation (BE), this document also presents the findings of a pedestrian biological survey of the project area and takes into consideration the action area; describes natural resources and species observed in the project area; provides analyses of impacts resulting from the proposed project; and recommends measures to avoid, minimize, and/or mitigate impacts to natural resources and species consistent with federal, state, and local laws.

1.2 Project Location

The historic coal mining community of Allison, New Mexico is located at the southern end of a small canyon north of Interstate 40 (I-40), approximately 2.48 miles (4 kilometers [km]) west of Gallup, New Mexico in McKinley County (Figure 1-1 and Figure 1-2). An unnamed ephemeral drainage flows through Allison from the northern end of the canyon to the Rio Puerco south of Allison and I-40 (USGS 2011a). Allison is located in the southern half of Section 18, Township 15 North, Range 18 West, and is found on the *Gallup West* United States Geological Survey 7.5-minute quadrangle map. Historical records indicate that Allison was a company town of the Diamond Coal Company, and the mine at Allison was a room-and-pillar underground coal mine that was in operation from 1893 to 1939 (Hegberg and Cordero 2017).

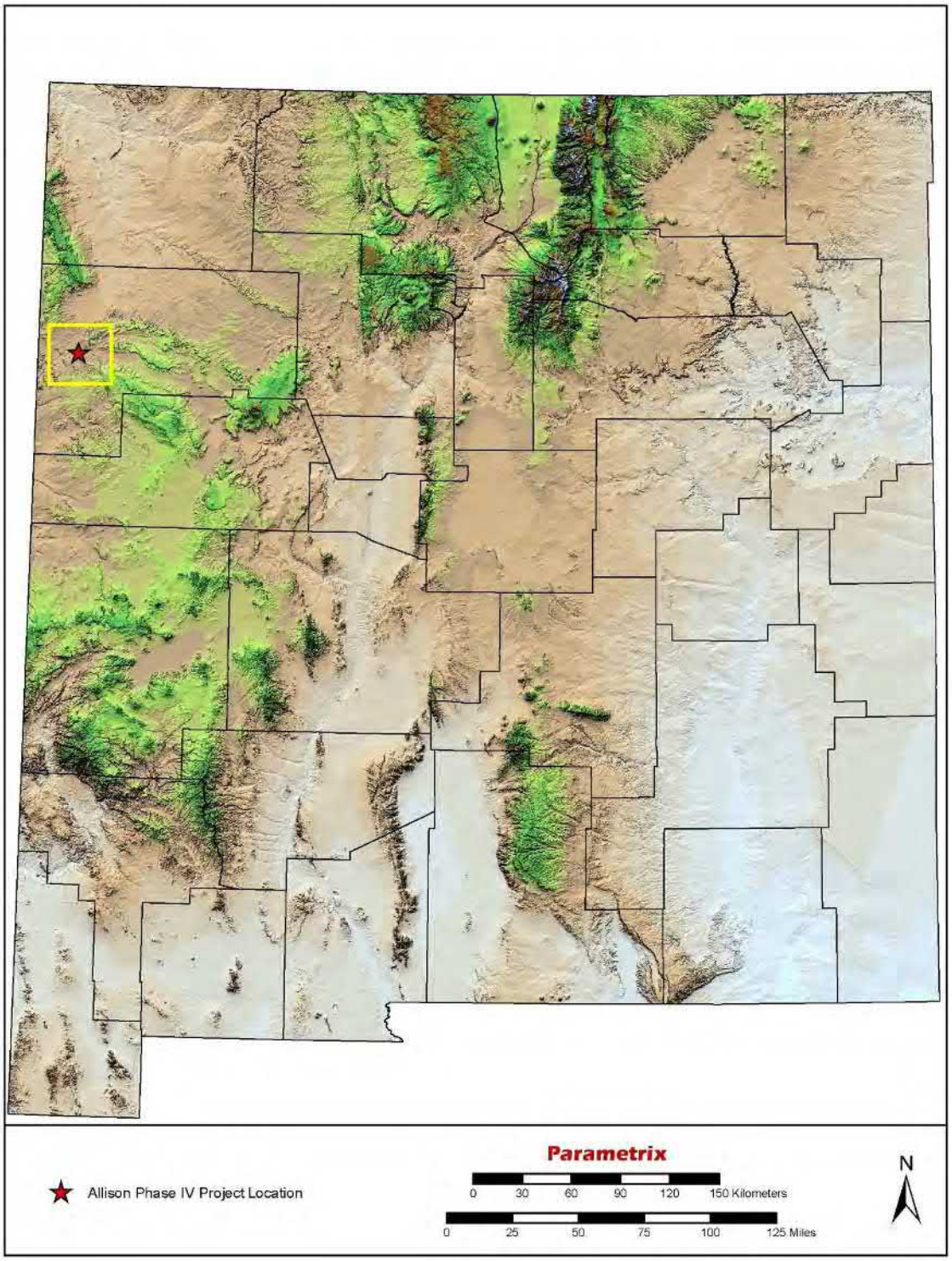

Figure 1-1. Project Location

Figure 1-2. 7.5-Minute (1:24,000 Scale) Aerial Map of the Proposed Phase IV Project Area at Allison, New Mexico.

2. PROPOSED ACTION

This BABE addresses a future phase of non-emergency mine remediation work planned for the abandoned coal mine at Allison, New Mexico. This proposed action is described further below, following the below summary of previous (Phase I–III) emergency abatement actions at the site.

2.1 History of Emergency Actions (Phases I through III)

The NMAMLP recently completed emergency construction activities to abate hazardous conditions caused by subsidence features that opened in 2015 and 2016, above the abandoned underground coal mine at Allison (NMAMLP 2017). These subsidence features, including sinkholes, ground cracks, and piping holes, were located in the backyards of residential properties along Coronado Boulevard, the primary north/south route through Allison. The 2015 subsidence feature consisted primarily of a sinkhole approximately 90 feet (ft) long by 45 ft wide by 20 ft deep (27 by 14 by 6 meters [m]), surrounded by ground cracks and piping holes within an area of approximately 150 by 75 ft (46 by 23 m). A second and third sinkhole opened in 2016, in close proximity to the first sinkhole. The second sinkhole measured approximately 20 ft long by 10 ft wide by 8 ft deep (6 by 3 by 2 m). The third was initially a circular opening 2 ft (0.6 m) in diameter but eventually widened to 5 ft (1.5 m) in diameter and 3 ft (0.9 m) deep.

The Allison Mine Emergency Project that addressed these conditions was completed in phases, beginning in 2016 with a geotechnical investigation, which concluded that the sinkhole was likely caused by (1) deterioration of underground mine workings below the sinkhole, (2) subsidence of alluvial soil above the mine workings, and (3) erosion of alluvial soil into the mine workings. The Phase I geotechnical investigation was followed by Phase I construction work consisting of excavation and removal of loose soil and debris from the sinkhole, backfilling with rubblized concrete and a soil cover, and earthwork to reestablish an existing drainage channel over the backfilled sinkhole.

New subsidence features appeared at the project site within a few months of completion of the Phase I construction and in February 2017, a Phase II geotechnical investigation was conducted to assess subsurface conditions at the site and to provide recommendations for further construction work, which was defined by the NMAMLP as Phase III of the emergency project. Phase III construction activities at Allison occurred over a period of approximately 21 weeks, between January and June 2018. Weekly construction summaries were produced by NMAMLP staff indicating that these activities included:

- Removal of an existing safety fence and a section of a damaged residential fence;
- Site clearing and grubbing;
- Bulkhead drilling and grouting;
- Excavation of loose soil within the (new) sinkhole, ground cracks, and piping holes;
- Backfilling of the sinkhole, ground cracks, and piping holes;
- Drilling and compaction grouting of loose soils;
- Earthwork to re-establish an existing drainage channel within the project limits;
- Construction of (replacement) residential property line fencing;
- Replacement of a residential septic system and leach field that was damaged by subsidence and posed a public hazard; and
- Seedbed preparation, seeding, and mulching across all disturbed areas of the work site.

Final project inspection by personnel from the NMAMLP and a construction management subcontractor, occurred on June 8, 2018. The emergency work conducted in Phases I–III was authorized by the Office of Surface Mining Reclamation and Enforcement (OSMRE), Program Support Division, and environmental compliance efforts were documented by OSMRE in a Categorical Exclusion Determination (OSMRE 2016) for the initial abatement work completed in February 2016 (Phase I). Additional environmental compliance efforts were conducted for subsequent phases (Phase II/III) of the Allison Emergency Project and documented in a memorandum completed for the NMAMLP in September 2018 (Parametrix 2018a). Environmental compliance for the planned non-emergency (Phase IV) activities at Allison, the Proposed Action described below, will be documented in an Environmental Assessment (EA) that will include the findings and management recommendations presented in this BABE.

2.2 Proposed Action – Phase IV

The Phase IV project area (see Figure 1-2) encompasses 173.5 acres (70.21 hectares), including the Phase I-III Allison Emergency Project areas. The proposed action consists of the following non-emergency construction activities that may occur in the Phase IV project area:

- Geotechnical studies;
- Drilling exploratory boreholes to define the extent of underground voids;
- Widening, straightening, and lining portions of the existing drainage channel through the subsidence area to improve hydraulic characteristics;
- Controlling flow and run-off from stormwater surrounding subsidence areas;
- Filling ground cracks and holes with concrete grout or other flowable fill; and
- Continued monitoring of subsidence around previously backfilled sinkholes.

3. PREVIOUS RESOURCE INVESTIGATIONS

Several recent investigations of cultural and natural resources have intersected or encompassed the Phase IV project area at Allison. In 2012, a pedestrian natural resources survey of a portion of the Phase IV project area was completed for a road improvements project for the Allison Road Corridor and I-40 Interchange at Gallup, McKinley County, New Mexico, from I-40 milepost 19.3 to 20.2 (Parametrix 2012a). In addition, a wetland delineation report for this same road project was produced in 2012 (Parametrix 2012b).

In 2017, a cultural resources survey was conducted at Allison (Hegberg and Cordero 2017), covering the same 173.5-acre (70.21-hectare) area that has been defined as the Phase IV project area to be assessed and evaluated in this BABE.

In addition to providing an assessment of potential impacts related to the proposed Phase IV project work, this BABE presents the findings from pedestrian natural resources surveys conducted by Parametrix of the entire Phase IV project area in December 2017 (Parametrix 2018b) and May 2018 (Parametrix 2018c), as well as a post-construction nest/avian survey that was conducted in July 2018 following the end of the Phase II/III emergency work at Allison.

On December 20 and 21, 2018, Parametrix biologists surveyed the entire Phase IV project area at Allison, which also encompasses the emergency work sites (Phases I–III). The purpose of this survey was to document and assess potential effects to any potential federally or state-listed species, including rare plants, that might be impacted by future Phase IV mine remediation activities, and to provide

recommendations regarding the need for any additional field investigations. Based on the data collected in December 2017, Parametrix recommended that additional surveys be conducted in spring 2018.

4. ACTION AREA

Parametrix evaluated possible impacts from the proposed project for all special-status species that could potentially utilize the Phase IV project action area. The U.S. Fish and Wildlife Service (USFWS) defines an action area as areas that could be directly or indirectly affected by a federal action (50 CFR 402.02). For the Phase IV project, the action area includes the 173.5-acre (70.21-hectare) project area defined by the NMAMLP (see Figure 1-2) and a 1-mile (1.61-km) buffer surrounding the project area, as defined by the New Mexico Department of Game and Fish (NMDGF) for this project (NMDGF 2018a). This buffer area includes areas outside of the Phase IV project area where temporary noise disturbance from construction activities and/or ground disturbance may impact listed species.

5. ENVIRONMENT AND EXISTING CONDITIONS

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

5.1 Methods

5.1.1 Pre-field Methods

Prior to the field survey, federally listed plant and animal species for this project area were reviewed through the USFWS's Information for Planning and Consultation (IPaC) resources list (USFWS 2017a, 2018), and state-listed plants were reviewed on the New Mexico Energy, Minerals and Natural Resources Department (NMEMNRD) website [NMEMNRD 2017] and the New Mexico Rare Plant Technical Council (NMRPTC) website (NMRPTC 1999a). The NMRPTC and NMEMNRD websites were also consulted for a list of rare plants in McKinley County (Appendix A). State-listed animals identified in McKinley County were compiled from the NMDGF's Biota Information System (BISON-M) [NMDGF 2017a]. Pre-field data reviewed also included the National Hydrology Dataset (NHD) [USGS 2017] and the National Wetland Inventory (NWI) [USFWS 2017b].

5.1.2 Field Methods

A 100-percent, pedestrian survey was conducted to evaluate potential impacts to threatened or endangered species, migratory birds, rare plants or other vegetation, waterways and wetlands, and other natural resources within the area of potential effects (APE) [see Figure 1-2] defined by NMAMLP for the Phase IV project. This field effort involved walking transects approximately 50 ft (15 m) wide from the southern boundary of the APE to the northern boundary, and from the western boundary to the eastern boundary of the APE in a grid pattern, until 100-percent of the ground area had been surveyed. Approximately 72 person-hours were needed to complete the natural resources survey of the 173.5-acre (70.21-hectare) APE, including the mapping of the wetland and waterways. Field work was conducted in December 2017, and May and July 2018 (see detailed discussion of field work dates and activities further below in Section 6: *Results of the Field Survey*).

Survey field work was conducted by Robert Sivinski, Parametrix Senior Botanist, and Jenny Lisignoli, Senior Biologist and Parametrix Natural Resources Program Lead. Ms. Lisignoli has 27 years of professional experience conducting natural resources compliance investigations in the Southwest, including inventory surveys of wildlife, vegetation, and water resources. She has Bachelor of Science (BS, 1989) and Master of Science (MS, 1991) degrees in Renewable Natural Resources-Wildlife and Fisheries Sciences. Mr. Sivinski has over 38 years of professional experience and previously served as the State Botanist and Program Manager for the Rare and Endangered Plant Program at the NMEMNRD for 22 years. He has BS (1978) and MS (1980) degrees in Wildlife Biology. Ms. Lisignoli and Mr. Sivinski are authorized to conduct surveys for federally listed species under Parametrix's USFWS Permit Number TE819477-0, and both are also certified to conduct wetland delineation determinations.

The field surveyors examined all areas of the Phase IV APE for vegetation species, documenting all species detected, and noted habitat differences observed during the survey. They also documented mammals, reptiles, their tracks and scat, and birds present in the APE. Binoculars were used to positively identify avian and mammalian species observed at a distance. Photographs were taken of representative habitats within the APE, and along the boundaries of the APE where wildlife species or their sign were detected, and where the wetland and waterways were encountered.

Apple iPad tablets linked to Trimble R1 Global Positioning System (GPS) receivers set up with the ESRI Collector App were used in the field to record locations of any pertinent field data. These data were collected using the North American Datum (NAD) 83 Universal Transverse Mercator coordinates, and differentially corrected for sub-meter accuracy. A project area webmap was produced and set up with a confidential username and password for the NMAMLP Allison Emergency Project team to access the data collected. The online database that was created for this project contained locations of rare plants, potential nesting and breeding habitat, and any animals observed during the field surveys, as well as locations of any additional ground holes observed in the field. Ordinary high water marks in unnamed waterways in the project area were also mapped and recorded on the tablet, and one wetland was identified and its boundaries were delineated. Geo-referenced photographic documentation of the field surveys was also uploaded so the project team could visually review data collected in the field at any time. The webmap allows the NMAMLP the ability to determine how much acreage may be impacted by future project activities anywhere within the APE. Results of the field work are presented further below, following the summary of the project area's existing conditions.

5.1.3 Climate

Climate information for this project was compiled using the PRISM (Parameter-elevation Regression on Independent Slopes Model) database (PRISM Climate Group 2018). The project area is semi-arid with large seasonal variations in local conditions. Average monthly minimum temperatures previously recorded from February 2009 to December 2017 were compiled for the Gallup Municipal Airport Weather station (#293422). Monthly average annual minimum temperatures ranged from 17 degrees Fahrenheit (F) [-8.3 Celsius (C)] in January, to 55.4 F (13.0 C) in July. The average annual minimum temperature from 2009 through 2017 was 32.15 degrees F (0.83 C). Average monthly maximum temperatures range from 39.3 F (4.0 C) in January, to 85.3 F (29.6 C) in July (PRISM Climate Group 2018). The average annual maximum temperature from 2009 through 2017 was 62.68 degrees F (17.11 C) [PRISM Climate Group 2018]. Precipitation data available from 2009 through 2015 for the project area includes rain and snow combined. Precipitation here has a bimodal distribution, with most precipitation occurring in the winter (November through January) and in the summer (July through September). Annual precipitation was 15.07 inches (38.28 centimeters [cm]) [PRISM Climate Group 2018].

5.1.4 Physiography and Geology

Pre-field review of ecoregions in the Phase IV APE determined that the area falls within the Semiarid Tablelands subregion of the Arizona/New Mexico Plateau (USGS 2011a, b). This area consists of mesas, plateaus, cliffs, and valleys with some ephemeral and intermittent streams. The elevation range for the Semiarid tablelands is 5,200 ft to 8,748 ft (1,585 m to 2,666 m). Geology consists of Quaternary colluvium with valley-fill alluvium, basalt flows colluvium, and discontinuous aeolian deposits; Cretaceous, Jurassic, and Triassic sedimentary rocks of sandstone, shale, and mudstone; and some areas of Tertiary and Quaternary volcanic fields (USGS 2011b).

5.1.5 Soils

Prior to the field survey, a soil survey report was compiled for the Phase IV APE, utilizing the Natural Resources Conservation Service's (NRCS's) Web Soil Survey data (NRCS 2018). This soil survey report shows there are three soil types within this project area. These include Mentmore loam, Eagleye-Atchee-Rock outcrop complex, and Breadsprings and Nahodish soils (Table 5-1 and Figure 5-1 below, and Appendix B).

Table 5-1. Soils Present in the Allison Phase IV APE, Located in McKinley County, New Mexico

Map Unit Name	Map Unit Symbol	Acres in Project Area	Percent Soil in Project Area	Location in Project Area	Slope Percent	Drainage Class and Depth to Restrictive Layer	Soil profile
Breadsprings and Nahodish soils	240	25.2	14.5	Stream terraces and valley floors	0 to 2	Well-drained; >80 inches	Silty loam, silty clay, and silty clay loam
Mentmore loam	241	77.2	44.6	Drainageways, fan remnants on valley sides, and side slopes	1 to 8	Well-drained; >80 inches	Loam, clay loam, and sandy clay loam.
Eagleye-Atchee-Rock outcrop complex	258	70.7	40.8	Ridges and hills; backslopes, footslopes, shoulders, and toeslopes; side slopes, nose slopes, and head slopes	5 to 35	Well-drained; 5 to 20 inches to paralithic bedrock	Gravelly clay loam - 0 to 2 inches, clay - 2 to 10 inches, and bedrock - 10 to 20 inches.

Source: NRCS 2018

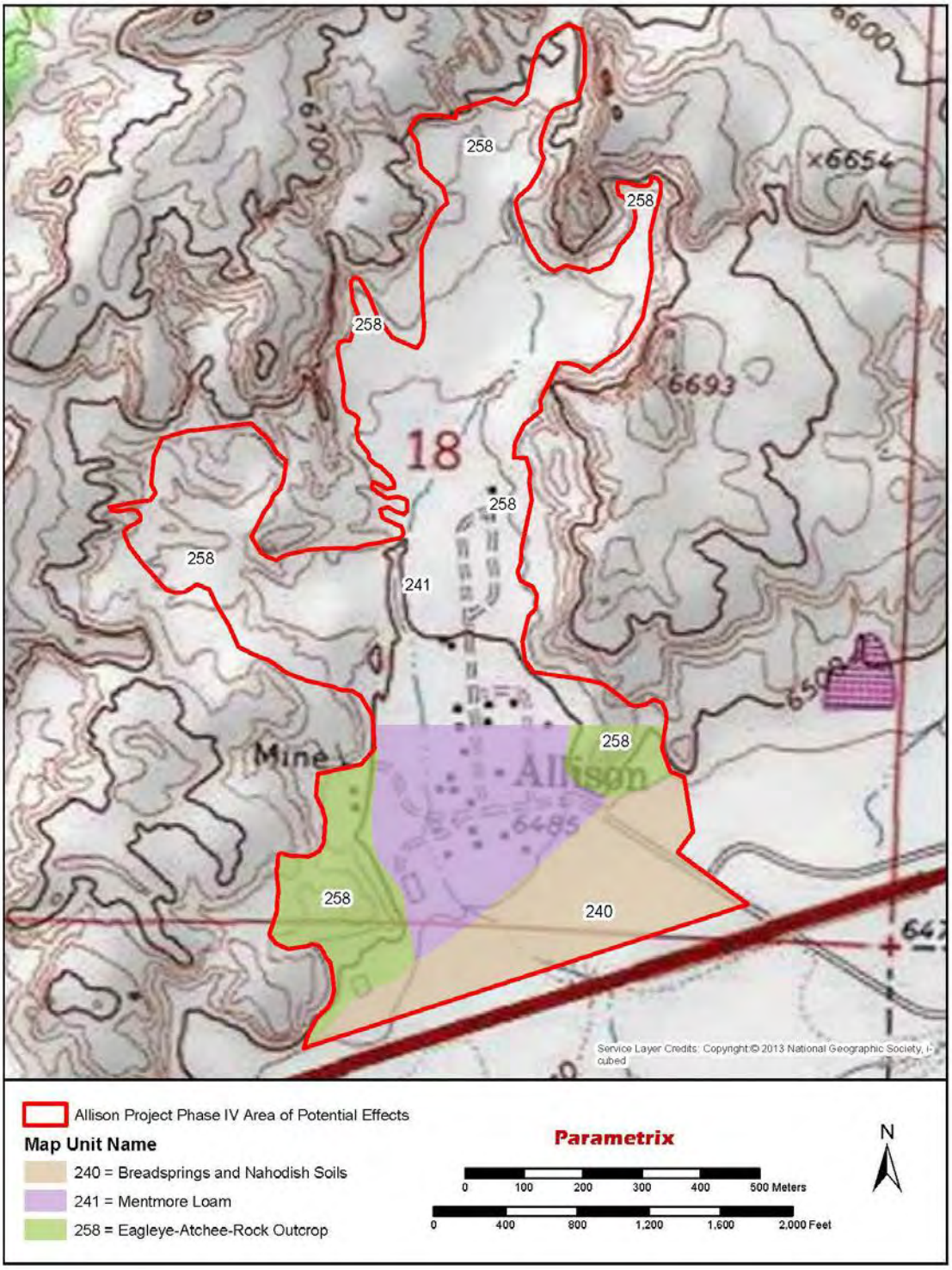

Figure 5-1. Soil Classification within the Allison Mine Phase IV APE

5.1.6 Waterways, Wetlands, and Floodplains

5.1.6.1 Waterways

Pre-field review of the NHD indicated that the Phase IV APE is located within the Upper Puerco watershed (hydrologic unit 15020006) [USGS 2017]. One unnamed waterway, classified as an intermittent riverine channel, temporarily and seasonally flows 2.77 miles (4.46 km) from the north head of the canyon, south through Allison toward the Rio Puerco – which is located just south of I-40 (USGS 2017) [Figure 5-2; Appendix C]. Prior consultation between the U.S. Army Corps of Engineers (USACE) and NMAMLP determined that there are no jurisdictional waters of the U.S. within the project site (Appendix C). USACE Action Number SPA-2016-00322 was assigned to the project and an approved jurisdictional determination was issued, based on a finding that the project site contains only isolated waters (Appendix C).

