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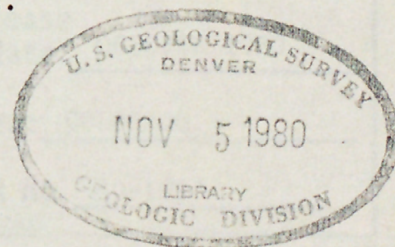
Preliminary Report on the Mineral Resource Potential
of the Powderhorn Instant Study Area,
Gunnison and Hinsdale Counties, Colorado

By

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Mineral Surveys

Related to Bureau of Land Management

Instant Study Areas

In accordance with the provisions of the Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976), the Geological Survey and the Bureau of Mines have conducted mineral surveys on certain areas, which formally had been identified as "natural" and "primitive" areas prior to November 1, 1975. This report discusses the results of a mineral survey of the Powderhorn Instant Study Area, Gunnison and Hinsdale Counties, Colorado.

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Mineral resource potential of the

Powderhorn Instant Study Area

The Powderhorn Instant Study Area covers approximately 51,000 acres of land under BLM administration located about 80 km (50 mi) southwest of Gunnison, Colorado. A mineral resource survey, made in 1979 by the U.S. Geological Survey and the U.S. Bureau of Mines, indicates that both the mineral potential and the energy potential for the Powderhorn Instant Study Area are low. This report is based on geologic and geochemical investigations, examination of prospects, and an aeromagnetic survey. Spectrographic analyses were made of approximately 120 stream-sediment and rock samples. No mining districts are located within the study area.

The Powderhorn Instant Study Area is underlain entirely by volcanic rocks of Tertiary age along the northern side of the San Juan volcanic field (Map A). Despite its proximity to known mineralized areas near Lake City on the west and Powderhorn on the north and northeast, no evidence was seen in the geologic, geochemical, or geophysical surveys made of the Powderhorn Instant Study Area to indicate that any significant mineral resources occur within the study area. Surface geology did not indicate exposed centers of mineralization, nor were any geologic environments interpreted that might indicate hidden centers of this kind. Geochemical sampling results (Map B; tables 1-7) all can be explained by sources in the different bedrock terranes; no anomalous metal concentrations were detected that might indicate proximity to mineral deposits. Results of aeromagnetic (Map C) and gravity surveys (map not included in this report) also can be explained by the known or reasonably inferred distribution of bedrock types, without invoking special circumstances that might indicate a mineral resource potential.

Whereas several periods of mineralization can be documented in the volcanic rocks exposed in mining areas near Lake City to the west (Slack, 1976; Slack and Lipman, 1979; Steven and others, 1977), none of these episodes affected rocks within the Powderhorn Instant Study Area. The nearest altered and mineralized rocks related to these periods of mineralization are in the Slumgullion Pass area, 10 km south of the Powderhorn Instant Study Area (Map B) where sampling during the present study did find anomalous concentrations of several metals (table 5). These altered and mineralized rocks are overlain unconformably by the late basalt lava flows that cap the high plateau underlying the southern part of the Powderhorn Instant Study Area. No evidence was seen, however, to warrant extrapolating the altered and mineralized rocks northward beneath the basalt cover as far as the study area.

Numerous small mines and prospects in the area of Precambrian rocks near Powderhorn, Colorado, were established to explore for base and precious metals, thorium, niobium, titanium, rare-earth elements, and other mineral occurrences. Some of these occurrences could well underlie the volcanic rocks exposed in the Powderhorn Instant Study Area. If so, however, they would be at depths of 400-1,500 m, and would have no geological, geochemical, or presently available geophysical expression. Under these circumstances, the exploration or development of such deposits would be economically unfeasible.

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