SEG 2022 Conference: Minerals For Our Future

Development of Data Systems to Support Critical Mineral Research in New Mexico

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The NM Bureau of Geology and Mineral Resources (NMBGMR) has accumulated data on mines and minerals resources, including critical minerals, in NM since 1927. Over past decades the NMBGMR has converted historical data into various electronic formats. Relational databases and images are available on the NMBGMR website with more content being added. To date, over 6800 photographs, 750 maps, and other historic documents have been uploaded onto the NMBGMR Photo Archive site. Under the USGS National Geological and Geophysical Data Preservation Program, USGS Earth Mapping Resources Initiative, and DOE CORE-CM programs, additional data including physical samples are collected and archived. Legacy chemical analyses are important to understand where critical minerals are likely to be found and their potential for development. More than 2900 chemical analyses from past projects are archived (https://geoinfo.nmt.edu/staff/mclemore/projects/mining/REE/McLemoreMasterChem_v5.xlsx). Not only do the actual chemistry data need to be accessible, but the context of such data is vital to our research. The context information includes locations, geological settings, collection methodologies, and in-house tracking of samples. Therefore, the NMBGMR is undertaking efforts to better organize, store, catalog, and retrieve a large collection of geochemical and related data. Previously, data were collected and analyzed in ad-hoc databases and spreadsheets. New SQL Server databases and web-based applications are being developed to enter, store, retrieve, analyze, and visualize these data on mines, mineral deposits, and samples. The purpose of these databases are to provide information that will aid in 1) evaluating critical minerals and other resource potential, 2) identifying their development and production, and 3) identifying possible environmental concerns. These data are needed by government agencies to make land-use decisions. In this presentation members of the NMBGMR economic geology and information technology teams will present the status of our efforts in developing these data systems, and lessons learned along the way.