5.1.6.2 Wetlands

Pre-field review of the NWI data (USFWS 2017b) determined that no wetlands were previously mapped within the Phase IV APE (see Figure 5-2).

5.1.6.3 Floodplains

Pre-field review indicated that the Allison Phase IV APE lies within Zone X, an area of minimal flood hazard (Federal Emergency Management Agency [FEMA] 2018). Zone X for this area refers to a zone determined to be outside the 500-year flood and is typically protected by a levee from 100-year floods (FEMA 2018) [Appendix C].

5.1.7 Vegetation

Prior to the field survey, the GAP/LANDFIRE National Terrestrial Ecosystems Database (USGS 2011a) was reviewed to determine the landcovers within the Phase IV APE. Eleven ecological systems were identified in this project area (Figure 5-3). These included:

- Inter-Mountain Basins Greasewood Flat - Ecological System #457
- Inter-Mountain Basins Mat Saltbush Shrubland - Ecological System #484
- Colorado Plateau Pinyon-Juniper Woodland - Ecological System #187
- Inter-Mountain Basins Semi-Desert Shrub Steppe - Ecological System #498
- Developed, Open Space - Ecological System #581
- Developed, Low Intensity - Ecological System #582
- Developed, Medium Intensity - Ecological System #583
- Inter-Mountain Basins Mixed Salt Desert Scrub - Ecological System #485
- Rocky Mountain Subalpine-Montane Riparian Shrubland - Ecological System #439
- North American Warm Desert Bedrock Cliff and Outcrop - Ecological System #539
- Madrean Encinal - Ecological System #46

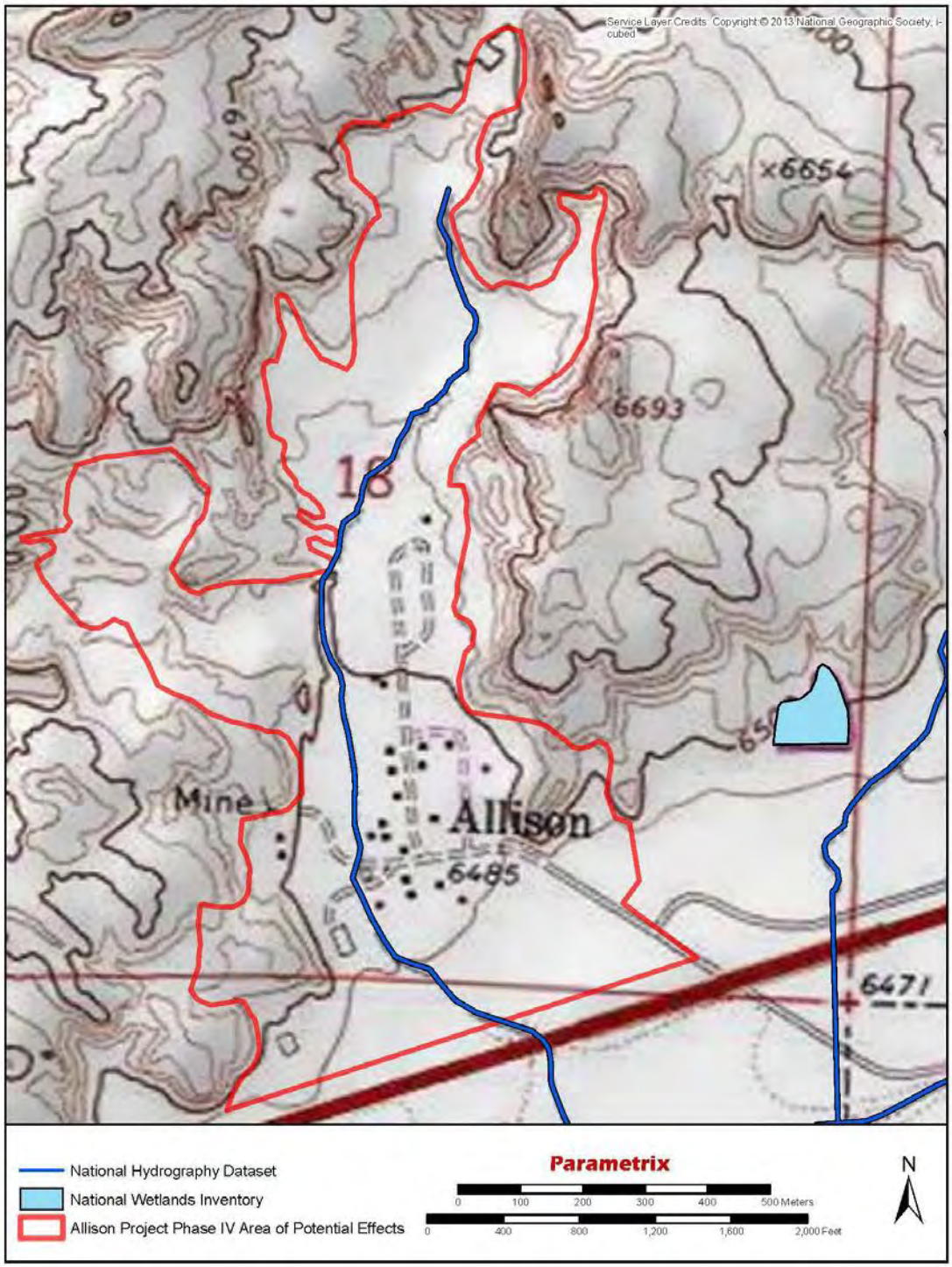

Figure 5-2. One main waterway flows north to south through the Phase IV APE, from the head of the canyon in which Allison is located.

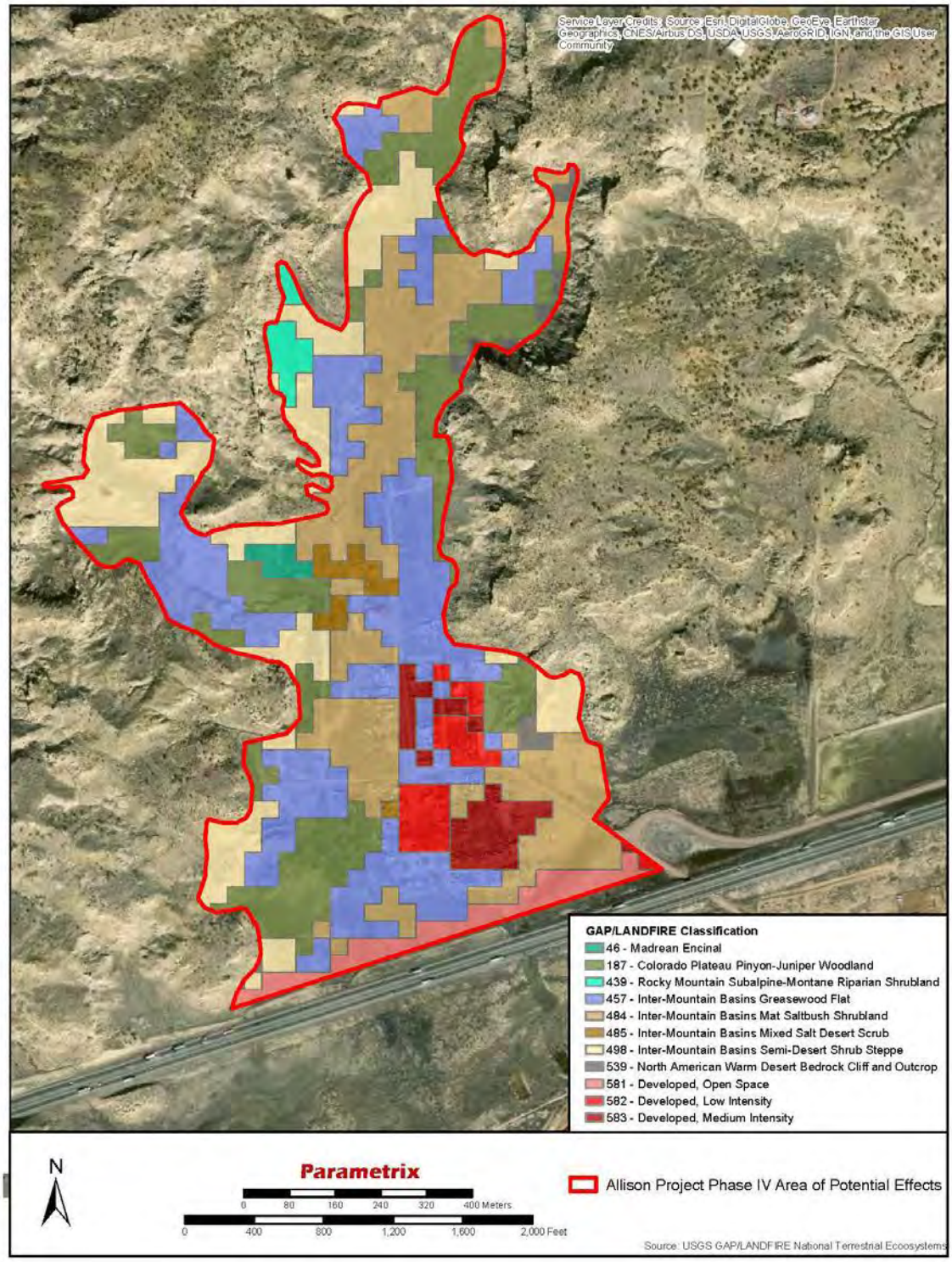

Figure 5-3. Ecological System Classifications from the GAP/LANDFIRE data that are present in the Allison Phase IV APE.

5.1.8 Special Status Plant Species

5.1.8.1 Federally Listed Species

Based on the pre-field review, Zuni fleabane (*Erigeron rhizomatus*) is the only federally listed plant species for the Phase IV APE (USFWS 2017a, 2018). This species is also state-listed and a New Mexico rare plant.

5.1.8.2 State-listed and New Mexico Rare Plants

Three state-listed species (NMEMNRD 2017) and 17 New Mexico rare plants (NMRPTC 1999a) are listed for McKinley County. Each of the state-listed species is also listed as a New Mexico rare plant.

State-listed species for McKinley County:

- Gooding's onion (*Allium gooddingii*) [state-listed and New Mexico rare plant]
- Parish's alkali grass (*Puccinellia parishii*) [state-listed and New Mexico rare plant]
- Zuni fleabane (federal-, state-listed, and New Mexico rare plant)

New Mexico Rare Plants listed for McKinley County:

- Zuni fleabane (federal-, state-listed, and New Mexico rare plant)
- Gooding's onion (state-listed and New Mexico rare plant)
- Parish's alkali grass (state-listed and New Mexico rare plant)
- Acoma fleabane (*Erigeron acomanus*)
- Chaco milkvetch (*Astragalus micromerius*)
- Chuska milkvetch (*A. chuskanus*)
- Clifford's groundsel (*Senecio cliffordii*)
- Clipped wild buckwheat (*Eriogonum lachnogynum var. colobum*)
- Clifford's milkvetch (*A. cliffordii*)
- Heil's milkvetch (*A. heilii*)
- Naturita milkvetch (*A. naturitensis*)
- Navajo bladderpod (*Physaria navajoensis*)
- Navajo muhly (*Muhlenbergia arsenei*)
- Sarah's wild buckwheat (*Eriogonum lachnogynum var. sarahiae*)
- Sivinski's fleabane (*E. sivinski*)
- Threadleaf blazingstar (*Mentzelia filifolia*)
- Zuni milkvetch (*A. missouriensis var. accumbens*)

5.1.9 Federally Listed Special Status Animal Species

In addition to reviewing the IPaC list for plant species that could potentially occur in the Phase IV APE, the IPaC list was also reviewed prior to field surveys for federally listed special status animal species that could occur in this project area (USFWS 2017a, 2018). Four additional federally listed species, including three avian species and one fish species, are listed for the project area (USFWS 2017a, 2018):

- Mexican spotted owl (*Strix occidentalis lucida*),
- Southwestern willow flycatcher (*Empidonax traillii extimus*),
- Yellow-billed cuckoo (*Coccyzus americanus*), and
- Zuni bluehead sucker (*Catostomus discobolus yarrowi*)

5.1.10 State-Listed Special Status Animal Species

Prior to the field survey in December 2017, state-listed species for this project area were reviewed using the NMDGF's BISON-M database (NMDGF 2017a). In August 2018, during report development for this BABE, the NMDGF's Environmental Review Tool (NMERT) [NMDGF 2018a] was introduced. The NMERT contains an initial list of recommendations and potential impacts to special status species and habitats for a proposed project area, and serves to assess impacts once project details are developed (NMDGF 2018a). This tool will be used in place of the former BISON-M list, as recommended by the NMDGF (C. Hayes, Personal Communication 2018). The new NMERT tool evaluates all state-listed species, those identified as Species of Greatest Conservation Need (SGCN), and species determined as those of Economic and Recreational Importance (SERI) that could potentially be impacted within 1-mile (1.61 km) of the project area (NMDGF 2018a). For this project area, the NMERT list recommends additional review of the following species (NMDGF 2018a):

Three state-listed threatened species:

- Gray vireo (*Vireo vicinior*)
- Peregrine falcon (*Falco peregrinus*)
- Spotted bat (*Euderma maculatum*)

Thirteen SGCN species (three of these species are also state-threatened species listed above):

- Clark's nutcracker (*Nucifraga columbiana*)
- Gray vireo
- Gunnison's prairie dog (*Cynomys gunnisoni*)
- Juniper titmouse (*Baeolophus ridgwayi*)
- Lewis's woodpecker (*Melanerpes lewis*)
- Olive-sided flycatcher (*Contopus cooperi*)
- Peregrine falcon
- Pinyon Jay (*Gymnorhinus cyanocephalus*)
- Pygmy nuthatch (*Sitta pygmaea*)
- Loggerhead shrike (*Lanis ludovicianus*)
- Spotted bat
- Western bluebird (*Sialia mexicana*)
- Williamson's Sapsucker (*Sphyrapicus thyroideus*)

Two SERI species:

- Cougar (*Puma concolor*)
- Mule deer (*Odocoileus hemionus*)

In addition, BISON-M species account booklets (NMDGF 2017b, 2018b–2018o) were utilized in reporting, to provide specific habitat requirement information for each listed species and assess their potential to occur in the Phase IV APE.

6. RESULTS OF THE FIELD SURVEY

At the request of NMAMLP personnel, Parametrix conducted a 100-percent, pedestrian natural resources survey of the Phase IV APE in December 2017, prior to (Phase III) emergency construction activities scheduled to begin in January 2018. The Phase IV project APE also encompasses the emergency work sites at the subsidence area, and the purpose of this survey was to provide baseline environmental data prior to the commencement of the emergency construction work, and document and assess potential effects to any natural resources that might be impacted by future (Phase IV) non-emergency mine remediation activities. In addition, the field crew was able to examine potential gray vireo habitat (identified during an earlier reconnaissance of the Phase IV APE) at this time, in order to provide recommendations as to whether there was a need for additional field investigations during the breeding/nesting season. While the December 2017 survey was conducted primarily to assess potential impacts from Phase IV work, field observations from this investigation resulted in recommendations for additional survey and monitoring related to the emergency construction activities that would take place in spring/summer 2018, as described below.

The initial natural resources survey was conducted by Robert Sivinski, Parametrix Senior Botanist, and Jenny Lisignoli, Senior Biologist, on December 20 and 21, 2017. Based on findings of this initial survey, Parametrix recommended that additional surveys be conducted in spring 2018 and a second field survey was conducted on May 7 and 8, 2018. The purpose of this second survey was to search for any additional locations of rare plants, delineate the waterways and the one wetland identified in December in the southeastern portion of the Phase IV APE, and survey for gray vireos and other special status species such as loggerhead shrikes, Gunnison's prairie dogs, and burrowing owls. The biological field team specifically searched for these species because a loggerhead shrike was observed during an informal site reconnaissance in November 2017, and a possible active prairie dog colony was also identified at this time. In addition, the May 2018 field work included a survey for any migratory birds and any nests within the Phase IV APE. Although the emergency construction work at the subsidence area commenced in January 2018, before the migratory bird nesting season had begun, Parametrix recommended this second survey occur in May 2018 after learning from NMAMLP personnel that breaks in construction activities sometimes exceeded three days, a time-frame that would have allowed migratory birds to build nests, and potentially be impacted by the construction activities. The Parametrix biological field team revisited the Phase IV APE to verify no nests were present or had been impacted during breaks in construction activities, and that noise impacts and/or ground disturbance had subsided.

On July 7, 2018, Ms. Lisignoli revisited the Phase IV APE to conduct a final, post-construction avian/nest survey a few weeks after Phase III emergency work had been completed, and after any wildlife that may have left the area during construction activities had potentially returned. In addition, Ms. Lisignoli conducted a follow-up survey for gray vireo, as recommended in the gray vireo species survey protocol (DeLong and Williams 2006).

6.1 Soils

Soils observed in the field were consistent with those described in the Soil Survey Report for this project area (NRCS 2018). Soil profiles consisted of loam, silt loam, clay loam, silty clay loam, or gravely loam soils (Table 5-1, Figure 5-1, and Appendix B).

6.2 Waterways and Wetlands

6.2.1 Waterways

On December 20 and 21, 2018, Parametrix senior scientists surveyed the entire Phase IV APE at Allison. During that survey the field crew delineated portions of the main waterway that flows south through the APE (Figure 6-1), and smaller waterways along the eastern and western boundaries of the APE. In addition, an approximate boundary was delineated for one potential wetland located at the southeast end of the APE. Due to frozen ground conditions at the time of the December survey, portions of the main waterways were not mapped in December 2017. In addition, ground conditions precluded the digging of test pits in December, and mapping of waterway and wetland boundaries was refined during field work on May 7 and 8, 2018.

Figure 6-1. The main unnamed waterway that flows north to south through the project area is characterized by sandy bottoms. Photograph taken in May 2018, facing northeast.

Portions of the waterways contain linear groupings of bank vegetation with sand bars and vegetated points within the waterway boundaries at the north end of the canyon. In the northern end of the canyon, several tributaries to this waterway converge to form the main channel. As the waterway traverse further south towards Allison however, the drainage widens and deepens, and in some areas, is 10 ft (3.05 m) wide and 6 ft (1.83 m) deep, and flows until just north of the residences located in Allison. At this point the drainage changes significantly due to numerous manipulation of the waterway by Allison residents. A large portion of the channel has been excavated to improve conveyance, resulting in rectangular cross-section about 8-feet (2.43 m) wide and 3-feet (0.91 m) deep (Figure 6-2).

Figure 6-2. The unnamed waterway flowing north to south throughout the project area has been manipulated over the years to convey water away from buildings and structures in Allison.

6.2.2 Wetlands

One wetland was mapped in the southeastern corner of the project area in May 2018. This wetland encompasses 1.23 acres (0.50 hectares) and occurs in a broad, shallow swale, connected to the other waterways via culverts under I-40 and the bridge under the Allison access road. The USFWS classification system identifies this wetland as a palustrine emergent system (USFWS 2017b). The wetland is dominated by common spike rush (*Eleocharis palustris*), broadleaf cattails (*Typha latifolia*), and Baltic rush (*Juncus balticus*), with scattered coyote willow *Salix exigua*) [Figure 6-3]. Soil pits were excavated within the wetland in accordance with the methods described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* [USACE 2008], and were consistent with mapped soils but contained depleted matrix colors and prominent redox concentrations typical of hydric soils. For wetland data forms from the May 2018 field work see Appendix C.

Figure 6-3. Wetland at the southeastern boundary of the Phase IV APE. Photograph taken in July 2018, facing west.

6.3 Vegetation

The botanical field survey of the Phase IV APE was conducted by the Parametrix Botanist Robert Sivinski, on December 20 and 21, 2017 and May 7 and 8, 2018. Mr. Sivinski focused on habitats of rare or endangered plants, such as sandstone and shale outcrops, and the wetland area, with a more expedited search of less-suitable habitats. A complete list of plants identified in the APE is found in Appendix C.

6.3.1 Geological Conditions and Associated Plant Communities

Most of the Phase IV APE is vegetated with common plant associations typical of sedimentary geologic substrates on the Colorado Plateau. Steep slopes at the abandoned mine and along the edges of the APE are outcrops of Menefee Formation shale and mudstone strata capped by harder sandstone. The broad valley in the central part of the Phase IV APE consists of Tertiary deposits that are mostly alkaline sandy loam and sandy clay loam.

Plant Communities in the APE were defined in the field using the 11 Ecological Systems identified during the pre-field review. See Sections 6.3.1.1 through 6.3.1.9 below for detailed descriptions of these systems identified in the field.

6.3.1.1 Inter-Mountain Basins Greasewood Flat - Ecological System #457

Inter-Mountain Basins Greasewood Flats comprises 45.5 acres (18.41 hectares) of the Phase IV APE. This system usually occurs in areas near drainages, on stream terraces, and flats, or may be found in areas were sparsely vegetated playas occur (USGS 2011a, b). This ecological system was scattered throughout the APE, and includes species such as black greasewood (*Sarcobatus vermiculatus*) and big sagebrush (*Artemisia tridentata*) [Figure 6-4].

Figure 6-4. Inter-Mountain Basins Greasewood Flat habitat occurs throughout the Phase IV APE. Photograph taken in July in the northern portion of the APE, facing southwest.

