COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Satanic/Bluebird Drilling Investigation and Grouting Project (BIL007 & BIL013)

Overview

The Satanic/Bluebird mine in Jefferson County is in undeveloped land owned by the City of Lakewood. Mines located in steeply dipping bedrock easily propagate voids to the surface and have caused damage to property along the Denver Basin boundary where they exist. A large depression with mature cottonwood trees over the suspected hoist shaft is an attractive area for nearby public to want to explore, particularly children. This area is under increasingly high development pressure with new high-density residential development occurring or being proposed on the surrounding lands, and open space to the north drawing recreationalists from across the region to the area. Widening of local roads and nearby development has increased water runoff into the area following rain events. The hoist shaft area has been observed holding water after heavy rains, increasing the potential for sudden collapse. The deep mine depth and multiple levels of mining pose a high hazard if collapse were to occur. This project involves two phases: a drilling investigation to determine location and subsurface conditions of the hoist and air shafts, and then compaction grouting to stabilize the shafts. Surface subsidence related to the mine workings is likely to continue to occur.

Location

W Alameda Parkway and S. McIntyre Street
Lakewood, CO
Jefferson County

Site History

Otis Rooney (eldest son of settler Alexander Rooney) started the Satanic Mine in 1872, which eventually included several outbuildings and 4-story hotel that housed 77 men. The hoist foundation and foundations for the mule shed and machine building remain. Mine maps indicate the mine was in nearly vertical beds (dipping east at 85 degrees) of the Laramie Formation with coal seams 8-10 feet thick to a depth of 680 feet below ground surface. The mine contains at least 17 recorded levels of coal extraction. A triple-chambered hoist shaft descended into the mine to allow coal removal and men to enter and exit the subsurface workings. On December 3rd, 1921, 6 miners were killed by a coal dust explosion while trying to stop a mine fire. After an investigation, the air shaft to the north was advanced to help with ventilation and mine was renamed the Bluebird Mine. The mine shut down in 1936 during the Great Depression. There have been numerous documented subsidence occurrences relating to the mine workings in the late half of the 1900s.

For More Information

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Scan the QR code for up-to-date information about this project:

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Satanic Blue Bird Drilling Investigation Project

Goals and Mitigation Strategy/Planned Activities

The goal of the project is to determine the location and conditions of the hoist shaft and the air shaft and use compaction grouting techniques to stabilize the shaft locations. DRMS is working with City of Lakewood to understand potential risks to future development in the area and provide information to Colorado Geological Survey Land Use Review Program.

The first phase is a drilling investigation at the suspected hoist shaft and air shaft locations. Angled drilling was used to ensure the safety of the drill rig and crews. One borehole was used to monitor groundwater levels during and after the drilling project. The results of this investigation were used to develop recommendations for the compaction grouting project phase.

The second phase is the compaction grouting at the hoist shaft and air shaft locations. The hoist shaft location is the priority due to its size, depth, and near-vertical alignment. The air shaft was advanced at a shallower angle (45°) and poses less of a safety risk. Attempts will be made to grout the first 100 ft of depth at the air shaft location that pose the greatest safety risk.

This work will address the immediate safety issues at the site; however, is not intended to be a solution to future mine subsidence related to the underground mine workings.

Estimated Schedule

November – December 2023
- DRMS contracted work with Shannon and Wilson to drill up to 6 holes in hoist shaft to max depth of 220 ft to determine location and condition of each chamber, and up to 7 holes along air shaft alignment to determine location and condition of the incline to point where subsidence not likely to cause hazard at surface.

January – May 2024
- Shannon and Wilson analyzed the results of the drilling investigation and writes report with results and recommendations for stabilizing the shafts.

May – August 2024
- DRMS developing project scope of work for compaction grouting and bidding process.

September – December 2024
- DRMS contractor will use compaction grout to stabilize the hoist shaft and air shaft locations.
- Site reclamation will restore site conditions and re-seed the work area.

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