ABSTRACT

TITLE:	Investigation of Silver Concentrations in Galena and Tetrahedrite at the Highland Mary Mine, San Juan County, Colorado
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ABSTRACT: The Highland Mary mine of the Eureka Mining district in the western San Juan Mountains has produced silver rich ore since the Colorado mining boom of the early 1870's. Galena and tetrahedrite were suspected to be the dominant silver-bearing minerals in the ore, but the concentrations of silver in the minerals was not constrained. Argentiferous galena was widely documented in the western San Juan Mountains, with minor silver occurring in tetrahedrite. Electron Microprobe geochemistry of galena and tetrahedrite demonstrates that tetrahedrite is the dominant silver-bearing species in ore at the Highland Mary mine. Galena has concentrations of silver of 0.01 to 0.03 wt. % while tetrahedrite contains from 0.02 to 13.4 wt. % silver. At the Highland Mary mine tetrahedrite is the more economic mineral, but many questions remain about the physical and chemical controls on the distribution of these argentiferous minerals in the region. This research reinforces the importance of establishing the metal concentrations in different mineral phases for both mineral exploration and development.