6.3.1.2 Inter-Mountain Basins Mat Saltbush Shrubland – Ecological System #484

Inter-Mountain Basins Mat Saltbush Shrubland comprises 39.95 acres (16.16 hectares) of the Phase IV APE. This ecological system occurs on lowlands, alluvial flats, alluvial plains, and gentle slopes and rolling plains in the northern Colorado Plateau and Uinta Basin on Mancos shale (USGS 2011a, b). Stands of dwarf-shrubs and grasses that are < 1ft (0.3 m), and usually contain < 25 percent plant canopy cover grow on gentle terrain with fine-textured, saline, or shale soils (USGS 2011a, b). Shrubs in the APE consist of mixed stands of saltbush and sage species and winterfat (*Krascheninnikovia lanata*). Grasses included western wheatgrass *(Pascopyrum smithii*), squirreltail (*Elymus longifolia*), and blue grama (*Bouteloua gracilis)*. Annuals were present in May and July and consisted of species such as nodding buckwheat (*Eriogonum cernuum*), James' buckwheat (*E. jamesii*), and saltmeadow plantain (*Plantago argyrea*) [Figure 6-5].

Figure 6-5. Inter-Mountain Basins Mat Saltbush Shrubland habitat is present throughout the Phase IV APE. Photograph takin in May 2018 at the southeastern end of the project area facing west.

6.3.1.3 Colorado Plateau Pinyon-Juniper Woodland - Ecological System #4512

Colorado Plateau Pinyon-Juniper Woodland habitat comprises 32.92 acres (13.32 hectares) of the Phase IV APE. This ecological system occurs along the eastern and western project area boundaries. These woodlands occur on dry mountains and foothills of the Colorado Plateau Region from the Western Slope Colorado to the Wasatch Range, south to the Mogollon Rim (USGS 2011a, b). Pinyon-juniper woodlands are the predominant low-elevation woodlands of this region, and occur on dry sites on mountain slopes, mesas, plateaus, and ridges. Severe weather events, such as frost and drought can occur during the growing season, and may limit the distribution of pinyon-juniper woodlands to relatively narrow altitudinal zones (USGS 2011a, b). In the project area, pinyon pine (Pinus edulis) and one-seed juniper (Juniperus monosperma) are the most common trees. Shrubs were scattered and included sagebrush species (Artemisia spp.) and cliffrose (Purshia tridentata). Grasses include blue grama, James' galleta (Pleuraphis jamesii), western wheatgrass, and muttongrass (Poa fendleriana) [Figure 6-6].

Figure 6-6. Colorado Plateau Pinyon-Juniper Woodland habitat was observed in the foothills along the eastern and western boundaries of the Phase IV APE. Photograph taken facing northwest in the southwestern foothills during the December 2017 field survey.

6.3.1.4 Inter-Mountain Basins Semi-Desert Shrub Steppe - Ecological System #5309

These are dry, open grasslands with a mix of low to medium tall shrubs, found throughout the intermountain west. They occur on flats and gentle lower slopes, on well-drained, usually deep soils (USGS 2011a, b). This semi-arid shrub-steppe is typically dominated by grasses, with open to moderately dense cover of shrubs, usually a mix of species but sometimes a single species (USGS 2011a, b). This habitat comprises 27.95 acres (11.31 hectares) of the Phase IV APE on the eastern and western project area boundaries. Species observed included sagebrush, Greene's rabbitbush (*Chrysothamnus greenei*), rubber rabbitbrush (*Ericameria nauseosa*), gray horsebrush (*Tetradymia canescens*), and winterfat. Characteristic grasses included Indian ricegrass (*Achnatherum hymenoides)*, blue grama, muttongrass, alkali sacaton (*Sporobolus airoides*), needle-and-thread (*Hesperostipa comata*), and galleta. Cheatgrass (*Bromus tectorum*) was abundant throughout the APE (Figure 6-7).

Figure 6-7. Inter-Mountain Basins Semi-Desert Shrub Steppe land cover occurs along the eastern and western Phase IV APE boundaries. Photograph taken in May 2018 facing west.

6.3.1.5 Developed Land Cover Ecological Systems # 1201, 1202, and 1203

Land cover classified as "Developed" by the National GAP/LANDFIRE dataset (USGS 2011a, b) comprises a total of 18.50 acres (7.49 hectares) in the Phase IV APE. Developed land consists of the area in Allison, at the southeastern end of the APE, and along the I-40 right-of-way boundaries (USGS 2011a, b) [Figure 5-3; Figure 6-8].

Developed, Open Space - Ecological System #1201

Land classified as Developed, Open Space comprises 6.46 acres (2.61 hectares) of the Phase IV APE. This area includes a mixture of constructed materials, vegetation, and impervious surfaces that account for less than 20 percent of the total cover (USGS 2011a, b). These areas commonly include large-lot single-family housing units, and may include parks, golf courses, and vegetation planted in developed settings used for recreation or erosion control (USGS 2011a, b).

Developed, Low Intensity - Ecological System: #1202

Land classified as Developed, Medium Intensity comprises 5.50 acres (2.23 hectares) of the Phase IV APE. This area includes a mixture of constructed materials, vegetation, and impervious surfaces that account for 20 to 49 percent of the total cover. These areas most commonly include single-family housing units (USGS 2011a, b).

Developed, Medium Intensity - Ecological system #1203

Land classified as Developed, Medium Intensity comprises 6.54 acres (2.65 hectares) of the Phase IV APE. This area includes a mixture of constructed materials and vegetation, and impervious surfaces account for 50 to 79 percent of the total cover. These areas most commonly include single-family housing units (USGS 2011a, b).

Figure 6-8. Example of Developed, Medium Intensity land cover in Allison, at the southeastern end of the Phase IV APE. Photograph taken facing northeast.

6.3.1.6 Inter-Mountain Basins Mixed Salt Desert Scrub – Ecological System #5703

Inter-Mountain Basins Mixed Salt Desert Scrub habitat comprises 2.67 acres (1.08 hectares) of the Phase IV APE. This habitat was scattered throughout the APE and contains species such as pale wolfberry (*Lycium pallidum*), shadscale, and fourwing saltbush (Figure 5-3; Figure 6-9).

Figure 6-9. Inter-Mountain Basins Mixed Salt Desert Scrub habitat. Photograph taken in July, facing north, just north of Allison. A pale wolfberry patch is located west of the unnamed waterway that flows north to south through the canyon.

6.3.1.7 Rocky Mountain Subalpine-Montane Riparian Shrubland - Ecological System #439

Rocky Mountain Subalpine-Montane Riparian Shrubland includes tall to mid-sized shrublands found along rivers and streams from mid-elevations to the upper limit of tree line in the Rocky Mountains (USDA 2011a, b). This ecological system encompasses 2.46 acres (1.00 hectares) in the Phase IV APE. This system includes stream-side shrublands ranging from narrow stream borders in steep, V-shaped valleys and canyons, to broader floodplains in wide valley bottoms. It also includes headwaters basins in the alpine to subalpine transition where willow (*Salix* spp.) shrublands can form dense thickets on the slopes, with small rivulets running throughout them as winter snow melts USDA 2011a, b). This habitat occurs in the western portion of the APE (Figure 5-3; Figure 6-10).

Figure 6-10. Rocky-Mountain Subalpine-Montane Riparian Shrubland is designated in the Phase IV APE along the western boundary. Photograph taken facing west in the western portion of the APE.

6.3.1.8 North American Warm Desert Bedrock Cliff and Outcrop - Ecological System #3201

North American Warm Desert Bedrock Cliff and Outcrop land cover comprises 2.17 acres (0.88 hectares) of the Phase IV APE. This ecological system includes barren and sparsely vegetated cliffs, narrow canyons and small rock outcrops of igneous, sedimentary, and metamorphic bedrock (USGS 2011a, b). This ecological system occurs along the eastern and northern boundaries of the APE. Primary species documented included Grama grass and galleta (Figure 5-3; Figure 6-11).

Figure 6-11. North American Warm Desert Bedrock Cliff and Outcrop scattered sites along the eastern and northern boundaries of the Phase IV APE. Photograph taken in May 2018 facing northeast.

6.3.1.9 Madrean Encinal – Ecological System #46

The Madrean Encinal ecological system encompasses 1.33 acres (0.54 hectares) of the Phase IV APE. This ecological system only occurs in the foothills at the northwestern end of the APE (Figure 5-3). Some of the species observed in this habitat included pinyon and juniper, cliffrose (*Purshia stansburiana*), antelope bitterbush (*P. tridentata*), and blue grama (Figure 6-12).

Figure 6-12. Madrean Pinyon-Juniper Woodland land cover at the northwestern tip of the Phase IV APE, in an area not designated as this land cover in the National GAP/LANDFIRE database. Photograph taken facing northwest.

6.3.2 Special-Status Plants

Of the three special-status plants listed for McKinley County that have formal statutory protection, only one federally listed threatened and state-listed endangered species (Zuni fleabane), and one state-listed endangered species (Parish's alkali grass) [USFWS 2017a, 2018; NMEMNRD 2017] have the potential to occur in the Phase IV APE. Based on our field investigations, the state-listed threatened Gooding's onion does not have the potential to occur in the project area due to the lack of habitat (steep slopes and spruce-fir habitat) in the APE. None of these three protected plant species were detected in the Phase IV APE.

The 17 plants listed as New Mexico rare plants for McKinley County are listed as species of concern by the State to acknowledge their rarity, and to encourage avoidance or mitigation of impacts whenever

possible. Two of these 17 plants are Zuni fleabane and Parish's alkali grass but as mentioned above, these species were not detected in the APE. However, two other New Mexico rare plants, Navajo muhly and Threadleaf blazingstar, were identified during the field surveys conducted in December 2017 and May 2018. Table 6-1 provides descriptions of each of the special status plant species listed for McKinley County, as well as their habitat requirements and whether they were detected in the Phase IV APE.

6.3.2.1 Navajo muhly

This species widely ranges from southern Nevada to northern Baja California and east to New Mexico, and occurs in small, isolated populations (NMRPTC 1999n). Its discovery at Allison is a new location for this species. The population of Navajo muhly on the project area contains only a few small patches of plants located between sandstone boulders. These locations are on the undisturbed edges of the Phase IV APE and are unlikely to be impacted by NMAMLP project activities (Figure 6-13).

Figure 6-13. Navajo Muhly detected in the northeast section of the Allison Phase IV APE. Photograph taken facing northeast.

6.3.2.2 Threadleaf blazingstar

This species is narrowly endemic to sandy shale and coal outcrops in the southern Chuska Mountains, and along the state border between New Mexico and Arizona, just south of I-40 (NMRPTC 1999q). Discovery of this species at Allison marks its eastern-most known location. Only a few small patches of this species occur in the project area and are confined to relatively barren slopes of sandy shale with (Figure 6-14 and Figure 6-15). Most of this species' habitat in the project area is concentrated around abandoned mine workings, and could potentially be impacted by NMAMLP project activities that occur in those areas. It is noteworthy, however, that some of these plants occur on slopes that were previously impacted by mining activities and could likely persist on newly disturbed areas, if impacts are not too severe. No other special-status plant species were detected during the field surveys.

Figure 6-14. Threadleaf blazingstar was detected during the December 2017 field survey in the southwestern corner of the Phase IV APE, on slopes where mining had occurred historically.

Figure 6-15. Threadleaf blazingstar (in the right half of the photograph) was observed in the Phase IV APE in May 2018, intermixed with grass and shrub species. Photograph taken facing west.

Table 6-1. Special Status Plant Species and their Occurrence in the Phase IV Project Area

Common Name	Scientific Name	Status	Occurs in Project Area (Yes/No)	Habitat
Zuni fleabane	*Erigeron rhizomatus*	USFWS Threatened New Mexico (NM) Threatened NM Rare Plant	No	This species inhabits nearly barren detrital clay hillslopes with soils derived from shales of the Chinle or Baca formations. Zuni fleabane is located most often on north or east-facing slopes in open pinyon-juniper woodlands from 7,300 to 8,000 ft (2,200 to 2,400 m) [NMRPTC 1999b]. Only scattered one-seed juniper (*Juniperus monosperma*) and pinyon (*Pinus edulis*) are located at the outer edges of the project area. This species was not detected in the project area. No impacts to this species are anticipated. No further analysis is required.
Gooding's onion	*Allium gooddingii*	NM Threatened NM Rare Plant	No	This species is commonly found at the base of steep slopes and drainage bottoms in the shade of spruce-fir and mixed conifer and aspen (*Populus tremuloides*) between 6,500 to 9,400 ft (1,981 and 2,865 m). This species has also been found in the Lincoln National Forest above 10,000 ft (3,028 m) in open meadows, avalanche chutes, and ski runs adjacent to spruce-fir [NMRPTC 1999c]. This species is not found in the project area due to the lack of spruce-fir habitat and steep slopes. No impacts to this species are anticipated. No further analysis is required.
Parish's alkali grass	*Puccinellia parishii*	NM Endangered NM Rare Plant	No	Parish's alkali grass inhabits alkaline springs, seeps, and seasonally wet areas that occur at the heads of drainages or on gentle slopes from 2,600 to 7,200 ft (800 to 2,200 m). This species requires continuously damp soils during its growing period (late winter to spring) [NMRPTC 1999d].

Common Name	Scientific Name	Status	Occurs in Project Area (Yes/No)	Habitat
				Gentle slopes and a small wetland located at the southeastern corner of the project area could provide habitat for this species. However, this species was not detected in the project area. No impacts to this species are anticipated. No further analysis is required.
Acoma fleabane	*Erigeron acomanus*	NM Rare Plant	No	Acoma fleabane inhabits sandy slopes and benches beneath sandstone cliffs of Entrada Sandstone Formation in pinyon-juniper woodlands from 6,700 ft to 7,100 ft (2,100 to 2,170 m) [NMRPTC 1999e]. Only scattered one-seed juniper and pinyon are located at the outer edges of the project areas on the slopes, and Entrada Sandstone formations do not occur in the project area. Habitat for this species is not present in the project area, and no Acoma fleabane were detected in the project area. No further analysis is required.
Chaco milkvetch	*Astragalus micromerius*	NM Rare Pant	No	Chaco milkvetch inhabits gypseous or Limy sandstone in pinyon-juniper woodlands or in the Great Basin Desert Scrub habitat from 6,600 to 7,300 ft (2,000 to 2,250 m). Only scattered one-seed juniper and pinyon are located at the outer edges of the project areas on the slopes [NMRPTC 1999f]. Habitat for this species is not present in the project area, and no Chaco milkvetch were detected in the project area. No further analysis is required.
Chuska milkvetch	*Astragalus Chuskanus*	NM Rare Plant	No	Chuska milkvetch inhabits degraded Chuska sandstone in Ponderosa pine (*Pinus ponderosa*) and montane coniferous forest openings above 5,500 ft (1,650 m) [NMRPTC 1999g]. Habitat for this species does not occur in the project area and no Chuska milkvetch were detected in the project area. No further analysis is required.

Common Name	Scientific Name	Status	Occurs in Project Area (Yes/No)	Habitat
Clifford's groundsel	*Senecio cliffordii*	NM Rare Plant	No	This species inhabits sandy shale and mudstone areas [NMRPTC 1999h]. Although sandy shale is present in the project area, this species was not detected during the pedestrian surveys. No further analysis is required.
Clifford's milkvetch	*Astragalus cliffordii*	NM Rare Plant	No	Clifford's milkvetch inhabits rim rock ledges of the mesa Verde Group, in sagebrush and pinyon-juniper woodlands at 6,800 ft (2,070 m) [NMRPTC 1999i]. Rim rock ledges of the Mesa Verde Group are not present in the project area. This species does not occur in the project area. No further analysis is required.
Clipped wild buckwheat	*Eriogonum lachnogynum var. colobum*	NM Rare Plant	No	This species inhabits open sandy or gypsum and limestone ridges and edges of mesas in pinyon-juniper woodlands from 6,820 ft to 7,450 ft (2,080 to 2,300 m) [NMRPTC 1999j]. Only scattered pinyon and juniper are present in the project area. No clipped wild buckwheat was detected in the project area. No further analysis is required.
Heil's milkvetch	*Astragalus heilii*	NM Rare Plant	No	This species inhabits rim rock ledges of the Mesa Verde Group in pinyon-juniper woodlands at 7,200 ft (2,195 m) [NMRPTC 1999k]. The Mesa Verde Group does not occur in the project area and only scattered pinyon and juniper are present. This species was not detected in the project area. No further analysis required.
Naturita milkvetch	*Astragalus naturitensis*	NM Rare Plant	No	Naturita milkvetch occurs on sandstone ledges and rimrocks along canyons in pinyon-juniper woodlands [NMRPTC 1999l]. Only scattered pinyon and juniper are present in the project area, although sandstone ledges and rimrock are

Common Name	Scientific Name	Status	Occurs in Project Area (Yes/No)	Habitat
				present. This species was not detected in the project area. No further analysis is required.
Navajo bladderpod	*Physaria navajoensis*	NM Rare Plant	No	Navajo bladderpod inhabits mesa rims of Todilto limestone in sparse pinyon-juniper woodlands from 7,200 to 7,600 ft (2,200 to 2,320 m) [NMRPTC 1999m]. Only scattered pinyon and juniper are in the project area, and Todilto limestone is not present. This species was not detected in the project area. No further analysis is required.
Navajo muhly	*Muhlenbergia arsenei*	NM Rare Plant	Yes	Navajo muhly inhabits limestone rock outcrops in pinyon-juniper woodlands from 4,600 to 6,500 ft (1,400 to 2,000 m) [NMRPTC 1999n]. Although only scattered pinyon and juniper are present on the outer edges of the project area, this species was detected during the pedestrian surveys of the Phase IV APE in December 2017 and May 2018. Although this species lacks statutory protection, further analysis is discussed in Section 6.3.2.1.
Sarah's wild buckwheat	*Eriogonum lachnogynum var. sarahiae*	NM Rare Plant	No	Sarah's wild buckwheat inhabits open sandy limestone ridges and edges of mesas in pinyon-juniper woodlands from 5,900 to 7,450 ft (1,800 to 2,300 m) [NMRPTC 1999o]. Although there are scattered pinyon and juniper trees on the outer edges of the project area, this species was not detected. No further analysis is required.
Sivinski's fleabane	*Erigeron sivinskii*	NM Rare Plant	No	Sivinski's fleabane inhabits Chinle shale in pinyon-juniper woodlands and in the Great Basin Desert Scrub habitat from 6,100 to 7,400 ft (1,850 to 2,250 m) [NMRPTC 1999p].

Common Name	Scientific Name	Status	Occurs in Project Area (Yes/No)	Habitat
				Chinle shale is present in the project area and pinyon and juniper are scattered on the outer edges of the project area. However, this species was not detected in the project area. No further analysis is required.
Threadleaf blazingstar	*Mentzelia filifolia*	NM Rare Plant	Yes	Threadleaf blazingstar inhabits road cuts and shale slopes of the upper Chinle Formation in pinyon-juniper woodlands from 6,400 to 7,500 ft (1,850 to 2,300 m) [NMRPTC 1999q]. Although only scattered pinyon and juniper are present on the outer edges of the project area, detected during the pedestrian surveys of the Phase IV APE in December 2017 and May 2018. It's presence in the project area, on slopes that contain old mining tailings, is farther east than has been previously documented. Although this species lacks statutory protection, further analysis is discussed in Section 6.3.2.2.
Zuni milkvetch	*Astragalus missouriensis var. accumbens*	NM Rare Plant	No	Zuni milkvetch inhabits gravelly clay banks and knolls, in dry, alkaline soils derived from sandstone in pinyon-juniper woodlands from 6,200 to 7,900 ft (1,890 to 2,410 m) [NMRPTC 1999r]. Soils derived from sandstone are present; however, this species was not detected in the project area. No further analysis is required.

Sources: NMRPTC 1999a–r; NMEMNRD 2017; USFWS 2017a, 2018

6.3.2.3 Noxious weeds

The State of New Mexico, under the administration of the Department of Agriculture (NMDA), lists certain weed species as noxious (NMDA 2016). "Noxious" in this context is defined as plants not native to New Mexico that have a negative impact on the economy or environment, and are targeted for management and control (NMDA 2016). Class A noxious weeds have limited distributions within the state. Preventing new infestations and eliminating existing infestations are the priorities for Class A noxious weeds (NMDA 2016). Class B noxious weeds are considered common, but not yet widespread within certain regions of the state (NMDA 2016). The objectives for control of Class B noxious weeds are to prevent new infestations, and in areas where they are already abundant, to contain these infestations and prevent further spread (NMDA 2016). Weeds listed as Class C noxious weeds are common and widespread species that are well established within the state. Management and suppression of Class C noxious weeds is left to the local land-manager's discretion (NMDA 2016). The noxious weed list for New Mexico is in Appendix A.

Five noxious weeds (NMDA 2016) were observed in the Allison Phase IV APE. One Class B noxious weed, bull thistle (*Cirsium vulgare*), occurred in the small wetland at the southeastern end of the APE. Four Class C noxious weeds including cheatgrass (*Bromus tectorum*), musk thistle (*Cernuus natans*), Siberian elm (*Ulmus pumila*), and saltcedar (*Tamarix chinensis*) were also found in the APE. Siberian elm (Figure 6-16) and cheatgrass were concentrated on disturbed soils around the abandoned mine workings and in the town. Musk thistle occurs on the road shoulder near the culvert and wetland at the southeastern edge of the APE (Figure 6-17), and a saltcedar was observed in the wetland at the southeastern edge of the APE (Figure 6-18).

Figure 6-16. Siberian elm is the largest and most common tree in Allison, New Mexico. Photograph taken in July 2018, after recent rains in Allison, facing south at the south end of town.

Figure 6-17. Musk thistle is present in the southeastern end of the Allison Phase IV APE, adjacent to the wetland. Photograph taken in May 2018.

Figure 6-18. A saltcedar is in the small wetland at the southeastern edge of the Phase IV APE. Photograph taken facing west from the east end of the wetland.

6.4 Federally Listed Species Considered

Potential effects of the proposed project were considered for federally listed threatened, endangered, and proposed species. There are five federally listed species for the Allison Phase IV APE (USFWS 2017a, 2018). See Table 6-2 below for discussion of these species, their habitat requirements, and a determination of effects from the proposed action regarding each species.

