

Project Summary

Background

The New Mexico Energy, Minerals, and Natural Resources Department (NMEMNRD), Abandoned Mine Land (AML) Program, in partnership with the U.S. Department of Interior, Office of Surface Mining Reclamation and Enforcement (OSMRE), is proposing to safeguard hazardous abandoned mine features throughout the Yankee Canyon area (Project Area) located eight miles northeast of the City of Raton, Colfax County, New Mexico (Figure 1).

Mining was first conducted around Yankee Canyon, as well as the nearby Sugarite Canyon, in the early 1890s. Mining operations continued for over 40 years until the early 1940s, when mining was shut down in the area.

The Project Area consists of private land and state trust land administered by the New Mexico State Land Office. The area contains numerous historical mining features, many of which are hazardous and in need of safeguarding.

Project Description

The Yankee Canyon Safeguard Project (herein referred to as the Proposed Project) involves the implementation of safeguarding measures in the most dangerous locations of the Project Area with a focus on repair of a section of County Road (CR) A-25 where it passes through the Project Area. Safeguarding measures would include investigation and repair of subsidence on CR A-25, stabilization of steep slopes on coal gob piles, and the construction of structural barriers designed to restrict human access. Gates, cupolas, or other wildlife-compatible closures would be installed site-wide where the dangerous features are located.

Existing roads would be used wherever possible to access the mining features proposed for closure. Construction staging areas would be located near existing roads in areas that are already disturbed. The Proposed Project ground disturbance footprint would be focused on the identified hazardous mine features throughout the Project Area. Colfax County Roads A-25 and A-26 would serve as the main access roads, along with former two-track, unpaved mine roads that would serve as access to other areas situated away from the county roads. Existing disturbed and flat areas adjacent to the road may also be used for geotechnical drilling activities and staging of drilling, construction equipment and materials.

Implementation of the Proposed Project is anticipated to begin in the early fall 2023. The Proposed Project would be completed in phases, with the most critical work taking place first. The below table shows the phases and estimated timing of completion.

Phase	CR A-25	Structural Closures	Coal Waste (Gob) Piles	Approximate Timing of Completion	Public Accessibility During Construction
I	X	X (near CR A-25)	-	Up to 1 month	Access will be limited during work along CR A-25. All efforts will be made to accommodate local residential traffic, however there may be times when the road must be shut down.
II	-	X	X (on at least state trust lands)	Up to 1 year	No limitations

Phase I

Phase I would investigate and repair areas on or adjacent to CR A-25 where subsidence features (tension cracks) have been identified along a section of the road. In addition, Phase I includes the safeguarding of several adits close to the road. Safeguarding hazardous mine openings and other features will be designed to allow for open access to, and continued use of, the mine features by smaller wildlife species, including bats.

Phase II

Phase II would consist of safeguarding the remaining adits and other hazardous features identified throughout the Project Area. Phase II would also include gob pile reclamation on state trust land and potentially on private land.

Phase I and II Project Details

The following describes the safeguarding measures in detail for the Proposed Project:

County Road A-25

Geotechnical exploration would be conducted by drilling to further characterize subsurface conditions and determine if the subsidence is related to underground mine workings. Backfilling through drilling and injection of a water, sand and cement grout mixture would then be completed to mitigate the areas of subsidence impacting the road. The grout mixture would be injected into the voids beneath and adjacent to the A-25 alignment. The grouting work may take place concurrently with the drilling investigation. The goal of drilling and grouting the CR

A-25 subsidence features is to map the voids under and near the road alignment and to fill those voids with grout to stop additional subsidence in the area and stabilize the road. The drill holes would be spaced every 30 feet along the A-25 alignment, with an increased drilling density of every 20 feet around the existing subsidence features.

Adits and Other Hazardous Mine Features

Gates: Gates would be installed over mine shafts and in mine adits or portals, as well as in other mine entryways where gates are determined to be the best method for blocking access to mine features. The gates would be designed in accordance with the latest industry standards and would be modified as necessary to fit the specific entryway, occasionally using steel culverts to support the gate. The basic gate design generally used consists of a vertical to horizontally placed flat grid of welded steel cross bars anchored in place over the mine entryway. The cross bars would be oriented horizontally and welded onto vertical supports spaced widely. Spacing of the horizontal cross bars would be 6 inches, designed to allow passage of bats in flight, as well as access for other small mammals and for birds, but not spaced widely enough to allow human entry. Gates are typically constructed of 2-inch by 4-inch and 2-inch-square tubular weathering steel that is anchored into the surrounding rock using 1-inch steel rods. Gates are designed to not inhibit air flow into or out of the mine feature and constructed of angled steel oriented with the apex up to maximize the airflow through the gate.

The gates would be installed at all features identified for closure that have been surveyed by Bat Conservation International (BCI) and documented for historical purposes (Okun 2023). Closure and construction timing will be in accordance with the recommendations of BCI. Any recommendations, such as pre-construction wildlife surveys, resulting from the BA/BE conducted in the Project Area (DBSA 2022) will be followed.

Rock/concrete bulkhead with culvert gate: At some locations, gates would consist of a bulkhead constructed of a 2- to 4-foot-thick section of rocks cemented together with concrete. A 3- to 4-foot steel culvert with a steel gate would be constructed inside.

Cupolas: Cupolas are a type of gate designed to fit over a vertical mine shaft. Bat-friendly cupolas may be installed over mine shafts if determined to be an appropriate measure for safeguarding a feature in the Project Area. Locations and construction timing will be in accordance with the recommendations of BCI and based on pre-construction surveys of wildlife usage of features.

Backfill: Some mine openings may be backfilled with adjacent coal gob or waste rock piles.

Other structural closures: Polyurethane foam (PUF) plugs, gated culverts, and other structures may be used to safeguard mine openings.

Coal Waste (Gob) Pile Reclamation

Stabilization of steep slopes on coal gob piles would be conducted in place to prevent mine waste from entering adjacent ephemeral channels. Proposed work would include in situ burial of coal gob or the establishment of vegetation and installation of various erosion control structures on the gob piles as necessary to facilitate effective stormwater management.