

GEOCHEMISTRY AND REACTION PATH MODELING OF THE BEOWAWE
HYDROTHERMAL SYSTEM, NEVADA: A BARREN END-MEMBER EPITHERMAL
SYSTEM

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ABSTRACT

The Beowawe geothermal area is manifested by numerous hot springs, fumaroles, and before the installation of an electric power plant, spectacular geysers. Beowawe also bears many geologic similarities to ancient epithermal gold-silver ore deposits, suggesting that it is a modern-day example of one of these ancient ore-forming systems.

Three distinct modes of study were utilized. The first is a study of the trace element composition of silica sinters that have deposited by Beowawe geothermal waters. The purpose for this was to look for evidence of episodic fluid flow, which would help explain the high temperatures of the system. The second is a study of fluid inclusions trapped in precipitated quartz and sinter. This has provided data on the composition and temperature of the flow system over time. The third is a reaction path modeling study of geothermal waters along the flow path with various rocks. Although Beowawe is weakly mineralized in precious metals, modeling the geochemical evolution of the fluid will provide insights into the maximum concentrations of precious metals able to be carried and precipitated. This will, in turn, provide insights into the degree to which Beowawe is a modern-day analog to fossil systems responsible for making ore deposits.