Table 6-2. Federally Listed Species for the Phase IV APE

Species **Common Name** **(Scientific Name)**	**Legal Status**	**Habitat Present**	**Habitat Not Present**	**Habitat Requirements and Effects Determination**
Mexican Spotted Owl (*Strix occidentalis lucida*)	Threatened		X	In New Mexico, this owl uses mixed-conifer forests dominated by Douglas fir (*Pseudotsuga menziesii*), juniper, pinyon pine, ponderosa pine, and southwestern white pine (*Pinus strobiformis*). Nesting and roosting habitat consists of both forested areas including high canopy cover with mature or old-growth stands, and rocky-canyon sites (USFWS 2012). Based on a lack of suitable habitat for this species in the project area there would be a "No Effect" determination for this species.
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	Endangered		X	This flycatcher uses willows (*Salix* spp.) or sites with cottonwood (*Populus* spp.), boxelder (*Acer negundo*), ash (*Fraxinus* spp.), alder (*Alnus* spp.), and buttonbush (*Cephalanthus* spp.) from 10 to 50 ft (3 to 15 m) tall, with a distinct overstory and dense understory of mixed species. This bird also breeds in monotypic, dense stands of exotic species such as Russian olive (*Elaeagnus angustifolia*) and saltcedar, or in areas of mixed native and exotic vegetation (Sogge et al. 2010). Based on a lack of suitable habitat for this species in the project area there would be a "No Effect" determination for this species.

Species **Common Name** **(Scientific Name)**	**Legal Status**	**Habitat Present**	**Habitat Not Present**	**Habitat Requirements and Effects Determination**
Yellow-billed Cuckoo (*Coccyzus americanus*)	Endangered		X	Yellow-billed cuckoos nest in dense, multi-storied, canopied riparian habitat containing willows, cottonwoods, and tamarisk, as well as honey mesquite (*Prosopis glandulosa* and *P.* pubescens), and seep willow (*Baccharis salicifolia*) (McNeil et al. 2013). This species prefers contiguous riparian vegetation containing cottonwood and willow with an average overstory height of 15 ft (4.5 m) (Anderson and Ohmart 1984). Based on a lack of suitable habitat for this species in the project area there would be a "No Effect" determination for this species.
Zuni Bluehead Sucker (*Catostomus discobolus yarrowi*)			X	Zuni bluehead suckers occupy stream reaches with clean, perennial water flowing over hard substrate, such as bedrock. These fish often occur in shaded pools and habitats where water runs less than 0.3 ft (0.1 m) per second (USFWS 2014). Based on a lack of perennial water in the project area there would be a "No Effect" determination for this species.
Zuni Fleabane (*Erigeron rhizomatus*)			X	Zuni fleabane occurs on nearly barren, detrital clay hillsides with soils derived from shales of the Chinle or Baca formations. This plant most often occurs on north- or east-facing slopes in open pinyon-juniper woodlands between 7,300 and 8,000 ft (2,200 and 2,400 m) [NMRPTC 1999b]. Based on a lack of suitable habit for this species in the project area there would be a "No Effect" determination for this species.

Sources: Anderson and Ohmart 1984; NMRPTC 1999b; Sogge et al. 2010; McNeil et al. 2013; USFWS 2012, 2014 2017a, 2018

6.4.1 Critical Habitat

No critical habitat is located within the Phase IV APE or the action area (USFWS 2017a, 2018; NMDGF 2018a). The nearest critical habitat occurs in the Rio Nutria for the Zuni bluehead sucker and in the Zuni Mountains for the Mexican spotted owl, both located approximately 20 miles (32.19 km) southeast of Allison (USFWS 2017a, 2018; NMDGF 2018a).

6.5 State-Listed Special Status Animal Species Considered

For this project, state-listed animal species were identified initially through BISON-M (NMDGF 2017a), and later through the NMERT website (NMDGF 2018a), which was introduced in August 2018 by the NMDGF to address all species that are considered:

- State threatened, endangered, or proposed;
- SGCN species, or species that are monitored for their distribution and abundance, including low and declining populations that are indicative of the diversity and health of wildlife of the state (NMDGF 2018a);
- and SERI species designated, or those that are considered species with economic and recreational importance to the state (NMDGF 2018a).

The list generated by the NMERT website for this project (NMDGF 2018a) includes three state-listed threatened and SGCN designated species, 10 SGCN species, and two SERI species that could potentially be impacted within 1 mile (1.61 km) of the Phase IV APE. See Table 6-3 below for analysis of the potential for state-listed species to occur in the project area and the 1-mile (1.61-km) buffer defined by the NMERT report (NMDGF 2018a), which is also designated as the action area for the Phase IV APE.

Table 6-3. State-Listed Animal Species for McKinley County, and their Potential to Occur in the Phase IV APE

Species Common Name (Scientific Name)	Legal Status	Habitat Present	Habitat Not Present	Habitat Requirements and Effects Determination
Birds				
Gray Vireo (*Vireo vicinior*)	State Threatened SGCN	X		In central and western New Mexico, gray vireos inhabit one-seed juniper savannas associated with drainages (NMDGF 2017b). Based on limited habitat for this species located in the northern portion of the canyon, further analysis is required. See Section 7.2.1.1.
Peregrine Falcon and Arctic Peregrine Falcon (*Falco peregrinus* and *Falco peregrinus tundrius*)	State Threatened SGCN		X	Peregrine falcons hunt in canyons, mountains, rivers, or wetlands (Stahlecker 2010; NMDGF 2018b), ranging from 3,500 ft to 9,000 ft (1,067 to 2,743 m). Peregrine falcons nest on steep cliffs near water where prey is available (Stahlecker 2010). Steep cliffs and water are lacking in the project area. No impacts to this species are anticipated. No further analysis is required.
Clark's nutcracker (*Nucifraga columbiana*)	SGCN		X	Clark's nutcrackers utilize a variety of habitats including riparian woodlands, pinyon-juniper woodlands, and madrean evergreen woodlands (NMDGF 2018c). No Clark's nutcrackers were present during the field survey. This species has been documented 6.6 miles (10.6 km) east of Allison near the Hemlock Canyon Trail in Gallup, beyond the buffer area. Therefore, no impacts to this species are anticipated for this project area. No further analysis is required.
Juniper titmouse (*Baeolophus ridgwayi*)	SGCN	X		Juniper titmice utilize lowlands, riparian areas, and montane habitats (NMDGF 2018d). They frequently use tree cavities excavated by woodpeckers or rotten or broken branches for nest cavities (NMDGF 2018d). Although no snags were detected during the surveys, one juniper titmouse was detected audibly and visually during the May 2018 survey, at the northern end of the canyon. This species requires further analysis. See Section 7.2.1.1.
Lewis's woodpecker (*Melanerpes lewis*)	SGCN		X	Lewis's woodpeckers are found in riparian areas, lowland and montane habitats (NMDGF 2018e). This species has been observed in desert scrub/rocky slopes, juniper savannah, pinyon-juniper woodlands, and ponderosa oak forests (NMDGF 2018e). Snags important to this species were not observed in the project area. In addition, this species was not detected during surveys in May and July 2018. No impacts to this species are anticipated. No further analysis is required.

Species **Common Name** **(Scientific Name)**	**Legal Status**	**Habitat Present**	**Habitat Not Present**	**Habitat Requirements and Effects Determination**
Loggerhead shrike (*Lanius ludovicianaus*)	SGCN	X		Loggerhead shrikes are found in riparian areas, lowlands, and montane habitat (NMDGF 2018f). This species can be a transient in areas of desert scrub/rocky slopes and juniper savannahs (NMDGF 2018f). One loggerhead shrike was detected in the eastern end of Allison during the reconnaissance survey conducted in November 2017. Further analysis is required. See Section 7.2.1.1.
Olive-sided flycatcher (*Contopus cooperi*)	SGCN		X	Olive-sided flycatchers utilize riparian habitats, and may migrate through lowlands to forest habitat (NMDGF 2018g). This species prefers edges between mature or old-growth conifers and meadows (NMDGF 2018g). Due to the lack of riparian areas, and the fact that no olive-sided flycatchers were detected during the biological surveys conducted during the migratory bird season (May and July 2018), no impacts to this species are anticipated. No further analysis is required.
Pinyon Jay (*Gymnorhinus cyanocephalus*)	SGCN		X	Pinyon jays utilize pinyon-juniper woodlands, but may also breed in sagebrush, scrub oak, chaparral, and ponderosa pine (NMDGF 2018h). This species prefers mature stands of pinyon trees. Flocks are known to remain in the same home range for decades, but may wander to other areas in search of food when it is scarce in their home ranges (NMDGF 2018h). Although scattered pinyon trees are present in the northern reaches of the project area, no stands of mature pinyon are present. No pinyon jays were observed during the May and July 2018 avian surveys. Although pinyon jays have been documented in Gallup and the surrounding area, no pinyon jays have been recorded in Allison or the 1-mile (1.61-km) project area buffer. No further analysis is required.
Pygmy nuthatch (*Sitta pygmaea*)	SGCN		X	Pygmy nuthatches are found in pine-fire ecotones and occasionally spruce-fir forests (NMDGF, 2018i). This species' preferred habitat is lacking in the project area. No Pygmy nuthatches have been documented in Allison or within the 1-mile (1.61-km) project buffer (NMDGF 2018i). No impacts to this species are anticipated and no further analysis is required.

Species **Common Name** **(Scientific Name)**	**Legal Status**	**Habitat Present**	**Habitat Not Present**	**Habitat Requirements and Effects Determination**
Western bluebird (*Sialia mexicana*)	SGCN		X	Western bluebirds utilize pinyon-juniper woodlands, ponderosa-oak forests, mixed-conifer forests, and spruce-fir forests during the breeding season and in the winter (NMDGF 2018j). These species are cavity nesters and may use trees excavated by woodpeckers. Trees large enough for cavity nesting birds as large as western bluebirds are lacking in the project area. No western bluebirds were present during the avian surveys conducted in May and July 2018. Therefore, no impacts to this species are anticipated. No further analysis is required.
Williamson's sapsucker (*Sphyrapicus thyroideus*)	SGCN		X	Williamson's sapsuckers utilized mixed conifer forests, and breed in Douglas fir (*Pseudotsuga menziesii*), lodgepole pine (*Pinus contorta*), and ponderosa pine (*Pinus ponderosa*) trees, as well as mixed coniferous forests (NMDGF 2018k). This habitat does not occur in the project area. No Williamson's sapsuckers were present during the May and July 2018 avian surveys or have been documented in the 1-mile project area species buffer. Therefore, no impacts to this species are anticipated. No further analysis is required.
Mammals				
Spotted bat (*Euderma maculatum*)	State threatened SGCN	X		Preferred habitat is unknown, but the spotted bat has been found in open semi-desert shrublands, pinyon-juniper, ponderosa pine, and subalpine coniferous forests (NMDGF 2018l). Spotted bats are cliff dwellers who roost in cracks and crevices of canyons and cliffs. Due to the presence of sandstone rocks and rock outcrops in the project area, further analysis is required. See Section 7.2.1.2.
Gunnison's prairie dog (*Cynomys gunnisoni*)	SGCN	X		Gunnison's prairie dogs inhabit grasslands from low valleys to montane meadows (NMDGF 2018m). Although active sign at a Gunnison's prairie dog colony in the project area was observed in May 2018, in July 2018 this site was abandoned. Further analysis is required. See Section 7.2.1.2.

Species Common Name (Scientific Name)	Legal Status	Habitat Present	Habitat Not Present	Habitat Requirements and Effects Determination
Cougar (*Puma concolor*) This species is also referred to as Mountain lion in BISON-M	SERI	X		Cougars utilize many habitat associations and use pinyon-juniper woodlands (NMDGF 2018n) within the project area. Cougar and bobcat tracks were observed in the canyon during field surveys. Further analysis is required. See Section 7.2.1.2.
Mule deer (*Odocoileus hemionus*)	SERI	X		Mule deer use a variety of habitats (NMDGF 2018o). Mule deer tracks and scat were identified during the field survey. Further analysis is required. See Section 7.2.1.2.

Sources: NMDGF 2017a, 2018a–o; Stahlecker 2010

7. ANALYSIS OF EFFECTS ON LISTED SPECIES

7.1 Federally Listed Species and Critical Habitat

Parametrix biologists analyzed the effects of the proposed action on the federally listed species in Table 6-2 above. No critical habitat occurs within the Phase IV APE and none of the five USFWS-listed species reviewed (USFWS 2017a, 2018) have the potential to occur in the APE, based on the lack of habitat for these species in the APE and the fact that no detections occurred during the field surveys conducted in December 2017, May 2018, or July 2018. Federally listed species are protected by the USFWS under the Endangered Species Act of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act as amended (16 USC 668-668c); therefore, the effects determination provided below uses language specific to the USFWS's guidance pertaining to federally listed species.

7.1.1 Determination

Due to the lack of habitat or occurrence of these species in the Allison Phase IV APE there would be a no effect determination for:

- Mexican spotted owl
- Southwestern willow flycatcher
- Yellow-billed cuckoo
- Zuni bluehead sucker
- Zuni fleabane

In addition, there is a no effect determination on critical habitat within this project area, because no critical habitat is present within the Allison Phase IV APE.

7.2 State-Listed Species

Parametrix biologists analyzed the effects of the project on a total of 15 special-status animal species within 1-mile (1.61 km) of the Allison Phase IV APE (NMDGF 2018a). These species included three state-listed threatened/SGCN species, 10 SGCN species, and two SERI species.

7.2.1 State-Listed Species Evaluated Further

Of the 15 state-listed species, there is potential for two state-listed threatened/SGCN species (gray vireo, spotted bat), three SGCN species (Gunnison's prairie dog, juniper titmouse, and loggerhead shrike), and two SERI species (cougar and mule deer) to occur in the Phase IV APE and its associated action area as defined by the NMDGF (see NMERT in Appendix A). These species are further evaluated below:

7.2.1.1 Birds

Gray vireo (*Vireo vicinior*) – New Mexico Threatened Species

Species Ecology, Habitat Use, and Threats

In New Mexico, the gray vireo has been observed from late April until mid-August on foothills and mesas in chaparral-juniper, pinyon-juniper woodlands, and pinyon-madrone associations (New Mexico Avian Conservation Partners [NMACP] 2007b). Vegetation within the gray vireo's preferred habitat includes mountain mahogany, Utah serviceberry (*Amelanchier utahensis*), and big sagebrush (*Artemisia tridentata*). Preferred breeding habitat is generally open woodlands/shrublands, containing juniper and oaks (NMACP 2007b). Numbers of gray vireos appear to be increasing in the state. This species does not appear to winter in New Mexico (NMACP 2007b). Conservation concerns include loss or alteration of wintering habitat and suitable nest sites, brood parasitism by brown-headed cowbirds (NMACP 2007b), and predation of eggs or nestlings by snakes, rats (Muridae family), chipmunks (Sciuridae family) coyotes (*Canis latrans*), and other birds including jays (Corvidae family), northern mockingbirds (*Mimus polyglottos*), Scott's orioles (*Icterus parisorum*), and hooded orioles (*I. cucullatus*) [NMACP 2007b].

Habitat for Species in Phase IV Area of Potential Effect

Gray vireos have not been documented in or near the project area (eBird 2018). The closest reported sighting of a gray vireo was in Red Rock State Park, just north of Church Rock, New Mexico, approximately 11 miles (18 km) east of the project area (eBird 2018). Due to the presence of small drainages and scattered pinyon and juniper trees in the northern reaches of the canyon in which the project area is located; all songbirds were recorded during the May and July 2018 avian surveys. However, no gray vireos were detected migrating through or inhabiting any area within the canyon during these field surveys.

Potential Impacts

Gray vireos could potentially migrate through the northern reaches of the canyon within the project area in the spring or fall. Individual gray vireos may be indirectly impacted by construction noise, if they are present in the canyon during the migration. However, no construction activities are anticipated in the areas where gray vireos could potentially migrate.

Determination

The determination of the effects for the proposed action on gray vireos is: may affect, but is not likely to adversely affect, the species so that a federal listing or loss of viability of the species would occur.

Juniper titmouse – New Mexico Species of Greatest Conservation Need

Species Ecology, Habitat Use, and Threats

Juniper titmouse habitat is typically pinyon-juniper woodland habitat (NMDGF 2018d). This species is nonmigratory and pairs will defend their territories year-round, although this species is known to move upslope into ponderosa pine forests in winter (NMDGF 2018d). They occupy foothills and canyons below 7,000 ft (2,133 m), and are frequent transients in juniper-savannah and pinyon-juniper woodlands, typically near waterways (NMDGF 2018d). This species eats pinyon seeds, but also consumes terrestrial invertebrates gleaned from trees and shrubs or from the ground. In the fall and winter this species consumes pinyon seeds, juniper berries, and mistletoe berries (NMDGF 2018d). This species is a cavity nesting bird and requires mature woodlands with trees large enough to support nest cavities (NMDGF 2018d). Threats may include toxic and oily waste fluids in areas where natural gas and coalbed methane extraction of oil and minerals occurs (NMDGF 2018d). This species is also sensitive to insecticide/pesticide use (NMDGF 2018d).

Habitat for Species in Phase IV Area of Potential Effect

One juniper titmouse was detected in a rocky area in the northeastern portion of the canyon during the May 2018 field survey. This species was not detected during the July 2018 survey and could potentially have been a transient when it was observed in May 2018.

Potential Impacts

If juniper titmice travel into the proposed project area, they would be able to move away from direct and indirect construction-related disturbance, such as areas where noise related to construction activities might occur at the southern end of the canyon in which the project area is located. However, this area is located out of potential juniper titmouse habitat, which is in the northern reaches of the canyon. Therefore, any impacts related to the proposed action would be minor, and are not likely to result in federal listing or loss of viability of the species.

Determination

The determination of the effects for the proposed action on juniper titmice is: may affect, but is not likely to adversely affect, the species so that a federal listing or loss of viability of the species would occur.

Loggerhead shrike - New Mexico Species of Greatest Conservation Need

Species Ecology, Habitat Use, and Threats

The loggerhead shrike is widespread in lowland habitats of New Mexico including the Great Basin Desert Shrub, Plains-Mesa Sand Shrub, Chihuahuan Desert Scrub, and Plains-Mesa Grassland (NMACP 2007a). This species has also been documented in the Chihuahuan Desert Grassland, pinyon-juniper woodlands, and agricultural areas. The loggerhead shrike is a year-round resident of the southern half of the United States from California to the Carolinas, south of the Pacific slope and into the interior highlands of Mexico (NMACP 2007a). Summer breeding populations extend into the northern United States, in the Midwest, and into south-central Canada (NMACP 2007a). This species is associated with a variety of

habitats, but general species requirements include widely spaced shrubs and low trees, interspersed with grasses, forbs, and bare ground (NMACP 2007a). In New Mexico, loggerhead shrikes are usually associated with open country that contains short vegetation. Breeding territories are often characterized by the presence of isolated trees and large shrubs, and dense, thorny shrubs are preferred for nesting. In desert areas, tall yucca stems are used as hunting perches. Presence of shrubs is critical to loggerhead shrike habitat where the species has access to thorns or barbed-wire on which to impale its prey (NMACP 2007a). The act of impaling its prey may stem from its lack of talons, and is also indicative of a food-caching behavior of the species (NMDGF 2018f). Threats include consuming fertilizer or pesticide-contaminated insects and small mammals (NMDGF 2018f).

Habitat for Species in Phase IV Area of Potential Effect

Lowland habitat is present east of the Allison residences and a loggerhead shrike was audibly and visually detected in southeastern Allison in November 2017, during an informal reconnaissance of the area, but was not detected during the May or July 2018 field surveys.

Potential Impacts

No direct impacts to loggerhead shrikes are expected to occur due to any project activities in the Phase IV APE. Loggerhead shrikes would be most likely to inhabit foothills and lowland habitat located along the southeastern boundary of the project area, away from anticipated construction activities. Any loggerhead shrikes that travel into Allison would be able to move away from indirect construction-related disturbance, further into the foothills to the east of Allison. Therefore, any project-related impacts would be minor, and are not likely to result in a federal listing or loss of viability of the species.

Determination

The determination of effects for the proposed action on loggerhead shrikes is: may affect, but is not likely to adversely affect, the species so that a federal listing or loss of viability of the species would occur.

7.2.1.2 Mammals

Spotted Bat – New Mexico Threatened Species

Species Ecology, Habitat Use, and Threats

The spotted bat is an insectivorous bat that consumes large numbers of insects (NMDGF 2018l). This species has been found in a variety of habitats including pinyon-juniper woodlands, mixed-conifer forests, ponderosa pine trees, and sandstone cliffs (NMDGF 2018l). Spotted bats are cliff dwellers that roost diurnally in cracks and crevices in canyons and along cliffs (NMDGF 2018l). A critical component of this species' habitat is water (NMDGF 2018l). Limiting factors that potentially impact spotted bat populations include pesticides that are ingested through contaminated insects (NMDGF 2018l). Threats also may include loss of riparian areas where spotted bats are known to forage (NMDGF 2018l).

Habitat for Species in Phase IV Area of Potential Effect

Although no spotted bats were observed during the biological field surveys, a pallid bat was observed during the May 2018 field survey. The pallid bat was in a rock crevice and came out of the rock crevice suddenly when biologists approached the location.

Due to the presence of the pallid bat species, there is a potential for spotted bats to utilize the rock outcrops located along the northern boundaries of the Phase IV APE. Although water is limited in the

canyon, puddles were observed following heavy rains during the May and July field surveys, which could provide water for this species during the summer months. In addition, the wetland located to the southeast of Allison may provide water for this species.

Potential Impacts

No direct impacts to this species are expected due to the proposed action. If a spotted bat uses rocky areas in the southern portion of the canyon area, it may be indirectly impacted by noise, if they are in a diurnal roost site. However, most of the suitable rock outcrops and crevices of the project area are located in the northern portion of the canyon, away from potential construction areas in Allison. Therefore, any impacts related to the proposed action would be minor, and are not likely to result in federal listing or loss of viability of the species.

Determination

The determination of the effects for the proposed action on spotted bats is: may affect, but is not likely to adversely affect, the species so that a federal listing or loss of viability of the species would occur.

