MINING IN THE MAGDALENA AREA, SOCORRO COUNTY, NEW MEXICO

Virginia T. McLemore, Cynthia Connolly, and Amy Trivitt-Kracke
New Mexico Bureau of Geology and Mineral Resources, New Mexico Tech, Socorro, NM, 87801

INTRODUCTION

From 1866 to 1970, 7 mining districts in the Magdalena Mountains (Magdalena, Hop Canyon, North Magdalena, Water Canyon, Cat Mountain, Council Rock, Bear Mountain districts) produced more than $46 million worth of zinc, lead, copper, silver, manganese, gold, and barite from carbonate-hosted lead-zinc replacement and volcanic-epithermal vein deposits. Nearly all of the mineral production was from the Magdalena mining district, where three mines accounted for much of the production (Kelly, Juanita, and Graphic mines).

MINING HISTORY

1866—J.S. Hutchason discovered ore and started the Kelly, Juanita and Graphic mines and began producing silver
1885—Railroad built between Socorro and Magdalena to ship ore to the Billings smelter in Socorro
1903—Re-discovery of zinc carbonate (smithsonite, a vital ingredient for paint) and new processing techniques began producing lead-zinc from the Magdalena mines
1970—End of mineral production in the Magdalena area
1972—Last cattle drive to Magdalena and the railroad was abandoned

MINERAL RESOURCE POTENTIAL

Most of the mineral deposits in the Magdalena area were formed from hydrothermal fluids associated with volcanic rocks. The most productive mineral deposits are lead-zinc with some silver and gold found in the Kelly Limestone of the Magdalena Group, mostly as pods and replacements, minor skarns, and minor veins in carbonate rocks that are adjacent to intrusive rocks. They are typically lead-zinc dominant, with a by-product of copper, silver, and gold, consisting predominantly of galena and sphalerite with lesser amounts of chalcopyrite and other minerals.

ENVIRONMENTAL ISSUES

• Mine workings, rock piles, tailings, and heap leach facilities can result in physical hazards
• Acid rock drainage and contamination by metals and other constituents is a problem at some sites in the Magdalena area and can result in potential water quality issues
  Lead is present in many districts
• Since there is no complete inventory of the mines, we do not know the extent of any problems

NMBGMR is conducting research on inactive/abandoned mine features in New Mexico. The objective of our research is to develop a better procedure to inventory and characterize inactive or abandoned mine features in New Mexico. For more information see https://geoinfo.nmt.edu/geoscience/research/home.cfm?id=13

GEOLOGIC PROCESSES

Schematic of formation of volcanic-epithermal districts—related to calderas and geothermal activity

Why Study Mining districts?

• History
• Mineral collecting
  • Minerals
  • Environmental issues
  • Mineralogy and geochemistry
• Mineral-resource potential
  • Are there any minerals left to mine today or in the future?
• Understanding geologic processes

MINERAL COLLECTING

Tony Otero with a prize Smithsonite, photo by Al Tlush. New Mexico Bureau of Geology and Mineral Resources, Historic Photograph Archives, Socorro, NM

Azurite—Kelly mine. Photo by Jeff Scovil.

Native Copper—Kelly mine, 1987. Courtesy of Wendell E. Wilson, Historical Archives, NM Bureau of Geology, Socorro NM

MINERAL-RESOURCE POTENTIAL

Most of the mineral deposits have been mined out. There is only moderate potential for gold and copper in some districts.

Acid Rock Drainage (ARD) plot of waste rock pile at mines examined during the NMBGMR AML project

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