Gunnison's prairie dog - New Mexico Species of Greatest Conservation Need

Species Ecology, Habitat Use, and Threats

Gunnison's prairie dogs inhabit plains, desert grasslands, and Great Basin Desert-scrub habitat in New Mexico (NMDGF 2018m). They may also utilize agricultural fields and sometimes damage irrigation canal banks (NMDGF 2018m). Gunnison's prairie dogs eat mostly grasses, forbs, and sedges, but may also consume insects (NMDGF 2018m). Gunnison's prairie dogs may denude the vegetation around their colonies and will eventually abandon the site (NMDGF 2018m). Threats to this species include sylvatic plague, which can occasionally eliminate a group from an area, and control practices such as poisoning (NMDGF 2018m).

Habitat for Species in Phase IV Area of Potential Effect

A Gunnison's prairie dog town was located at the southeastern edge of the project area. In May 2018, several of the mounds appeared to have recent sign, indicating the presence of Gunnison's prairie dogs, although none were observed during the field survey. In July 2018, the site of the prairie dog town was denuded of vegetation, and no active prairie dog sign was present. However, it is unknown whether this species vacated the prairie dog town or if it was eliminated through human intervention.

Potential Impacts

No direct impacts to Gunnison's prairie dogs are expected due to the proposed action. The known prairie dog town is located outside the town of Allison, away from locations where construction activities are anticipated to occur. Indirect impacts to Gunnison's prairie dogs may occur due to noise from construction equipment that is brought to and removed from the site via Allison Road, which is adjacent to the prairie dog town located just west of the road. However, Gunnison's prairie dogs declined from a few active mounds in May 2018 to no active mounds in July 2018. Impacts to this species are therefore expected to be minor.

Determination

The determination of effects for the proposed action on Gunnison's prairie dogs is: may affect, but is not likely to adversely affect, the species so that a federal listing or loss of viability of the species would occur.

Cougar – New Mexico Species of Economic and Recreational Importance

Species Ecology, Habitat Use, and Threats

Cougars inhabit many habitats including forested mountains, rock-rimmed canyons and cliffs, and foothills and rocky outcrops where deer are typically present (NMDGF 2018n). They may travel extended distances in search of food or mates (NMDGF 2018n). Although deer typically make up 50 to 75 percent of their diet, they may also consume peccaries, pronghorn antelope, and small mammals such as rabbits, beaver, and skunk (mustelids). In desert habitats, this species may consume reptiles. In southwestern Arizona, where the prey base can be scarce, cougar scats analyzed indicated a minimal consumption of chuckwalla and Gila monsters (Cashman et al. 1992). Threats to cougars may include trapping, hunting, and poisoning (NMDGF 2018n).

Habitat for Species in Phase IV Area of Potential Effect

Cougar tracks were observed in the northern portion of the Phase IV APE. Deer sign, including tracks and scat were detected in the APE, but no lion kills were observed. Cougars may use the canyon as a travel corridor and may hunt in the foothills outside of the APE and action area boundaries.

Potential Impacts

No direct impacts to cougars are expected due to the proposed action. If cougars travel into the project area, they would be able to move away from direct or indirect disturbances such as noise related to construction. Impacts to this species are therefore expected to be minor.

Determination

The determination of effects for the proposed action on cougars is: may affect, but is not likely to adversely affect, the species so that a federal listing or loss of viability of the species would occur.

Mule deer – New Mexico Species of Economic and Recreational Importance

Species Ecology, Habitat Use, and Threats

Mule deer are found throughout the state in a variety of habitats (NMDGF 2018o). They are browsers that consume various species such as bitterbush, oak (*Quercus* spp.), juniper, pinyon, Douglas fir, and ponderosa pine, at different times of the year. They may also consume grasses, sedges, mushrooms, acorns, and mistletoe depending on the time of year and availability of food sources (NMDGF 2018o). Threats include climatic conditions such as a lack of summer rains, declines in forage, and fire as many species including mule deer can be trapped and killed by fast-moving fires (NMDGF 2018o).

Habitat for Species in Phase IV Area of Potential Effect

Mule deer tracks and scat were found in the northern area of the Phase IV APE during the May and July 2018 field surveys.

Potential Impacts

No direct impacts to mule deer are expected due to the proposed action. If mule deer travel into the project area, they would be able to move away from direct or indirect disturbances such as noise related to construction. Impacts to this species are therefore expected to be minor.

Determination

The determination of effects for the proposed action on mule deer is: may affect, but is not likely to adversely affect, the species so that a federal listing or loss of viability of the species would occur.

8. DETERMINATION SUMMARY

There would be a "no effect" determination for the following federally listed species, for the proposed action:

- Mexican spotted owl
- Southwestern willow flycatcher
- Yellow-billed cuckoo,
- Zuni bluehead sucker
- Zuni fleabane

There would be "no impact" on the following state-listed plant species and state-listed/SGCN-listed species:

- Gooding's onion
- Parish's alkali grass
- Zuni fleabane

There would be "no impact" on the following New Mexico special-status animal species:

- Peregrine falcon
- Lewis's woodpecker
- Williamson's sapsucker
- Olive-sided flycatcher
- Pinyon jay
- Clark's nutcracker
- Pygmy nuthatch
- Western bluebird

There would be a "may affect, but is not likely to adversely affect or result in a trend towards federal listing or loss of viability of the species" determination for the following New Mexico special-status animal species:

- Gray vireo
- Loggerhead shrike
- Juniper titmouse
- Gunnison's prairie dog
- Cougar
- Mule deer

9. SUMMARY AND RECOMMENDATIONS

Below is a list of findings and management recommendations from the natural resources surveys conducted in the Phase IV APE in December 2017, May 2018, and July 2018:

- Ordinary high water marks were mapped in the unnamed waterways that flow through the Phase IV APE. One wetland was mapped at the southeastern corner of the Phase IV APE that encompasses 1.23 acres (0.50 hectares). Wetland pits were dug at the site in December 2017, and May 2018, to determine the boundaries of the wetland. For specific information on data collected at this wetland please see the wetland data forms in Appendix C. Prior consultation between the USACE and NMAMLP determined that there are no jurisdictional waters of the U.S. within the project site. USACE Action Number SPA-2016-00322 was assigned to the project and an approved jurisdictional determination was issued, based on a finding that the project site contains only isolated waters. This wetland area is not expected to be impacted by the proposed action; however, should construction activities be necessary in the general vicinity of the wetland, we recommend the delineated wetland boundaries be avoided.
- The Phase IV APE contains one Class B noxious weed, bull thistle, and four Class C noxious weed species including cheatgrass, musk thistle, saltcedar, and Siberian elm. Disturbed areas should be seeded and mulched with a native seed mix determined by the NMAMLP following any Phase IV construction activities (NMAMLP 2017).
- We recommend that future surface-disturbing activities should avoid if possible the known locations of the two New Mexico rare plant species, Navajo muhly and threadleaf blazingstar, detected in the Phase IV APE.
- None of the five federally listed species that appear on the IPaC-generated species list (USFWS 2017a, 2018) have the potential to occur in the Phase IV APE, due to the lack of habitat for these species. Therefore, no additional surveys for these federally listed species are necessary prior to future construction activities.
- Fifteen state-listed species appear on the NMERT-generated Phase IV project/action area list (NMDGF 2018a). Of these 15 species, seven had the potential to occur in the Phase IV APE. These included two state-listed threatened/SGCN species (gray vireo, spotted bat), three SGCN species (loggerhead shrike, juniper titmouse, Gunnison's prairie dog), and two SERI species (cougar and mule deer). These seven species were analyzed in detail in this report. Of those analyzed, only the loggerhead shrike and juniper titmouse were documented in the project area. Sign of one mammal species, Gunnison's prairie dog, was also documented during the May 2018 survey, but was absent during the July 2018 survey. This species could have the potential to occur in the project area in the future. In addition, sign of two SERI designated species, the cougar and mule deer, were documented in the project area and may be present in the Phase IV APE during future construction activities. The proposed action may have temporary effects on special-status species listed here. However, larger mammals such as cougar and mule deer, and avian species, may choose to leave the project area during construction. Once construction-related disturbances cease, these species would be expected to return to the APE.

- In May 2018, an active common raven nest was detected in the northern end of the Phase IV APE, 0.47 miles (756 m) north of the area where Phase III emergency construction work was conducted. In addition, migratory birds were observed in the Siberian elms surrounding the Phase III construction area, and in trees within the Phase IV APE. We recommend pre-construction nest surveys be conducted prior to any future construction activities that would occur during the migratory bird breeding season (March 15 to September 15).

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Appendix A

Species Lists for the Phase IV Area of Potential Effects

United States Department of the Interior

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

In Reply Refer To:
Consultation Code: 02ENNM00-2018-SLI-0070
Event Code: 02ENNM00-2018-E-02756
Project Name: AML project - Allison

August 31, 2018

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

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

FEDERALL Y-LISTED SPECIES AND DESIGNA TED CRITICAL HABIT AT

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

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

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

Candidate Species and Other Sensitive Species

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

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

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

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

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

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

WETLANDS AND FLOODPLAINS

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

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

MIGRATORY BIRDS

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

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

BALD AND GOLDEN EAGLES

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

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

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

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

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 02ENNM00-2018-SLI-0070

Event Code: 02ENNM00-2018-E-02756

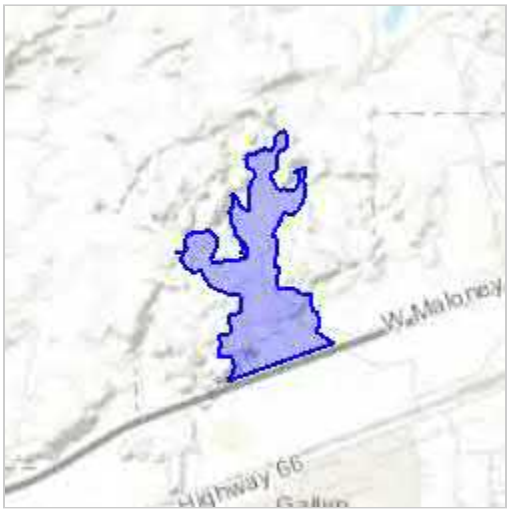
Project Name: AML project - Allison

Project Type: Guidance

Project Description: AML issues - safety

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/35.52847557358194N108.79094865914419W



Counties: McKinley, NM

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

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

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

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

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

Birds

NAME	STATUS
Mexican Spotted Owl Strix occidentalis lucida There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8196	Threatened
Southwestern Willow Flycatcher Empidonax traillii extimus There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo Coccyzus americanus Population: Western U.S. DPS There is proposed critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Zuni Bluehead Sucker Catostomus discobolus yarrowi There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3536	Endangered

Flowering Plants

NAME	STATUS
Zuni Fleabane Erigeron rhizomatus	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/5700

Critical habitats

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

Migratory Birds

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

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

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

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

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

NAME	BREEDING SEASON
Pinyon Jay *Gymnorhinus cyanocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the

FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

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

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

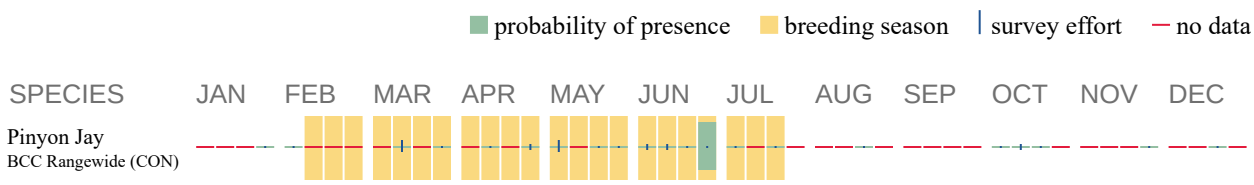
1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability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

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

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

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

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



Additional information can be found using the following links:

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

Migratory Birds FAQ

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

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

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

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

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

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

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

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

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

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

PROJECT INFORMATION

Project Title:	Allison Mine bio Resources revised
Project Type:	MINING, BASELINE WILDLIFE SURVEYS
Latitude/Longitude (DMS):	35.532052 / -108.785892
County(s):	MC KINLEY
Project Description:	Baseline wildlife survey in Allison, NM

REQUESTOR INFORMATION

Project Organization:	NM ENERGY MINERALS AND NATURAL RESOURCES DEPARTMENT
Contact Name:	Jenny Lisignoli
Email Address:	jlisignoli@parametrix.com
Organization:	Parametrix
Address:	9600 San Mateo Blvd. NE, Albuquerque NM 87048
Phone:	505-821-4700

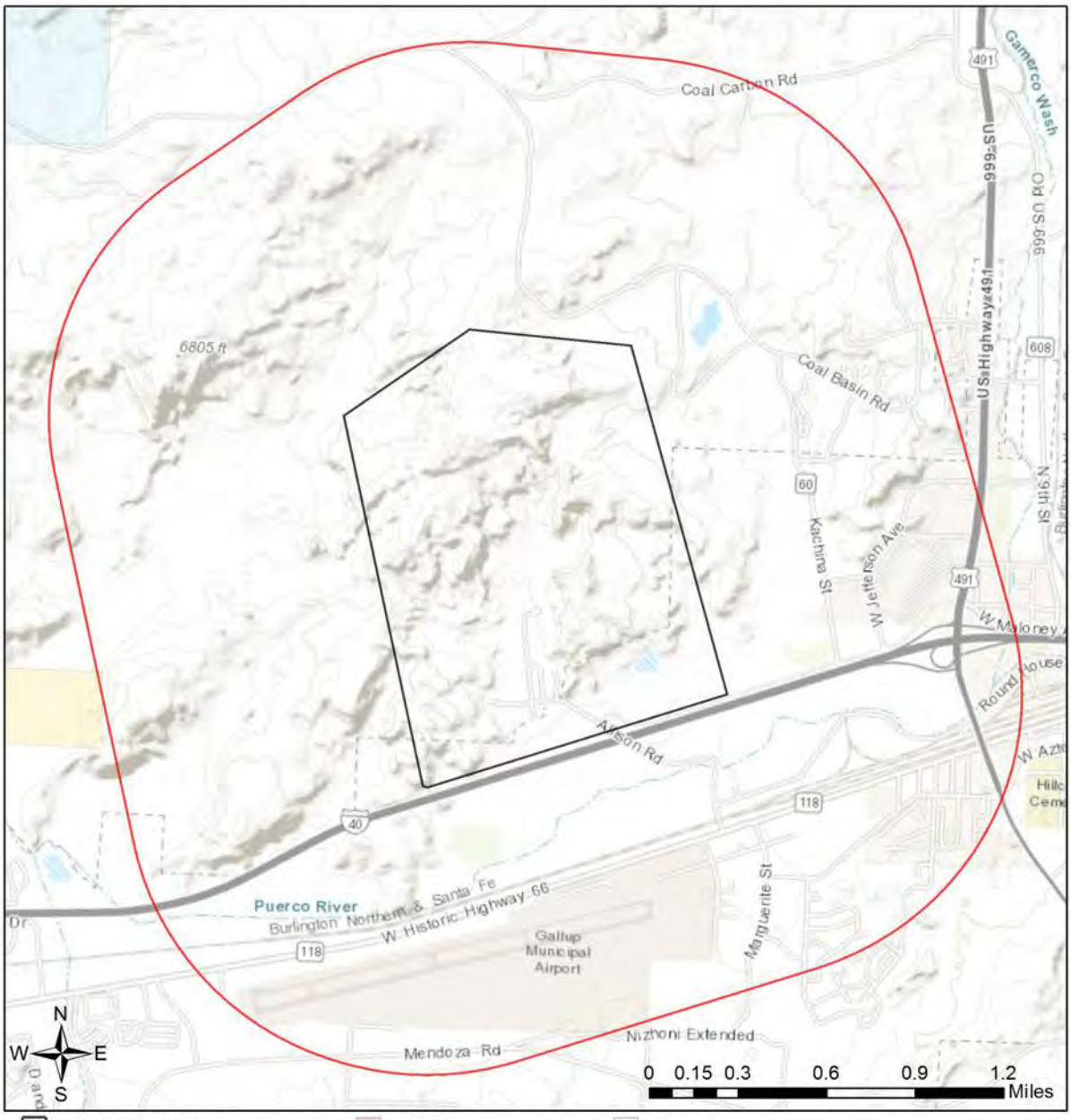
OVERALL STATUS

This report contains an initial list of recommendations regarding potential impacts to wildlife or wildlife habitats from the proposed project. Your project proposal is being forwarded to a Department biologist for review to determine whether there are any additional recommendations regarding the proposed actions. You should be notified within 30 days whether there are further recommendations regarding this project proposal.

About this report:

- This environmental review is based on the project description and location that was entered. The report must be updated if the project type, area, or operational components are modified.
- This is a preliminary environmental screening assessment and report. It is not a substitute for the potential wildlife knowledge gained by having a biologist conduct a field survey of the project area. Federal status and plant data are provided as a courtesy to users. The review is also not intended to replace consultation required under the federal Endangered Species Act (ESA), including impact analyses for federal resources from the U.S. Fish and Wildlife Service (USFWS) using their Information for Planning and Consultation tool.
- The New Mexico Environmental Review Tool utilizes species observation locations and species distribution models, both of which are subject to ongoing change and refinement. Inclusion or omission of a species within a report can not guarantee species presence or absence at a precise point location, as might be indicated through comprehensive biological surveys. Specific questions regarding the potential for adverse impacts to vulnerable wildlife populations or habitats, especially in areas with a limited history of biological surveys, may require further on-site assessments.
- The New Mexico Department of Game Fish (Department) encourages use of the Environmental Review Tool to modify proposed projects for avoidance, minimization, or mitigation of wildlife impacts. However, this tool is not intended to be used in a repeatedly iterative fashion to adjust project attributes until a previously determined recommendation is generated. This tool serves to asses impacts once project details are developed. The New Mexico Crucial Habitat Assessment Tool is the appropriate system for early-stage project planning and design to avoid areas of anticipated wildlife concerns and associated regulatory requirements.

Allison Mine bio Resources revised



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Special Status Animal Species within 1 Miles of Project Area

Common Name	Scientific Name	USFWS (ESA)	NMDGF (WCA)	NMDGF SGCN/SERI
Peregrine Falcon	Falco peregrinus		T	SGCN
Lewis's Woodpecker	Melanerpes lewis			SGCN
Williamson's Sapsucker	Sphyrapicus thyroideus			SGCN
Olive-Sided Flycatcher	Contopus cooperi			SGCN
Pinyon Jay	Gymnorhinus cyanocephalus			SGCN
Clark's Nutcracker	Nucifraga columbiana			SGCN
Juniper Titmouse	Baeolophus ridgwayi			SGCN
Pygmy Nuthatch	Sitta pygmaea			SGCN
Western Bluebird	Sialia mexicana			SGCN
Loggerhead Shrike	Lanius ludovicianus			SGCN
Gray Vireo	Vireo vicinior		T	SGCN
Spotted Bat	Euderma maculatum		T	SGCN
Gunnison's Prairie Dog	Cynomys gunnisoni			SGCN
Cougar	Puma concolor			SERI
Mule Deer	Odocoileus hemionus			SERI

ESA = Endangered Species Act, WCA = Wildlife Conservation Act, SGCN = Species of Greatest Conservation Need, SERI = Species of Economic and Recreational Importance

Project Recommendations

Baseline surveys should grow out of a clear and concise statement of the ultimate objectives of the investigation. Different objectives require different sampling designs. A clear and concise statement of objectives is essential to select appropriate locations for inclusion in the study, take relevant and meaningful measurements at these locations, and perform analyses that will provide a basis for the conclusions necessary for meeting the stated objectives.

- Studies associated with specific proposed actions should be designed to gather information on key wildlife species and important wildlife habitats based on anticipated project?specific effects.
- Surveys, inventories, and monitoring are carried out using protocols. Protocols are detailed study plans that explain how data are to be collected, managed, analyzed, and reported, and are a key component of quality assurance for natural resource monitoring and inventory programs.
- Sampling design, including determination of sample size, replication, stratification, and statistical analysis, is as important to a baseline study as survey or inventory method. These considerations will influence the conclusions that can be drawn from collected data and appropriate application of findings to impacts analysis or management decisions. If sufficient resources are available, sampling design should be reviewed by a biological statistician prior to expenditure of money and effort.
- Investigations of wildlife likely present in the project area and area of potential effects should begin by accessing existing information. Wildlife and habitat information is often available to the public, and may be archived in online searchable databases. Much information on the distribution, status, habitat affinities and natural history of New Mexico's wildlife is housed in the Biota Information System of New Mexico (BISON?M) database, which contains species accounts for all New Mexico vertebrates and selected invertebrates.
- Special attention should be given to documenting the presence or potential occurrence of state and federally listed species, candidate and sensitive species. Special training and certification is often required to survey for state and/or federally listed species. Permits may also be required from USFWS and the Department to conduct surveys for certain species, particularly if these species are listed, or if trapping, handling, and/or collecting of wildlife is necessary. For threatened, endangered, and candidate species, consultation with agency species biologists may be necessary to document potential occurrence within a project area or area of potential effects of a proposed project. Some of this information may not be accessible by the public, and in the case of federally listed species, may require informal or formal consultation with the USFWS.

Additional information is available from the Department's Baseline Wildlife Study Guideline. Once these initial guidelines have been followed, baseline study proposals may be submitted directly to the Department fo review.

The proposed project occurs within a riparian area. Because riparian areas are important wildlife habitats, your project will receive a custom review by Department staff. If your project involves removal of non-native riparian trees or planting of native riparian vegetation, please refer to the Department's riparian habitat management guidelines.

Disclaimers regarding recommendations:

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

NEW MEXICO STATE ENDANGERED PLANT SPECIES (19.21.2.8 NMAC)

Detailed information and images of many of these and other rare plants can be found at the New Mexico Rare Plants website (http://nmrareplants.unm.edu/index.html) (plants marked with an * are not listed on the NMRPTC website)

Botanical Name	Common Name	New Mexico Counties
Aliciella formosa	Aztec gilia	San Juan
Allium gooddingii	Goodding's onion	San Juan, McKinley, Catron, Lincoln, Santa Fe
Amsonia tharpii	Tharp's bluestar	Eddy
Argemone pleiacantha subsp. pinnatisecta (A. pinnatisecta)	Sacramento prickly poppy	Otero
Astragalus humillimus	Mancos milkvetch	San Juan
Cirsium vinaceum	Sacramento Mountains thistle	Otero
Cirsium wrightii	Wright's marsh thistle	Chaves, Grant, Guadalupe, Otero, Sierra, Socorro
Cleome multicaulis (Peritoma multicaulis)	slender spiderflower	Grant, Hidalgo
Coryphantha scheeri var. scheeri	Scheer's pincushion cactus	Chavez, Eddy
Cylindropuntia viridiflora	Santa Fe cholla	Santa Fe
Cypripedium parviflorum var. pubescens *	golden lady's slipper	San Juan, Grant, San Miguel
Echinocereus fendleri var. kuenzleri	Kuenzler's hedgehog cactus	Chavez, Eddy, Lincoln, Otero
Erigeron hessii	Hess' fleabane	Catron
Erigeron rhizomatus	Zuni fleabane	Catron, McKinley, San Juan
Eriogonum gypsophilum	gypsum wild buckwheat	Eddy
Escobaria duncanii	Duncan's pincushion cactus	Sierra
Escobaria organensis	Organ Mountain pincushion cactus	Doña Ana
Escobaria sneedii var. leei	Lee's pincushion cactus	Eddy

Escobaria sneedii var. sneedii	Sneed's pincushion cactus	Doña Ana
Escobaria villardii	Villard's pincushion cactus	Doña Ana, Otero
Hedeoma todsenii	Todsen's pennyroyal	Otero, Sierra
Helianthus paradoxus	Pecos sunflower	Cibola, Valencia, Socorro, Guadalupe, Chavez
Hexalectris nitida	shining coralroot	Eddy, Otero
Hexalectris spicata *	crested coralroot	Sierra, Otero, Hidalgo
Ipomopsis sancti-spiritus	Holy Ghost ipomopsis	San Miguel
Lepidospartum burgessii	gypsum scalebroom	Otero
Lilium philadelphicum *	wood lily	Otero, Los Alamos, Sandoval, San Miguel, Santa Fe
Mammillaria wrightii var. wilcoxii *	Wilcox pincushion cactus	Hidalgo, Grant, Doña Ana, Luna
Opuntia arenaria	sand prickly pear	Doña Ana, Luna, Socorro
Pediocactus knowltonii	Knowlton's cactus	San Juan
Pediomelum pentaphyllum	Chihuahua scurfpea	Hidalgo
Peniocereus greggii	night-blooming cereus	Doña Ana, Grant, Hidalgo, Luna
Polygala rimulicola var. mescalerorum	San Andres milkwort	Doña Ana
Puccinellia parishii	Parish's alkali grass	Catron, Cibola, Grant, Hidalgo, McKinley, Sandoval, San Juan
Sclerocactus cloveriae subsp. brackii	Brack's cactus	San Juan, Rio Arriba, Sandoval
Sclerocactus mesae-verdae	Mesa Verde cactus	San Juan
Spiranthes magnicamporum *	lady tresses orchid	Bernalillo, Santa Fe, Guadalupe, Rio Arriba

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Rare Plant List
County List
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Photo List

About the List
History of Changes
Species Considered, but dropped

Photographers, Illustrators and Authors
Image Usage Guidelines
Sponsors
Discussion Group
Useful Literature
Links

Results of County Search

MCKINLEY	
Scientific name	County-NM
Allium gooddingii	Catron, Lincoln, Mckinley, San Juan
Astragalus chuskanus	Mckinley, San Juan
Astragalus cliffordii	Mckinley, San Juan, Sandoval
Astragalus heilii	Mckinley
Astragalus micromerius	Mckinley, Rio Arriba, San Juan
Astragalus missouriensis var. accumbens	Catron, Cibola, Mckinley
Astragalus naturitensis	Mckinley, San Juan
Erigeron acomanus	Cibola, Mckinley
Erigeron rhizomatus	Catron, Mckinley, San Juan
Erigeron sivinskii	Mckinley
Eriogonum lachnogynum var. colobum	Mckinley, Taos
Eriogonum lachnogynum var. sarahiae	Mckinley
Mentzelia filifolia	Mckinley
Muhlenbergia arsenei	Mckinley, Sandoval, Santa Fe
Physaria navajoensis	Mckinley
Puccinellia parishii	Catron, Cibola, Grant, Hidalgo, Mckinley, San Juan, Sandoval
Senecio cliffordii	Mckinley, Rio Arriba

NM STATE UNIVERSITY

New Mexico Department of Agriculture
Office of the Director/Secretary
MSC 3189
New Mexico State University
P.O. Box 30005
Las Cruces, NM 88003-8005
575-646-3007

October 19, 2016

MEMORANDUM

TO: General Public

FROM: Director/Secretary Jeff Witte

SUBJECT: New Mexico Noxious Weed List Update

The Director of the New Mexico Department of Agriculture has selected the following plant species *(see attached New Mexico Noxious Weed List)* to be targeted as noxious weeds for control or eradication pursuant to the Noxious Weed Management Act of 1998.

Petitions to add new plant species to the state noxious weed list were solicited and received by the New Mexico Department of Agriculture (NMDA) from Cooperative Weed Management Areas, individuals, agencies, and organizations. The petitions were reviewed by the New Mexico Weed List Advisory Committee using ecological, distribution, impact, and legal status criteria within the State of New Mexico and adjoining states and countries. Based on their extensive knowledge and experience, experts from the New Mexico State University Plant Sciences Department added several species as well.

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

New Mexico Noxious Weed List

Updated September 2016

Class A Species

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

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

Class B Species

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

Common Name	Scientific Name
African rue	*Peganum harmala*
Bull thistle	*Cirsium vulgare*
Chicory	*Cichorium intybus*
Halogeton	*Halogeton glomeratus*
Malta starthistle	*Centaurea melitensis*
Perennial pepperweed	*Lepidium latifolium*
Poison hemlock	*Conium maculatum*

Quackgrass	*Elytrigia repens*
Russian knapweed	*Acroptilon repens*
Spiny cocklebur	*Xanthium spinosum*
Teasel	*Dipsacus fullonum*

Class C Species

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

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

Watch List Species

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

Common Name	**Scientific Name**
Crimson fountaingrass	*Pennisetum setaceum*
Meadow knapweed	*Centaurea pratensis*
Myrtle spurge	*Euphorbia myrsinites*
Pampas grass	*Cortaderia sellonana*
Sahara mustard	*Brassica tournefortii*
Syrian beancaper	*Zygophyllum fabago L.*
Wall rocket	*Diplotaxis tenuifolia*

Appendix B

Soil Survey Report for the Phase IV Area of Potential Effects

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for McKinley County Area, New Mexico, McKinley County and Parts of Cibola and San Juan Counties

Allison_APE

February 22, 2018

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:10,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: McKinley County Area, New Mexico, McKinley County and Parts of Cibola and San Juan Counties
Survey Area Data: Version 12, Sep 13, 2017

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

Date(s) aerial images were photographed: Apr 13, 2011—Mar 3, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
240	Breadsprings and Nahodish soils, 0 to 2 percent slopes	25.2	14.5%
241	Mentmore loam, 1 to 8 percent slopes	77.2	44.6%
258	Eagleye-Atchee-Rock outcrop complex, 2 to 35 percent slopes	70.7	40.8%
Totals for Area of Interest		**173.1**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

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

McKinley County Area, New Mexico, McKinley County and Parts of Cibola and San Juan Counties

240—Breadsprings and Nahodish soils, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1xkb
Elevation: 6,100 to 6,800 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 46 to 49 degrees F
Frost-free period: 100 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Nahodish and similar soils: 35 percent
Breadsprings and similar soils: 35 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nahodish

Setting

Landform: Stream terraces on valley floors
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from sandstone and shale

Typical profile

A - 0 to 1 inches: silt loam
Bw1 - 1 to 9 inches: silty clay loam
Bw2 - 9 to 17 inches: silty clay
Bk1 - 17 to 31 inches: silty clay
Bk2 - 31 to 36 inches: clay loam
2Bk3 - 36 to 58 inches: silt loam
3Bky - 58 to 80 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: Rare
Calcium carbonate, maximum in profile: 10 percent
Gypsum, maximum in profile: 10 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site: Salty Bottomland (R036XB010NM)
Hydric soil rating: No

Description of Breadsprings

Setting

Landform: Stream terraces on valley floors
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Stream alluvium derived from sandstone and shale

Typical profile

A - 0 to 3 inches: loam
Bw1 - 3 to 7 inches: loam
Bw2 - 7 to 14 inches: stratified clay loam
Bk - 14 to 22 inches: fine sandy loam
Ck1 - 22 to 29 inches: stratified silt loam
Ck2 - 29 to 36 inches: stratified loam
Ck3 - 36 to 70 inches: stratified silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: Rare
Calcium carbonate, maximum in profile: 15 percent
Gypsum, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site: Salty Bottomland (R036XB010NM)
Hydric soil rating: No

Minor Components

Nahodish sodic, sodic

Percent of map unit: 15 percent
Ecological site: Salty Bottomland (R036XB010NM)
Other vegetative classification: SALTY BOTTOMLAND (null_27)
Hydric soil rating: No

Breadsprings sodic, sodic

Percent of map unit: 10 percent
Ecological site: Salty Bottomland (R036XB010NM)
Other vegetative classification: SALTY BOTTOMLAND (null_16)
Hydric soil rating: No

Berryhill

Percent of map unit: 5 percent
Ecological site: Clayey (R036XB002NM)
Other vegetative classification: Clayey (null_7)
Hydric soil rating: No

241—Mentmore loam, 1 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1xn9
Elevation: 6,100 to 6,900 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 45 to 49 degrees F
Frost-free period: 100 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Mentmore and similar soils: 85 percent
Atrac and similar soils: 10 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mentmore

Setting

Landform: Drainageways, fan remnants on valley sides, dip slopes on cuestas
Landform position (three-dimensional): Side slope, tread, dip
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, concave
Parent material: Fan and slope alluvium derived from sandstone and shale

Typical profile

A - 0 to 1 inches: loam
Bt1 - 1 to 2 inches: clay loam
Bt2 - 2 to 7 inches: sandy clay loam
Btk1 - 7 to 13 inches: clay loam
Btk2 - 13 to 22 inches: clay loam
Bk - 22 to 70 inches: clay loam

Properties and qualities

Slope: 1 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained

Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.7 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Ecological site: Loamy (R036XB006NM)
Hydric soil rating: No

Description of Atrac

Properties and qualities
Slope: 1 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Land capability classification (irrigated): None specified
Ecological site: Loamy (R035XA112NM)
Other vegetative classification: Loamy (null_13)
Hydric soil rating: No

Minor Components

Gish
Percent of map unit: 5 percent
Ecological site: Clayey (R035XA128NM)
Other vegetative classification: Clayey (null_7)
Hydric soil rating: No

258—Eagleye-Atchee-Rock outcrop complex, 2 to 35 percent slopes

Map Unit Setting
National map unit symbol: 1xnd
Elevation: 6,500 to 7,000 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 46 to 49 degrees F
Frost-free period: 100 to 135 days

Farmland classification: Not prime farmland

Map Unit Composition

Eagleye and similar soils: 40 percent
Atchee and similar soils: 35 percent
Rock outcrop: 20 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eagleye

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, footslope, shoulder, toeslope
Landform position (three-dimensional): Side slope, crest, nose slope, head slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium over residuum weathered from shale

Typical profile

A - 0 to 2 inches: gravelly clay loam
Cy - 2 to 10 inches: clay
Cr - 10 to 20 inches: bedrock

Properties and qualities

Slope: 5 to 35 percent
Depth to restrictive feature: 5 to 20 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Gypsum, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Very low (about 1.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Clayey (R036XB002NM)
Hydric soil rating: No

Description of Atchee

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, footslope, shoulder, toeslope
Landform position (three-dimensional): Side slope, crest, nose slope, head slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Slope alluvium over residuum weathered from sandstone and shale

Typical profile

A - 0 to 2 inches: fine sandy loam
C1 - 2 to 12 inches: extremely channery sandy clay loam
C2 - 12 to 14 inches: extremely channery sandy clay loam
R - 14 to 20 inches: bedrock

Properties and qualities

Slope: 2 to 10 percent
Depth to restrictive feature: 5 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Clayey (R036XB002NM)
Hydric soil rating: No

Description of Rock Outcrop

Typical profile

R - 0 to 60 inches: bedrock

Properties and qualities

Depth to restrictive feature: 0 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Interpretive groups

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

Minor Components

Lockerby

Percent of map unit: 3 percent
Ecological site: Clayey (R035XA128NM)
Other vegetative classification: Clayey (null_7)
Hydric soil rating: No

Barboncito

Percent of map unit: 2 percent
Ecological site: Loamy (R035XA112NM)
Other vegetative classification: Loamy (null_13)
Hydric soil rating: No

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Appendix C

Water Resources Data and Wetland Delineation Forms

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
1970 EAST 3RD AVENUE, SUITE 109
DURANGO, COLORADO 81301

REPLY TO
ATTENTION OF

December 13, 2016

Regulatory Division

SUBJECT: No Permit Required – Action No. SPA-2016-00322, Allison Site, New Mexico Abandoned Mine Land Program, McKinley County, New Mexico

New Mexico Abandoned Mine Land Program
ATTN: Erin Marynak
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Ms. Marynak:

I am writing this letter in response to your request for a determination of Department of the Army permit requirements for the proposed Allison site located at approximately latitude 35.523, longitude -108.786, in McKinley County, New Mexico. The work, as described in your September 13, 2016 email, will consist of backfilling a sinkhole to protect adjacent property. We have assigned Action No. SPA-2016-00322 to this project. Please reference this number in all future correspondence concerning the project.

Based on the information provided, we have determined that a Department of the Army permit is not required because there are no jurisdictional waters of the U.S. within the project site. However, please be advised that there are potential waters of the U.S. located in the vicinity of the project site and it is incumbent upon you to remain informed of any changes in the Corps Regulatory Program regulations and policy as they relate to your project. If your plans change such that waters of the U.S. could be impacted by the proposed project, please contact our office for a reevaluation of permit requirements.

This decision is based on an approved jurisdictional determination (JD) (attached) that there are no waters of the United States on the project site. The basis for this JD is that the project site contains isolated waters. A copy of this JD is also available at http://www.spa.usace.army.mil/reg/JD. This approved JD is valid for five years unless new information warrants revision of the determination before the expiration date.

You may accept or appeal this approved JD or provide new information in accordance with the attached Notification of Administration Appeal Options and Process and Request for Appeal (NAAOP-RFA). If you elect to appeal this approved JD, you

must complete Section II of the form and return it to the Army Engineer Division, South Pacific, CESPD-PDS-O, Attn: Tom Cavanaugh, Administrative Appeal Review Officer, 1455 Market Street, Room 1760, San Francisco, CA 94103-1399 within 60 days of the date of this notice. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

If you have any questions concerning our regulatory program, please contact me at 970-259-1947 or by e-mail at Christopher.r.wrbas@usace.army.mil. At your convenience, please complete a Customer Service Survey on-line available at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

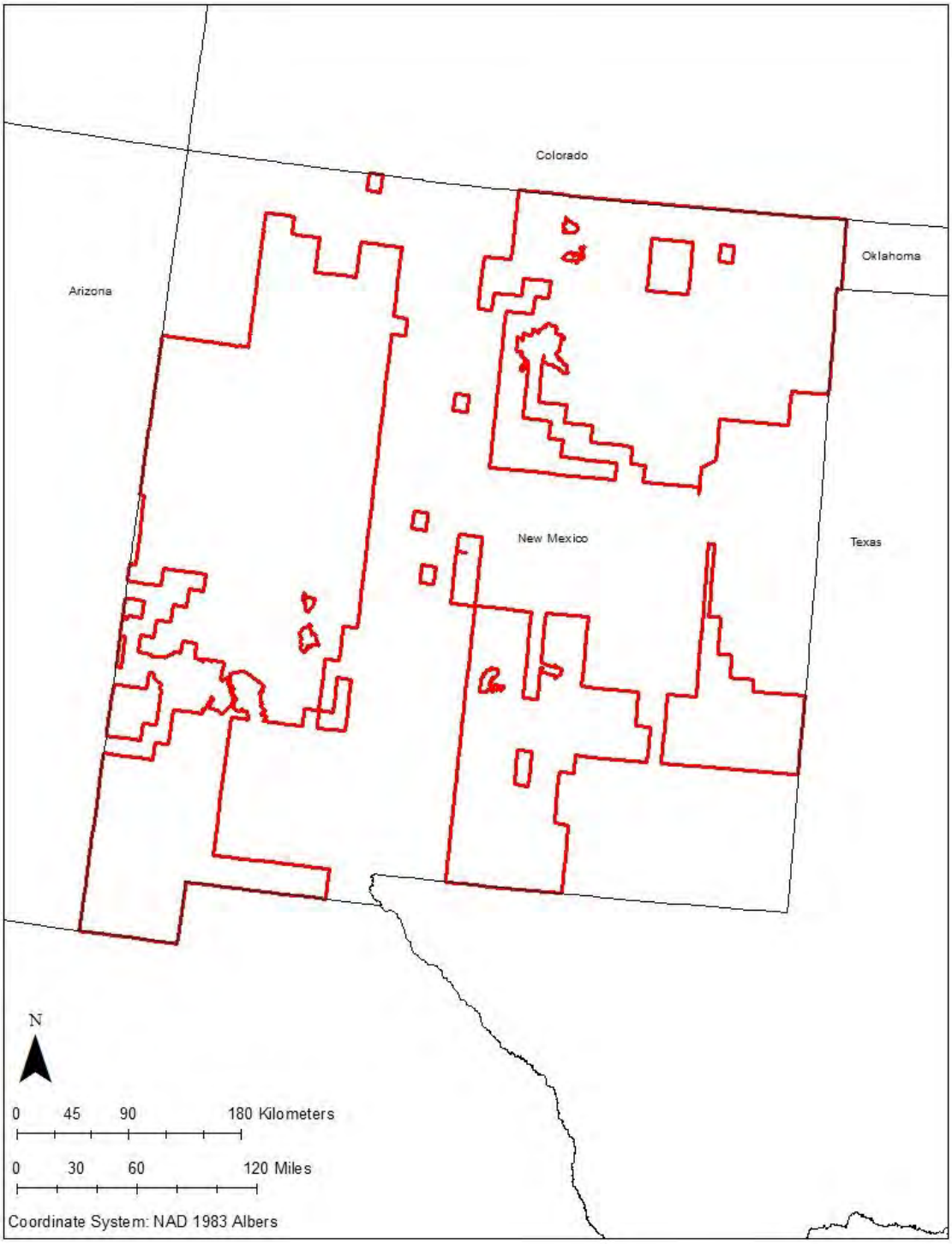
Sincerely,

Chris Wrbas
Project Manager

Supplemental Map Information (User Report)
Outline

Project ID: R09Y12P41

Project Title or Area: Scalable State of New Mexico



Source Data (type, scale and date): 1 meter resolution National Agricultural Imagery Program (NAIP) Natural Color Imagery (2010)

Collateral Data (include any digital data used as collateral):
2010 National Geographic Society (NGS) 1:24,000 topographic map, U.S Fish and Wildlife Service 1:100,000 Quadrangle, United States Geological Survey (USGS) hydrologic data, USGS topographic map

Inventory Method (original mapping, map update, techniques used):
Wetlands were derived from water and river symbols on topographic maps and "Heads up" digitizing was used to update double lined rivers on the topographic map to match 2010 NAIP imagery. This method uses aerial digital imagery on the computer monitor and wetlands are delineated on the screen using ESRI ArcGIS software. Wetlands were identified at 1:24,000 and delineated at 1:8,000. Swamp symbols on white and green backgrounds were considered emergent and forested wetlands, respectively.

Classification (Cowardin wetlands, riparian, uplands, hydrogeomorphic, etc.):

Wetland Definition and Classification

The Service uses the Cowardin *et al.* (1979) definition of a wetland; **Classification of Wetlands and Deepwater Habitats of the United States** (FWS/OBS – 79/31 December 1979). This definition is the Federal standard for classifying and mapping wetlands as determined by the Federal Geographic Data Committee. It is a two-part definition as indicated below:

> *Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water.*
>
> *For purposes of this classification wetlands must have one or more of the following three attributes: 1) at least periodically, the land supports predominantly hydrophytes; 2) the substrate is predominantly undrained hydric soil; and 3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.*

Links to on-line Classification system information:

http://www.fws.gov/Wetlands/_documents/gNSDI/ClassificationWetlandsDeepwaterHabitatsUS.pdf

Data Limitations:
Scalable map products may be generated in certain parts of the country as initial or interim information. These interim products may include map information at different scales, classification level(s), or resolution. The goal is to develop maps that can be expanded or upgraded on demand. The production of interim products is at the discretion of the Region with an approved waiver provided by the Service's Data Steward for Water Resources and Wetlands. Regional specifications will dictate the procedures used to produce and distribute any interim map information.

Because this product is considered preliminary or interim and is a compilation of existing data and aerial image interpretation rather than an image-based mapping process, it will not comply with Federal Geographic Data Committee standards. The spatial accuracy goal for scalable products has been established at 40 meters with 90 percent accuracy for ecological classification to the Cowardin class level (excluding Lacustrine systems) for mapping.

Description of wetland habitats:

- **Organize by Cowardin classification type:** A variety of riverine, palustrine and lacustrine wetland systems were identified. See digital data for all examples.

- **Wetland classification codes and corresponding (general) community type(s):**

Mapping Code	Cowardin description	Definition
Lacustrine Features		
L(h)	Lacustrine	Lakes, reservoirs deeper than 6 meters
L1UB	Lacustrine, unconsolidated bottom	Permanently flooded, deep-water habitat greater than 20 acres in size
L2US	Lacustrine, littoral, unconsolidated shore	Playas larger than 20 acres
Riverine Features		
R2USC	Riverine, lower perennial, unconsolidated shore	Seasonally flooded unconsolidated substrate associated with lower perennial riverine systems
R3UB(H)	Riverine, upper perennial, unconsolidated bottom	Permanently flowing upper perennial rivers
R3USC	Riverine, upper perennial, unconsolidated shore	Seasonally flooded unconsolidated substrate associated with upper perennial riverine systems
R4SB(A,C)	Riverine, intermittent, streambed	Temporarily and seasonally flowing riverine channels
R5UB(Fx, H)	Riverine, unknown perennial, unconsolidated bottom	River
Palustrine Features		
PUS	Palustrine, unconsolidated shore	Playas smaller than 20 acres
PUSC(h)	Palustrine, unconsolidated shore	Seasonally flooded basins with little or no vegetation
PUS/EM1C(h)		
PUB(h)	Palustrine, unconsolidated bottom	Ponds, basins
PUBF(h)	Palustrine, unconsolidated bottom	Semi-permanently flooded ponds
PEM	Palustrine, emergent	Marsh, prairie, basin, depression, spring/seep, wet meadow

PEM1C(h)	Palustrine, emergent, persistent	Seasonally flooded wetlands dominated by persistent herbaceous vegetation
PEM1F(h)	Palustrine, emergent, persistent	Semi-permanently flooded depressions comprised of erect, rooted, herbaceous vegetation
PEM/FO1C	Palustrine, emergent, forested, broad-leaved deciduous	Seasonally flooded depressions, banks and floodplains characterized by a matrix of persistent herbaceous and forested vegetation.
PEM/SS1C(h)	Palustrine, emergent, shrub-scrub, broad-leaved deciduous	Seasonally flooded depressions, banks and floodplains characterized by a matrix of herbaceous and scrub-shrub vegetation.
PFO	Palustrine, forested	Forested floodplain, bottomland
PFO/EM(1C)	Palustrine, forested, emergent	Seasonally flooded depressions and floodplains characterized by a matrix of forested and herbaceous vegetation
PFO/SS	Palustrine, forested, shrub-scrub	Depressions and floodplains characterized by a matrix of forested and scrub-shrub vegetation
PFO1(A,C)	Palustrine, forested, broad-leaved deciduous	Temporarily and seasonally flooded depressions and floodplains dominated by forested vegetation
PSS	Palustrine, shrub-scrub	Scrub-shrub wetland typically found along drainages
PSS/EM(1C)	Palustrine, shrub-scrub, emergent	Seasonally flooded depressions and floodplains characterized by a matrix of scrub-shrub and herbaceous vegetation
PSS1C(h)	Palustrine, shrub-scrub, broad-leaved deciduous	Seasonally flooded scrub-shrub wetland typically found along drainages
PSS1F(h)	Palustrine, shrub-scrub, broad-leaved deciduous	Semi-permanently flooded scrub-shrub wetland typically found along drainages

Description of other habitats:

- **Riparian** N/A
- **Uplands** N/A

List of wetland plant species with indicator status:
N/A

Regional specialized conventions:
N/A

Other discussion of mapping issues (image quality, water conditions, etc.):
N/A

References:

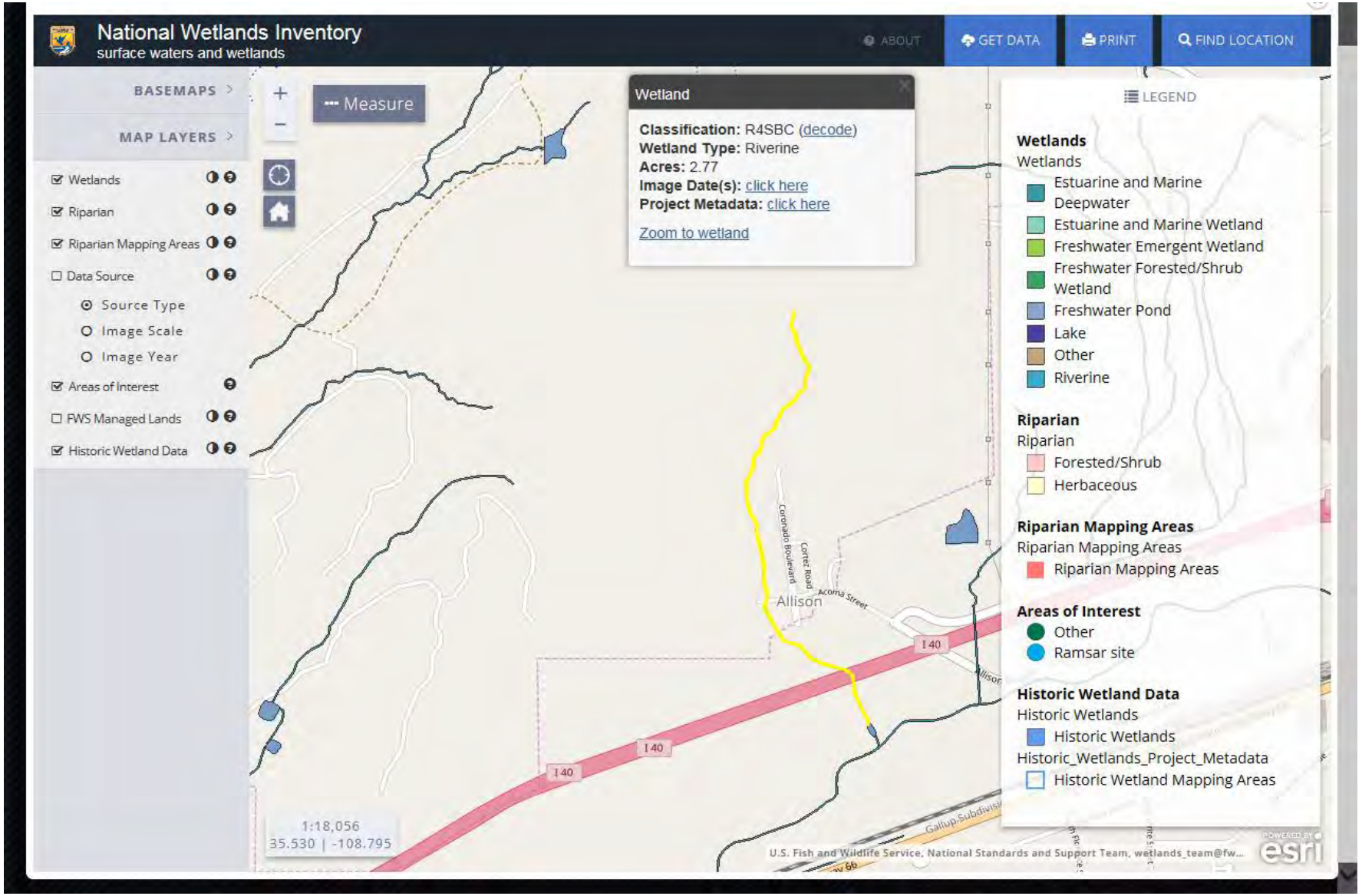
Data Collection Requirements and Procedures for Mapping Wetland, Deepwater and Related Habitats of the United States
U.S. Fish and Wildlife Service, Division of Habitat and Resource, Conservation Branch of Resource and Mapping Support, Arlington, VA 22203

National Agricultural Imagery Program
2010 NAIP imagery

U.S. Fish and Wildlife Service.
1:100,000 Quadrangle. 1980-1984. National Wetlands Inventory. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands/

U.S. Geological Survey. ***New Mexico*** **[map]**
1:24,000. 7.5 Minute Series. United States Department of the Interior, USGS

NWI map for Allison, NM



National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth
- Regulatory Floodway Zone AE, AO, AH, VE, AR

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2018 at 2:05:05 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Allison | City/County: Allison/McKinley | Sampling Date: 5/8/2018

Applicant/Owner: AML | State: NM | Sampling Point: SP-1-WET

Investigator(s): Wozniak, Lisignoli | Section, Township, Range: S18, T15N, R18W

Landform (hillslope, terrace, etc.): shallow swale | Local relief (concave, convex, none): concave | Slope (%): >1

Subregion (LRR): D | Lat: 35.5232 | Long: -108.7829 | Datum: WGS84

Soil Map Unit Name: Breadsprings and Nahodish soils, 0-2% | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: In extended drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: r=1m)	Absolute % Cover	Dominant Species?	Indicator Status
1. *none*			
2.			
3.			
4.			
50% = , 20% =	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: r=1m)			
1. *None*			
2.			
3.			
4.			
5.			
50% = , 20% =	0	= Total Cover	
Herb Stratum (Plot size: r=1m)			
1. *Eleocharis palustris*	80	yes	OBL
2. *Pascopyron smithii*	10	no	FAC
3. *Kochia scoparia*	10	no	NL (UPL)
4.			
5.			
6.			
7.			
8.			
50% = 50, 20% = 20	100	= Total Cover	
Woody Vine Stratum (Plot size: r=2m)			
1. *none*			
2.			
50% = , 20% =	0	= Total Cover	
% Bare Ground in Herb Stratum 0	% Cover of Biotic Crust 0		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Allison

SOIL

Sampling Point: SP-1-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 4/2	90	5YR 4/6	10	C	M	SiClLo	
2-16+	2.5Y 4/2	85	2.5Y 4/1	12	D	M	SiClLo	
			5YR 4/6	3	C	M		

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1) **(Nonriverine)**
- ☒ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches): >16

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Allison | City/County: Allison/McKinley | Sampling Date: 5/8/2018

Applicant/Owner: AML | State: NM | Sampling Point: SP-2-UPL

Investigator(s): Wozniak, Lisignoli | Section, Township, Range: S18, T15N, R18W

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): none | Slope (%): 1

Subregion (LRR): D | Lat: 35.5238 | Long: -108.7819 | Datum: WGS84

Soil Map Unit Name: Breadsprings and Nahodish soils, 0-2% | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: In extended drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: r=1m)	Absolute % Cover	Dominant Species?	Indicator Status
1. *none*			
2.			
3.			
4.			
50% = ____, 20% = ____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: r=1m)			
1. *Atriplex canescens*	35	yes	NL (UPL)
2.			
3.			
4.			
5.			
50% = 17.5, 20% = 7	35	= Total Cover	
Herb Stratum (Plot size: r=1m)			
1. *Pascopyron smithii*	40	yes	FAC
2. *Kochia scoparia*	10	no	NL (UPL)
3. *Descurainia pinnata*	5	no	NL (UPL)
4.			
5.			
6.			
7.			
8.			
50% = 27.5, 20% = 11	55	= Total Cover	
Woody Vine Stratum (Plot size: r=2m)			
1. *none*			
2.			
50% = ____, 20% = ____	0	= Total Cover	
% Bare Ground in Herb Stratum 15	% Cover of Biotic Crust 0		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Allison

SOIL

Sampling Point: SP-2-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					SiClLo	
4-14	2.5Y 4/3	100					SiClLo	
14-16+	2.5Y 4/3	95	2.5Y 4/1	5	D	M		

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches): >16

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Allison | City/County: Allison/McKinley | Sampling Date: 5/8/2018

Applicant/Owner: AML | State: NM | Sampling Point: SP-3-WET

Investigator(s): Wozniak, Lisignoli | Section, Township, Range: S18, T15N, R18W

Landform (hillslope, terrace, etc.): shallow swale | Local relief (concave, convex, none): concave | Slope (%): 1

Subregion (LRR): D | Lat: 35.5232 | Long: -108.7819 | Datum: WGS84

Soil Map Unit Name: Breadsprings and Nahodish soils, 0-2% | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐		
Hydric Soil Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: In extended drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: r=1m)	Absolute % Cover	Dominant Species?	Indicator Status
1. *none*			
2.			
3.			
4.			
50% = , 20% =	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: r=1m)			
1. *None*			
2.			
3.			
4.			
5.			
50% = , 20% =	0	= Total Cover	
Herb Stratum (Plot size: r=1m)			
1. *Pascopyron smithii*	90	yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
50% = 45, 20% = 18	90	= Total Cover	
Woody Vine Stratum (Plot size: r=2m)			
1. *none*			
2.			
50% = , 20% =	0	= Total Cover	
% Bare Ground in Herb Stratum 10	% Cover of Biotic Crust 0		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Allison

SOIL

Sampling Point: SP-3-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16+	2.5Y 4/2	85	5YR 4/6	10	C	M	Lo	
			2.5Y 4/1	5	D	M		

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☒ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches): >16

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Allison | City/County: Allison/McKinley | Sampling Date: 5/8/2018

Applicant/Owner: AML | State: NM | Sampling Point: SP-4-UPL

Investigator(s): Wozniak, Lisignoli | Section, Township, Range: S18, T15N, R18W

Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): none | Slope (%): 1

Subregion (LRR): D | Lat: 35.5238 | Long: -108.7819 | Datum: WGS84

Soil Map Unit Name: Breadsprings and Nahodish soils, 0-2% | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: In extended drought

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: r=1m)	Absolute % Cover	Dominant Species?	Indicator Status
1. *none*			
2.			
3.			
4.			
50% = , 20% =	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: r=1m)			
1. *None*			
2.			
3.			
4.			
5.			
50% = , 20% =	0	= Total Cover	
Herb Stratum (Plot size: r=1m)			
1. *Kochia scoparia*	50	yes	NL (UPL)
2. *Pascopyron smithii*	30	yes	FAC
3. *Descurainia pinnata*	5	no	NL (UPL)
4.			
5.			
6.			
7.			
8.			
50% = 42.5, 20% = 17	85	= Total Cover	
Woody Vine Stratum (Plot size: r=2m)			
1. *none*			
2.			
50% = , 20% =	0	= Total Cover	
% Bare Ground in Herb Stratum 15	% Cover of Biotic Crust 0		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Allison

SOIL

Sampling Point: SP-4-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Lo	
4-16	2.5Y 4/3	100					Lo	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
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- ☐ 1 cm Muck (A9) (**LRR D**)
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- ☐ Redox Dark Surface (F6)
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- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
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- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
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- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
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- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):
Water Table Present?	Yes	☐	No	☒	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches): >16

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix D

List of Species Detected During the Biological Field Surveys

ALLISON Flora Detected During Field Surveys

Graminoids

Scientific Name	Common Name
Achnatherum hymenoides	Indian ricegrass
Aristida purpurea	Purple threeawn
Bouteloua gracilis	Blue grama
**Bromus inermis*	Smooth brome
**Bromus tectorum*	Cheatgrass
Eleocharis palustris	Common spikerush
Elymus longifolia	Squirreltail
Elymus pseudorepens	False quackgrass
Hesperostipa comata	Needle and thread
Hordeum jubatum	Foxtail barley
Juncus balticus	Baltic rush
*Muhlenbergia arsenei**	Navajo muhly
Pascopyrum smithii	Western wheatgrass
Pleuraphis jamesii	Galleta
*Poa pratensis***	Kentucky bluegrass
*Seteria viridis***	Green bristlegrass
Sporobolus airoides	Alkali sacaton
Sporobolus cryptandrus	Sand dropseed
Typha latifolia	Broadleaf cattail

Forbs

Asclepias subverticillata	Horsetail milkweed
Astragalus lonchocarpus	Rushy milkvetch
Atriplex dioica	Orache
Atriplex powellii	Powell's orache
Brickellia brachyphylla	Plumed brickellbush
Castilleja linariifolia	Wyoming Indian paintbrush
Chaetopappa ericoides	Rose heath
*Cirsium vulgare***	Bull thistle
*Convolvulus arvense***	Bindweed
Conyza canadensis	Horseweed
Cordylanthus wrightii	Wright's bird's beak
Cryptantha flava	Plateau yellow catseye
Descurainia pinnata	Western tansymustard
Dieteria canescens	Hoary tansyaster
Eriogonum cernuum	Nodding buckwheat
Eriogonum jamesii	James' buckwheat
Grindelia squarrosa	Curlycup gumweed
Helianthus annuus	Annual sunflower

Scientific Name	***Common Name***
Forbs (continued)	
Heterotheca villosa	Hairy goldenaster
*Kochia scoparia***	Mock cypress
*Lactuca serriola***	Prickly lettuce
Lappula occidentalis	Western tickseed
Lithospermum incisum	Narrowleaf stoneseed
Machaeranthera tanacetifolia	Tansyaster
*Marrubium vulgare***	Horehound
Mentzelia albicaulis	Whitestem blazingstar
Mentzelia filifolia	Threadleaf blazingstar (rare plant)
Mirabilis multiflora	Colorado four-o'clock
Oenothera curtiflora	Velvetweed
Peritoma serrulata	Rocky Mountain beeplant
Petradoria pumila	Rock goldenrod
Polygonum sp.	Knotweed
Rumex mexicanus	Mexican dock
*Salsola tragus***	Prickly Russian thistle
Solanum elaeagnifolium	Silverleaf nightshade
Sphaeralcea fendleri	Fendler's globemallow
Stanleya pinnata	Desert prince's plume
Symphyotrichum subulatum	Annual saltmarsh aster
Verbesina encelioides	Golden crownbeard
Woody Plants and Cacti	
Artemisia bigelovii	Bigelow's sagebrush
Artemisia tridentata	Big sagebrush
Atriplex canescens	Four-wing saltbush
Atriplex confertifolia	Shadscale
Chrysothamnus greenei	Greene's rabbitbrush
Cylindropuntia whipplei	Whipple's cholla
Echinocereus triglochidiatus	Claretcup hedgehog
Ericameria nauseosa	Rubber rabbitbrush
Eriogonum leptophyllum	Slenderleaf buckwheat
Eriogonum microthecum	Slender buckwheat
Forestiera pubescens	New Mexico olive
Gutierrezia sarothrae	Snakeweed
Juniperus monosperma	One-seed juniper
Krascheninnikovia lanata	Winterfat
Lycium pallidum	Pale wolfberry
Opuntia phaeacantha	Brownspine pricklypear
Pinus edulis	Piñon pine
Purshia stansburiana	Cliffrose
Purshia tridentata	Antelope bitterbrush

Scientific Name	*Common Name*
Woody Plants and Cacti (continued)	
Salix exigua	Coyote willow
Sarcobatus vermiculatus	Greasewood
*Tamarix chinensis***	Saltcedar
Tetradymia canescens	Gray horsebrush
*Ulmus pumila***	Siberian elm
Yucca baileyi	Bailey's yucca

*= rare plant
**= non-native

ALLISON Fauna Detected During Field Surveys

Birds

Scientific Name	Common Name	4-Letter Code
Archilochus alexandri	Black-chinned hummingbird	BCHU
Baeolophus ridgwayi	Juniper titmouse	JUTI
Buteo jamaicensis	Red-tailed hawk	RTHA
Catherpes mexicanus	Canyon wren	CANW*
Corvus brachyrhynchos	American crow	AMCR
Corvus corax	Common raven	CORA
Euphagus cyanocephalus	Brewer's blackbird	BRBL
Haemorhous mexicanus	House finch	HOFI
Junco hyemalis	Dark-eyed junco	DEJU
Lanius ludovicianus	Loggerhead shrike	LOSH
Mimus polyglottos	Northern mockingbird	NOMO
Molothrus ater	Brown-headed cowbird	BHCO
Passer domesticus	House sparrow	HOSP
Quiscalus quiscula	Common grackle	COGR
Sayornis saya	Say's phoebe	SAPH
Setophaga coronata	Yellow-rumped warbler	YEWA
Spizella passerina	Chipping sparrow	CHSP
Streptopelia decaocto	Eurasian collared-dove	EUCD
Sturnella neglecta	Western meadowlark	WEME
Tyrannus vociferans	Cassin's kingbird	CAKI
Zenaida asiatica	White-winged dove	WWDO
Zenaida macroura	Mourning dove	MODO
Zonotrichia leucophrys	*White-crowned Sparrow*	

Mammals

Canis domesticus	Domestic dog	
Canis latrans	Coyote	
Cynomys gunnisoni	Gunnison's prairie dog	
Felis concolor	Cougar	
Lynx rufus	Bobcat	
Odocoileus hemionus	Mule deer	
Sylvilagus audubonii	Desert cottontail	

Reptiles

Cnemidophorus neomexicanus	New Mexico whiptail lizard	
Sceloporus cowlesi	Southwestern fence lizard	
Uta stansburiana uniformis	Eastern side-blotched lizard	
Unknown spp.	unknown species	Snake tracks

APPENDIX E

Agency Consultation Letters

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
1970 EAST 3RD AVENUE, SUITE 109
DURANGO, COLORADO 81301

REPLY TO
ATTENTION OF

December 13, 2016

Regulatory Division

SUBJECT: No Permit Required – Action No. SPA-2016-00322, Allison Site, New Mexico Abandoned Mine Land Program, McKinley County, New Mexico

New Mexico Abandoned Mine Land Program
ATTN: Erin Marynak
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Ms. Marynak:

I am writing this letter in response to your request for a determination of Department of the Army permit requirements for the proposed Allison site located at approximately latitude 35.523, longitude -108.786, in McKinley County, New Mexico. The work, as described in your September 13, 2016 email, will consist of backfilling a sinkhole to protect adjacent property. We have assigned Action No. SPA-2016-00322 to this project. Please reference this number in all future correspondence concerning the project.

Based on the information provided, we have determined that a Department of the Army permit is not required because there are no jurisdictional waters of the U.S. within the project site. However, please be advised that there are potential waters of the U.S. located in the vicinity of the project site and it is incumbent upon you to remain informed of any changes in the Corps Regulatory Program regulations and policy as they relate to your project. If your plans change such that waters of the U.S. could be impacted by the proposed project, please contact our office for a reevaluation of permit requirements.

This decision is based on an approved jurisdictional determination (JD) (attached) that there are no waters of the United States on the project site. The basis for this JD is that the project site contains isolated waters. A copy of this JD is also available at http://www.spa.usace.army.mil/reg/JD. This approved JD is valid for five years unless new information warrants revision of the determination before the expiration date.

You may accept or appeal this approved JD or provide new information in accordance with the attached Notification of Administration Appeal Options and Process and Request for Appeal (NAAOP-RFA). If you elect to appeal this approved JD, you

must complete Section II of the form and return it to the Army Engineer Division, South Pacific, CESPD-PDS-O, Attn: Tom Cavanaugh, Administrative Appeal Review Officer, 1455 Market Street, Room 1760, San Francisco, CA 94103-1399 within 60 days of the date of this notice. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

If you have any questions concerning our regulatory program, please contact me at 970-259-1947 or by e-mail at Christopher.r.wrbas@usace.army.mil. At your convenience, please complete a Customer Service Survey on-line available at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

Chris Wrbas
Project Manager

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, ALBUQUERQUE DISTRICT
4101 JEFFERSON PLAZA NE
ALBUQUERQUE, NM 87109

April 19, 2022

Regulatory Division

SUBJECT: No Permit Required – Action No. SPA-2022-00068, Allison Mine Drainage Control

James Hollen
New Mexico Energy, Minerals, and Natural Resources Department
Wendell Chino Building, 3rd Floor, Room 360
1220 S. St. Francis Drive
Santa Fe, NM 87505

Dear Mr. Hollen:

This letter responds to your request for a determination of Department of the Army permit requirements for the proposed Allison Mine Drainage Control located at approximately latitude 35.52208, longitude -108.78445, in McKinley County, New Mexico. The work, as described in your email, will consist of the construction of a drainage channel for the New Mexico Abandoned Mine Program. We have assigned Action No. SPA-2022-00068 to this project. Please reference this number in all future correspondence concerning the project.

Based on the information provided, we have determined that a Department of the Army permit is not required since the project would not result in the discharge of dredged/fill material into waters of the United States. However, please be advised that there are potential waters of the U.S. located in the vicinity of the project site and it is incumbent upon you to remain informed of any changes in the U.S. Army Corps of Engineers (Corps) Regulatory Program regulations and policy as they relate to your project. If your plans change such that waters of the U.S. could be impacted by the proposed project, please contact our office for a reevaluation of permit requirements.

This decision is based on an approved jurisdictional determination (JD) (attached) that there are no waters of the United States on the project site. The basis for this JD is that the project site contains intrastate waters with no nexus to interstate or foreign commerce, which are also isolated from other waters of the U.S. A copy of this JD is also available at http://www.spa.usace.army.mil/reg/JD. This approved JD is valid for five years unless new information warrants revision of the determination before the expiration date.

The delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for purposes of the Clean Water Act for the particular site identified in this request. This delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are United States Department of Agriculture (USDA) program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

You may accept or appeal this approved JD or provide new information in accordance with the attached Notification of Administration Appeal Options and Process and Request for Appeal (NAAOP-RFA). If you elect to appeal this approved JD, you must complete Section II of the form and return it to the Army Engineer Division, South Pacific, CESPD-PDS-O, 2052B, Attn: Tom Cavanaugh, Administrative Appeal Review Officer, P.O. Box 36023, 450 Golden Gate Ave, San Francisco, CA 94102 within 60 days of the date of this notice. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

If you have any questions concerning our regulatory program, please contact me at (505) 342-3678 or by e-mail at Forrest.Luna@usace.army.mil. At your convenience, please complete a Customer Service Survey on-line available at https://regulatory.ops.usace.army.mil/customer-service-survey/

Sincerely,

Forrest Luna
Regulatory Specialist

Enclosure(s)
1. 2022-068 AJD.pdf

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd Leahy, JD, PhD
Deputy Secretary

Jerry Schoeppner, Director
Mining and Minerals Division

6 April 2021

Mr. Jeff Pappas Ph. D., State Historic Preservation Officer and Director
Historic Preservation Division
407 Galisteo Street, Suite 236
Bataan Memorial Bldg.
Santa Fe, NM 87501

RE: Proposed AML Allison Phase IV Undertakings in Allison, New Mexico

Dear Dr. Pappas,

The New Mexico Abandoned Mine Land Program (AML), in partnership with the U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, is planning to address long-term threats to life and properties due to subsidence openings from the Allison mine workings west of Gallup, McKinley County, New Mexico. Two recent subsidence events (one in 2015 and another in 2016) resulted in emergency declarations. As a federally funded program this proposed AML undertaking is subject to Section 106 (54 U.S.C. 306108) of the National Historic Preservation Act (NHPA) (54 U.S.C. 300101 et seq.) and its implementing regulations (36 CFR Part 800: Protection of Historic Properties, as revised August 2004).

The AML Program is developing a comprehensive and long-term solution to alleviate potential for future mine subsidence in the area. The proposed project area is in the community of Allison, McKinley County, New Mexico located west of Gallup as shown on the USGS Gallup West 7.5-minute quadrangle, Township 15N, Range 18W, Section 18 (Figure 1).

The area of potential effects, as defined under 36 CFR 800.16(d), drainage improvements and geotechnical boring to determine the extent of underground coal mine workings. Your office concurred with this APE on February 13, 2017 (HPD Log No. 105262) and concurred with our determinations of eligibility for National Register of Historic Property listing. This project may include new geotechnical studies, drilling exploratory boreholes to define the extent of underground voids, as well as widening, straightening, and lining portions of the existing drainage channel to improve the hydraulic characteristics of the channel. Non-emergency work may also include controlling flow and run-off of storm water surrounding the subsidence area and other areas adjacent to the community of Allison, filling ground cracks and holes with concrete grout or other flow able fill, replacing two culverts, and the continuation of subsidence monitoring around the backfilled sinkhole features.

Briefly, the town of Allison likely gets its name from Fletcher J. Allison of the Victor American Coal Company who purchased the property in 1907 and operated the mine until 1910. Prior to the sale of the mine to the Victor American Coal Company, the mine was operater on a smaller scale back to 1899 and operated by Mulholland and Casna for a few years and closed the mine until ir reopened in 1906 under new ownership. The property was finally sold to the Diamond Coal Company who operated the mine into the late 1930s or early 1940s. Allison remained a company town throughout the mining era reaching a population of approximately 500. In addition to historic mining operations and associated residential complexes, several precontact Native American sites have been reported near Allison. Precontact Native American sites reported from the surrounding area are typically recognized by spatially discrete habitation areas and low-density ceramic, flaked, and ground stone artifact scatters.

As part of the historic property identification efforts for this undertaking, the University of New Mexico, Office of Contract Archaeology (OCA) completed an intensive level cultural resources management (CRM) inventory of the entire APE for the AML Program and produced a report entitled *When Coal was King: A 173.4 Acre Cultural Resources Inventory of the Allison Mining Town and Surrounding Areas, McKinley County, New Mexico*, prepared by Hegeberg and Cordero. In addition, consultation with appropriate Indian tribes was undertaken in July of 2017. Responses from two tribes were received from the White Mountain Apache Tribe stating the proposed project will not affect tribal historic properties or traditional cultural properties, however they requested that "any/all ground disturbing activities should be monitored "if" there are reasons to believe that there are human remains and/or funerary objects present, and if such remains are encountered they shall be treated with respect and handled accordingly until such remains are repatriated to the affiliated tribe(s)" The Navajo Nation requested a review of the cultural resources inventory report, which was sent to the Tribal Historic Preservation Officer on October 11, 2017 and we have not received a response but are included the tribe as a consulting party.

In all, seven sites and 21 historic architectural properties were recorded within the current project area by OCA inventory efforts. LA 188343 and LA 188345, the Allison mine and company town, LA 188339, 188341,188342 LA 188340 and LA .(Tabel 1)

Table 1. Archaeological Sites, Areas within LA 188345, Buildings and NRHP Eligibility (SHPO concurrence HPD Log No. 10692)

LA Number	OCA Field No.	Area	Eligibility Recommendation
188339	1		Not eligible
188340	8		Undetermined
188341	10		Not eligible
188342	20		Not eligible
188343	40		Eligible d
188344	52		Undetermined
188345	1000	Locality 1	Does not contribute to eligibility
		Locality 2	Does not contribute to eligibility
		Locality 3	Does not contribute to eligibility

		Currently Occupied	2 eligible properties, a
		Archaeological Remains	Eligible, d
HCPI No.	**Description**	**Comment**	**Eligibility Recommendation**
HCPI 43727	Allison Mine Stables	Dilapidated Livestock barn building	Undetermined
HCPI 43728		Dilapidated Livestock pen and barn Building	Not eligible
HCPI 43729	Boxcar	Lacks integrity	Not eligible
HCPI 43730	Residence	Lacks integrity	Not eligible
HCPI 43731	Former Hospital		Eligible, a
HCPI 43732	Residence	Lacks integrity	Not eligible
HCPI 43733	Boxcar	Lacks integrity	Not eligible
HCPI 43734	Residence	Lacks integrity	Not eligible
HCPI 43735	Residence	Lacks integrity	Not eligible
HCPI 43736	Residence	Lacks integrity	Not eligible
HCPI 43737	Residence	Alterations are reversible	Undetermined
HCPI 43738	Residence	Modern construction	Not eligible
HCPI 43739	Boxcar	Lacks integrity	Not eligible
HCPI 43740	Boxcar	Lacks integrity	Not eligible
HCPI 43741	Boxcar	Lacks integrity	Not eligible
HCPI 43742	Boxcar	Lacks Integrity	Not eligible
HCPI 43743	Road	Lacks integrity	Not eligible
HCPI 43744	RxR spur	Lacks integrity	Not eligible
HCPI 43745	Boxcar	Lacks integrity	Not eligible
HCPI 43746	Two-track road	No formal design	Not eligible
HCPI 43747	Reservoir	Lacks integrity	Not eligible

The Allison townsite is the dominant historical component in the project area, and mining and construction activities during the town's occupation period very likely destroyed any pre-existing prehistoric resources that may have existed in the core area of the Allison canyon.

Feature 5, a destroyed Pueblo II Period roomblock within LA 188345, is an example of how damaging historic mining activities were to prehistoric archaeology in the canyon. While the feature was most likely fully destroyed by mining safeguarding activities carried out by private landowners, prehistoric artifacts are visible on the surface surrounding the feature area and may be vulnerable to public collection.

The surviving occupied historic houses from the Allison townsite have all been modified and expanded over time. Only HCPI 43731 has had minimal modifications and is the most intact dwelling remaining in the Allison community and it is currently undergoing renovation by its private owner. The front enclosed porch and the metal flue appear to be the most distinctive alterations to the house. HCPIs 43727, 43731 and 43737 are recommended as eligible and potentially eligible for inclusion in the NRHP and SRCP under criterion A for their association with coal mining and the economic development of the Gallup area.

Some areas of the town have already experienced substantial mechanical disturbance: Localities 1, 2 and 3 most likely do not have any potential for subsurface historic or prehistoric archaeological resources.

Archaeological survey was not conducted within the currently occupied area of Allison. While most portions of the town appear to be heavily disturbed, the potential for subsurface archaeological resources has not been evaluated here. The 1916 Bortell photo demonstrates that within the currently occupied area, the back sections of house lots contained sheds, garages, and privies adjacent to the drainage channel. Survey in the northern part of town demonstrated that trash middens also frequently occurred adjacent to residential structures. Areas behind the historic homes, and east of the main drainage have potential for subsurface historic archaeological resources. Archaeological survey conducted in the northern portion of the site has demonstrated there is potential for subsurface historic archaeological resources.

At the time we were identifying historic properties we had not developed the potential scope of work (SOW), but additional data has allowed us to develop the SOW sufficiently to make a determination of potential project effects to historic properties. Currently, we have a conceptual design for our safeguard efforts (accessible vis FTP download). The safeguard efforts were designed to avoid known areas containing cultural resources and are largely confined to the existing drainage channel west of the Allison urban core and east of the mine processing areas. Additional exploratory bore holes follow the edge of existing roads and parcel lots and avoid property parcels. We believe the proposed safeguard efforts will not adversely affect historic properties within the project area.

We request your concurrence with our determinations of project effects and or comments. If you have any questions or need additional information feel free to contact me at (505) 819-8856, or at richard.wessel@state.nm.us.

Sincerely,

Richard L. Wessel
Cultural Resources Manager

Concurrence: _____ Date: 6/14/2021
New Mexico Historic Preservation Officer

Comments:

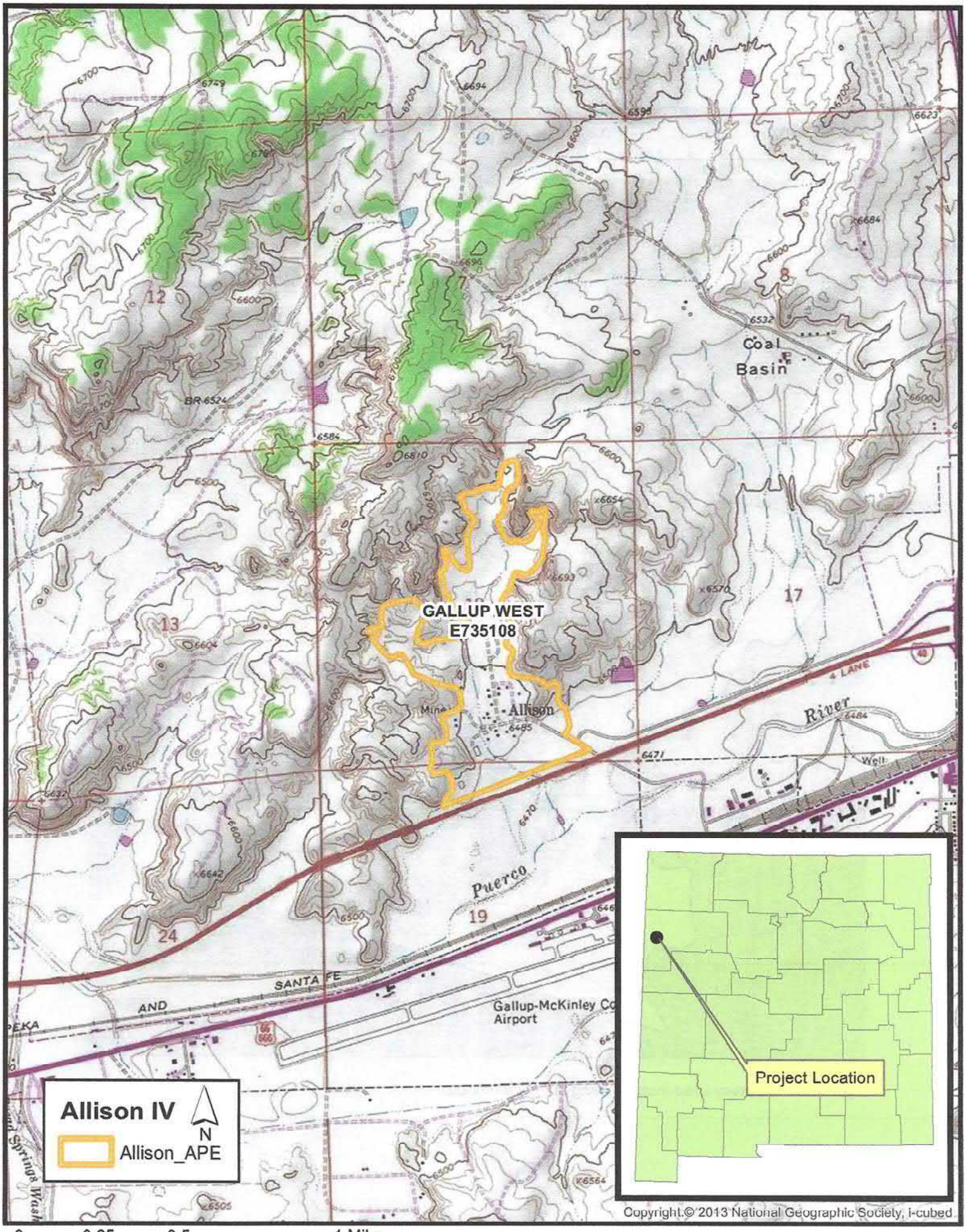


Figure 1: Allison Phase IV Project Location

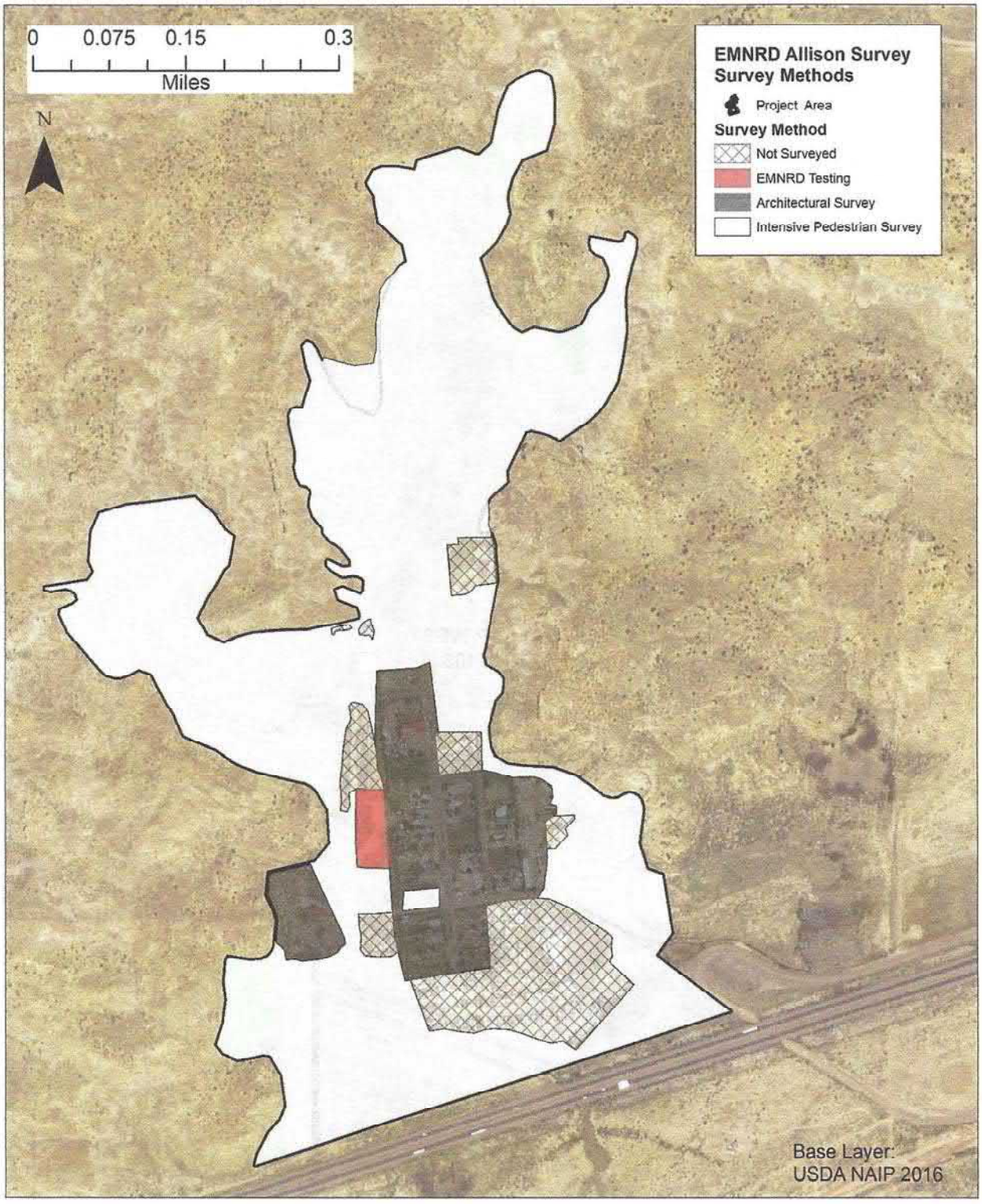
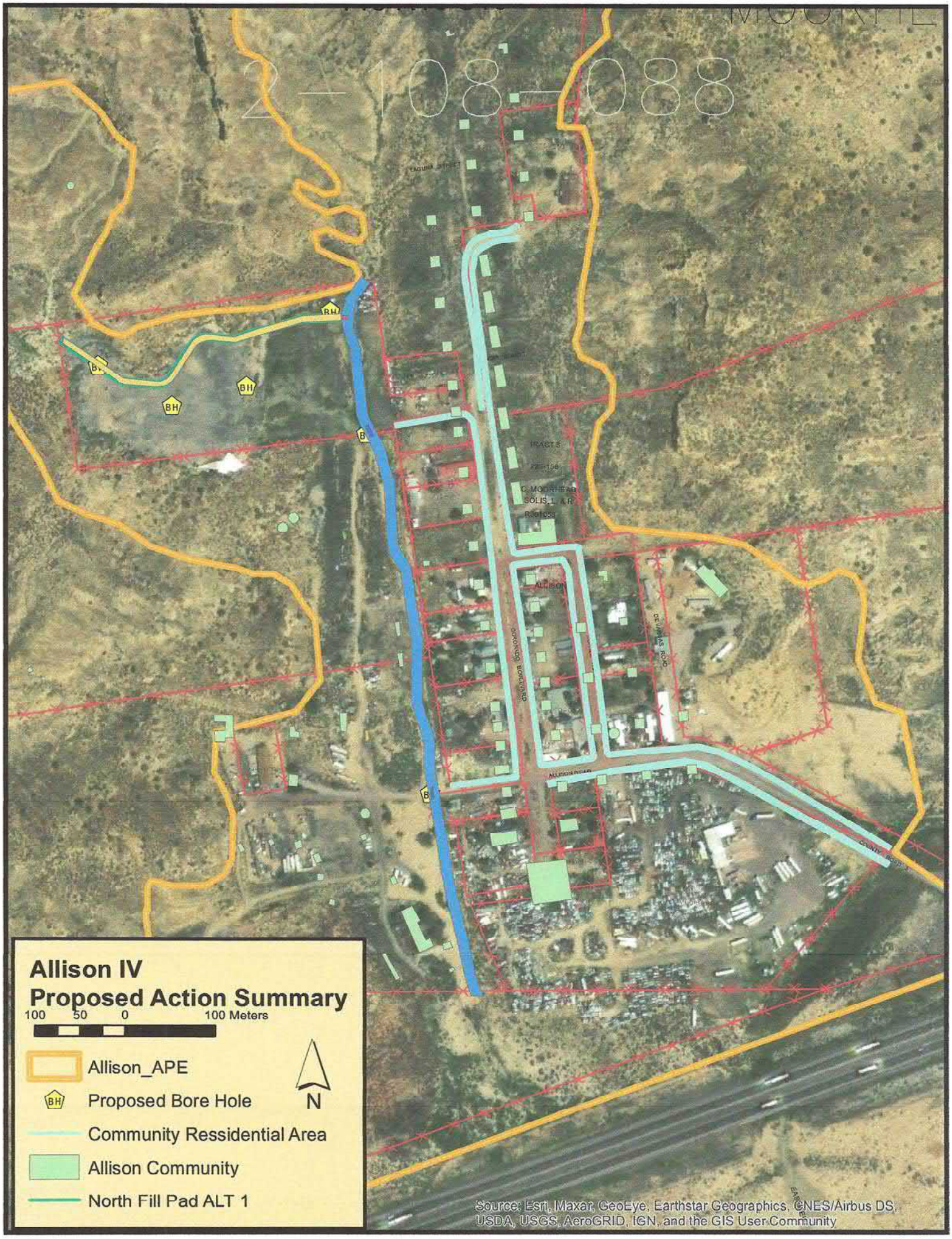


Figure 2. Survey area map showing survey methods.


Allison IV
Proposed Action Summary
100 50 0 100 Meters
Allison_APE
Proposed Bore Hole
Community Ressidential Area
Allison Community
North Fill Pad ALT 1
N
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Feet
0 140 280 560 840 1,120
Source: McKinley County Assessor, Gallup, NM